

Let's Talk About the Biological Reality of Sex, Baby*

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Abstract: Sex is at the very core of individual identity. It affects the conception of self and the way others view the individual. Every day, one's sex may open and close doors, access to communities, and opportunities. Laws that define sex may affirm scientific knowledge and protect people or threaten to unravel the facts and the reality of sex. A deep unmooring of sex is underway, and this article aims to stop it. On day one of the current presidential term, January 20, 2025, President Trump signed an Executive Order on "Defending Women from Gender Ideology Extremism and Restoring Biological Truth to the Federal Government." The Executive Order seeks to define sex to stop a problem it characterizes as follows: "Across the country, ideologues who deny the biological reality of sex have increasingly used legal and other socially coercive means to permit men to self-identify as women and gain access to intimate single-sex spaces and activities designed for women, from women's domestic abuse shelters to women's workplace showers." The Executive Order follows laws in multiple states that have restricted access to women's and girls' sports, restricted access to bathrooms, and prohibited or restricted access to gender affirming care.

This article takes seriously the assertion that there is a biological reality of sex. By examining the scientific and medical evidence this article demonstrates that sex determination does not and cannot occur at fertilization but is instead a complex process occurring at various stages of human development from the embryonic and fetal stage through adulthood. Ultimately, with this complexity as a guiding frame, this article concludes that legal definitions and related laws must align to the evidence and the lived experience of individuals.

* This title is an homage to "Let's Talk About Sex, Baby," by Salt-N-Pepa, BLACK MAGIC (1991).

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Introduction

On January 20, 2025, President Trump signed an Executive Order on “Defending Women from Gender Ideology Extremism and Restoring Biological Truth to the Federal Government” (EO). Among the stated purposes of the EO are to combat “Efforts to eradicate the biological reality of sex fundamentally attack women by depriving them of their dignity, safety, and well-being.” The goal is to rest these decisions on scientific and medical truth. “Basing

Federal policy on truth is critical to scientific inquiry, public safety, morale, and trust in government itself.” This article takes this task seriously by examining the scientific and medical evidence to construct a legal definition based on the biological reality of sex.

The EO seeks to use “clear and accurate language and policies that recognize women are biologically female, and men are biologically male.” The EO also provides these “clear and accurate” definitions. In defining sex the EO states, “‘Sex’ shall refer to an individual’s immutable biological classification as either male or female.” The EO also establishes what it excludes from the definition of sex, “‘Sex’ is not a synonym for and does not include the concept of ‘gender identity.’” The EO defines the gender categories of Women/Woman/Girls/Girl through the sex category of “adult and juvenile human females, respectively.” The same for Men/Man/Boys/Boy which “shall mean adult and juvenile human males, respectively.”

Determination of sex is made at “conception” by the size of the “reproductive cell.” Under this standard, “‘Female’ means a person belonging, at conception, to the sex that produces the large reproductive cell” and “‘Male’ means a person belonging, at conception, to the sex that produces the small reproductive cell.”

The EO raises many questions, among these are whether these definitions represent the “biological reality of sex,” whether this policy is based on “truth,” whether it is based on “scientific inquiry,” whether these definitions are “clear and accurate,” whether male and female are “immutable biological classifications,” whether sex is “synonymous” with or includes “gender identity,” whether sex determination can or should be made at “conception,” and whether female is “the sex that produces the large reproductive cell” and male is “the sex that produces the small reproductive cell.” Also important is to determine if these definitions and processes of sex testing stop the “fundamental[] attack [on] women [that is] depriving them of their dignity, safety, and well-being.” In other words, does the “truth” of these definitions advance, “scientific inquiry, public safety, morale, and trust in government itself.”

This article will explore these questions by examining when and how sex testing occurs and whether these standards align with the “biological reality of sex.”

I. The Biological Reality of Sex Before Birth and the Process of Sex Differentiation and Determination

The Executive Order on “Defending Women from Gender Ideology Extremism and Restoring Biological Truth to the Federal Government” attempts to restore biological truth and “biological reality of sex.” The EO alleges that this truth is established at

conception and differentiates Male and Female based on the size of the reproductive cell: “‘Female’ means a person belonging, at conception, to the sex that produces the large reproductive cell” and “‘Male’ means a person belonging, at conception, to the sex that produces the small reproductive cell.” These definitions are not biological truth and do not reflect the biological reality of sex at fertilization.

Medical doctors and scientists do not use the term conception because it is not a scientific term. Instead, scientific literature uses the term fertilization. “The chromosomal sex of an embryo is established at fertilization” but this is not the biological reality of sex.¹ There is no known test of chromosomal sex that can be conducted at fertilization in humans during pregnancy. The reality is that the “first signs of sex differentiation are noticed” in humans 6 weeks after fertilization.² Prior to this stage human gonads are sexually indifferent.³ Measuring the size of the reproductive cells at this stage of development does not differentiate sex. The process of sex determination and differentiation involves “[a] bewildering number of hormones and growth factors.”⁴

Prior to the sixth week of embryonic development in humans, “no sexual difference can be observed in the gonads.”⁵ Thus, differentiation between the large and small reproductive cell is not possible at fertilization. During the first six weeks, the “[u]ndifferentiated gonads of XX or XY individuals are apparently identical and can form either ovaries or testes.”⁶ The development of the gonadal ridge is the first time sex can be differentiated, but sex differentiation at this stage is not immutable. During the development of the gonadal ridge, adrenal agenesis can occur and

¹ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

² Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

³ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

⁴ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

⁵ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

⁶ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

“subsequent gonadal degeneration and XY sex reversal.”⁷ In general sex reversal is more common in XY embryos.⁸

Starting with the work of Alfred Jost in the 1940’s the existence of testes has been identified as differentiating “the sexually dimorphic fate of the internal and external genitalia.”⁹ The existence of testes “irrespective of their chromosomal constitution . . . [result in] all internal and external genitalia develop[ing] following the male pathway.”¹⁰ A lack of testes results in genitalia developing “along the female pathway.”¹¹ On the other hand, “The existence of ovaries has no effect on fetal differentiation of the genitalia.”¹² The process for adequate testes differentiation and secretion of masculinizing hormones involves a myriad of vascular, cellular, and molecular pathways that must occur in a specific sequence, at certain levels, and in a narrow time period in embryonic and fetal development.¹³ The genetic pathway to ovarian differentiation and stabilization, although it does not impact fetal differentiation, also involves a complex process of cell pathways.¹⁴

The internal reproductive tract is similar in both sexes until the eighth week of embryonic development.¹⁵ Only between the ninth and thirteenth week of embryonic development does the upper

⁷ Jean-Luc Pitetti et al., *Insulin and IGF1 Receptors Are Essential for XX and XY Gonadal Differentiation and Adrenal Development in Mice*, 9 PLOS Genetics 1 (Jan. 2013) <https://pmc.ncbi.nlm.nih.gov/articles/PMC3536656/>

⁸ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020) (XY sex reversal can occur for several other reasons during the development of the gonadal ridge such as “gonadal cell proliferation”). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

⁹ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

¹⁰ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

¹¹ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

¹² Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

¹³ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

¹⁴ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

¹⁵ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

part of the internal reproductive tract start to differentiate.¹⁶ Until approximately the ninth week of embryotic development external genitalia is undifferentiated.¹⁷ The masculinization of external genitalia is marked by prostatic development and repression of vaginal development.¹⁸ Despite higher testosterone levels that peak between weeks eleven to fourteen in embryotic development, no size difference exists between penile or clitoral size until fourteen weeks of embryonic development.¹⁹ In fact, testosterone levels may not impact phallic growth as, “Maximal phallic growth occurs during the third trimester of fetal life, at a time when male testosterone levels are declining.”²⁰ The vaginal rudiment does not open up until the twenty-second week of embryonic development.²¹ Development of the “Early patterning of external genitalia is regulated by a cascade of signaling molecules.”²² Development along the female pathway is the default pattern in embryotic development, “the reproductive tract, whatever its genetic sex, will develop along female lines provided it is not exposed to testicular hormones, the main forces driving male sex differentiation.”²³

The most common form of sex identification before birth is an ultrasound in the second or third trimester.²⁴ Accuracy during

¹⁶ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

¹⁷ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

¹⁸ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

¹⁹ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

²⁰ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

²¹ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

²² Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

²³ Rodolfo Rey, Nathalie Josso, & Chrystèle Racine, *Sexual Differentiation*, In: Kenneth R. Feingold et al., Eds. Endotext (Last updated May 2020). <https://www.ncbi.nlm.nih.gov/books/NBK279001/>

²⁴ Manette Kearin, Karen Pollard, & Ian Garbett, *Accuracy of Sonographic Fetal Gender Determination: Predictions Made by Sonographers During Routine Obstetric Ultrasound Scans*, 17 Australian J. Ultrasound in Med. 125, 125 (Aug. 2014).

these stages of pregnancy is more than 99%.²⁵ Accuracy is measured based on an actual determination and excludes instances where no determination is made or there is ambiguity. First trimester sex identification is less common and normally used to monitor risk of sex-linked disorders.²⁶ First trimester sex identification starting at twelve weeks is increasing in accuracy, but gestational age still improves accuracy.²⁷ Earlier testing is possible using chorionic villus sampling from eleven weeks or amniocentesis from fifteen weeks to identify the presence of a Y chromosome for sex linked genetic diagnosis, “but both techniques carry a small but significant miscarriage risk.”²⁸ The presence of a Y chromosome using non-invasive prenatal diagnosis (NIPD) can now be performed using cell-free fetal DNA in maternal plasma at 7 weeks with high accuracy.²⁹ The EO inaccurately states that sex differentiation occurs at fertilization.

The biological reality is that development of the testes is determinative of embryonic development to the male or female pathway regardless of chromosomes. The most accurate stages for identifying sex are the second and third trimester, not fertilization.

II. Sex Assigned at Birth and Addressing the Biological Reality of Sex

When a child is born, it is generally assigned to one of two sexes: male or female. Sex designation is required and monitored by the United States Department of Health and Human Services through the Center for Disease Control and Prevention’s National Center for Health Statistics. The National Center for Health Statistics (NCHS) collects statistics pertinent to the health and

²⁵ Celine Lewis, Melissa Hill, Heather Skirton, & Lyn S. Chitty, *Non-Invasive Prenatal Diagnosis for Fetal Sex Determination: Benefits and Disadvantages from the Service Users’ Perspective*, 20 *European J. Human Genetics* 1127 (March 2012).

²⁶ Manette Kearin, Karen Pollard, & Ian Garbett, *Accuracy of Sonographic Fetal Gender Determination: Predictions Made by Sonographers During Routine Obstetric Ultrasound Scans*, 17 *Australian J. Ultrasound in Med.* 125, 125 (Aug. 2014).

²⁷ Manette Kearin, Karen Pollard, & Ian Garbett, *Accuracy of Sonographic Fetal Gender Determination: Predictions Made by Sonographers During Routine Obstetric Ultrasound Scans*, 17 *Australian J. Ultrasound in Med.* 125, 128 (Aug. 2014).

²⁸ Celine Lewis, Melissa Hill, Heather Skirton, & Lyn S. Chitty, *Non-Invasive Prenatal Diagnosis for Fetal Sex Determination: Benefits and Disadvantages from the Service Users’ Perspective*, 20 *European J. Human Genetics* 1127 (March 2012).

²⁹ Celine Lewis, Melissa Hill, Heather Skirton, & Lyn S. Chitty, *Non-Invasive Prenatal Diagnosis for Fetal Sex Determination: Benefits and Disadvantages from the Service Users’ Perspective*, 20 *European J. Human Genetics* 1127 (March 2012).

wellbeing of all people under United States jurisdiction. In the United States, the legal authority for registering vital statistics, including birth certificates, resides individually with the 50 States, two cities (Washington, DC, and New York City), and five territories (Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands).³⁰ To ensure that vital statistics are properly maintained and consistent the NCHS coordinates collection with state agencies. Since the inception of a national vital statistics system, “the states and the federal government have worked together cooperatively to promote standards and consistency among state vital statistics systems.”³¹ To this end, the NCHS produces standard birth certificates as “the principal means of promoting uniformity in the data collected by the states.”³² United States birth certificates provide three designations: male, female, or not yet determined. If a child’s sex is designated not yet determined, the hospital is instructed that the “[i]tem must be completed. If the record is filled with an N code [not yet determined], send the record to NCHS but query the hospital until a determination of the infant’s sex is made. Send the updated record to NCHS with the updated file.”³³

Sex designation is made at birth primarily for statistical purposes, but also because traditionally this is when a child’s sex is identified. Sex statistics are used in making pertinent medical, social, and economic decisions. It is with this information that everything from stratification and wage disparities to sex-differentiated disease trajectories can be identified and tracked. Delay in identifying a child’s sex is discouraged both for logistical reasons and because research shows that genital reconstruction is the least biologically traumatizing when done prior to age one.³⁴

³⁰ Centers for Disease Control and Prevention, *About the National Vital Statistics System*, http://www.cdc.gov/nchs/nvss/about_nvss.htm

³¹ Centers for Disease Control and Prevention, *Birth Edit Specifications for the 2003 Proposed Revision of the US Standard Certificate of Birth*, (2012) http://www.cdc.gov/nchs/data/dvs/birth_edit_specifications.pdf

³² Centers for Disease Control and Prevention, *Birth Edit Specifications for the 2003 Proposed Revision of the US Standard Certificate of Birth*, (2012) http://www.cdc.gov/nchs/data/dvs/birth_edit_specifications.pdf

³³ Centers for Disease Control and Prevention, *Birth Edit Specifications for the 2003 Proposed Revision of the US Standard Certificate of Birth*, (2012) http://www.cdc.gov/nchs/data/dvs/birth_edit_specifications.pdf

³⁴ American Academy. of Pediatrics, *Timing of Elective Surgery on the Genitalia of Male Children with Particular Reference to the Risks, Benefits, and Psychological Effects of Surgery and Anesthesia*, 97 PEDIATRICS 590, 590 (1996).

Most children are designated as either male or female at birth. But, an estimated 1.7% to 4% of children are born Intersex.³⁵ Intersex is a term referring to a wide variety of individuals who are not easily identifiable as either male or female at birth, including those who have chromosomal abnormalities (such as Klinefelter’s syndrome)³⁶ or ambiguous genitalia.³⁷ Given the social desire to categorize individuals as either male or female, various policies and approaches have been pursued with the goal of placing an Intersex person into either the female or male category.

This section will explore the various approaches to categorizing Intersex children as either male or female.

A. The Potential Need for Perinatal Sex Identification

Maintaining statistics on sex can be important for addressing sex linked health issues and for tracking sex-based discrimination. Statistical information about sex is important for effective health intervention when there are differences between the sexes in the manifestation of a disease and its treatment. Heart disease is one often-cited health difference between females and males. “The exclusion of females from studies on heart disease is noted as one of the reasons heart disease is often misunderstood for female patients. Until recently, women have been under-represented in many studies that have set the standard for detection and treatment of heart disease. In addition, women with heart disease may have different symptoms than men, and different diagnostic tests may be less accurate in women.”³⁸ Similarly, a Minnesota study on advanced heart failure has indicated that women are typically four years older on diagnosis, compared to their male counterparts.³⁹ A wide variety of theories exist about the differences in heart disease between the

³⁵ There is some dispute in the medical community about the precise list of conditions that constitute the category of intersex. In addition, the desire to select a sex at birth makes tracking the actual incidence of intersex difficult.

³⁶ Klinefelter’s syndrome is a genetic disorder where a Y chromosome is present and at least one extra X chromosome is present. This is a deviation from the standard human male karyotype where there are only 46 chromosomes and the sex chromosomes are X and Y.

³⁷ Not all individuals categorized as Intersex have ambiguous genitalia and some conditions leading to categorization as intersex are even difficult to diagnose at birth. For example, Non-classical Adrenal Hyperplasia or Late-onset Congenital Adrenal Hyperplasia often manifests conditions at or after puberty.

³⁸ Hope Ricciotti, *Heart Disease - Differences Between Men and Women* (2003), <http://www.bidmc.org/CentersandDepartments/Departments/Medicine/Divisions/CardiovascularMedicine/YourHeartHealth/TipsforHeartHealth/HeartDiseaseDifferencesBetweenMenandWomen.aspx>

³⁹ Jill Killian, *Advanced Heart Failure Characteristics and Outcomes in Women and Men*, 13 *Journal of the American Heart Association* 114 (June 2024). <https://www.ahajournals.org/doi/10.1161/JAHA.123.033374>

sexes including differences in symptoms and physical characteristics of the cardiovascular system.⁴⁰

The National Institutes of Health (NIH) Women's Health Initiative was launched because of "the general underrepresentation of females in health studies and with the goal of providing better and more accurate treatment for females."⁴¹ Determining sex is important for maintaining statistics on health differences between males and females, ensuring that there is equal representation in health studies and ensuring for adequate care when sex differences matter.

Another such sex difference relates to the difference in autism diagnosis for young boys versus girls. Age at autism diagnosis is associated with sex assigned at birth, which causes girls/women with autism to receive a diagnosis later in life or to be "missed" entirely.⁴² This trend towards a diagnostic delay for girls/women poses a particularly troubling issue, as later diagnosed individuals demonstrate increased anxiety and depressive symptoms.⁴³

Sex identification is also important for monitoring and diagnosing sex-linked genetic disorders. Some genetic disorders are linked to the X chromosome but are recessive, so they only manifest in males. "Examples of such disorders include Duchenne muscular dystrophy and Becker muscular dystrophy (both of which are neuromuscular disorders), fragile X syndrome [(which causes a range of developmental problems including learning disabilities and cognitive impairment)], and some types of leukodystrophy (a group of disorders that affect the central nervous system)."⁴⁴ Additionally, there are substantial and pervasive differences in the occurrence and presentation of mental illnesses such as schizophrenia, major depressive disorder, and bipolar disorder between sexes.⁴⁵ However,

⁴⁰ Hope Ricciotti, *Heart Disease - Differences Between Men and Women* (2003), <http://www.bidmc.org/CentersandDepartments/Departments/Medicine/Divisions/CardiovascularMedicine/YourHeartHealth/TipsforHeartHealth/HeartDiseaseDifferencesBetweenMenandWomen.aspx>

⁴¹ National Institutes of Health, *Women's Health Initiative Background & Overview*, <http://www.nhlbi.nih.gov/whi/background.htm>

⁴² Jessica V Smith et al., *Time is of the essence: Age at Autism Diagnosis, Sex Assigned at Birth, and Psychopathology*, 28 *Autism* 2909 (June 2024). https://www.researchgate.net/publication/380484783_Time_is_of_the_essence_Age_at_autism_diagnosis_sex_assigned_at_birth_and_psychopathology

⁴³ Tasha M. Oswald et al., *Sex Differences in Internalizing Problems During Adolescence in Autism Spectrum Disorder*, 46 *J. Autism & Developmental Disorders* 624 (Feb. 2016).

⁴⁴ Leslie Pray, *Sex-linked Diseases: the Case of Duchene Muscular Dystrophy (DMD)*, 1 *NATURE EDUC.* 1, 1 (2008).

⁴⁵ Gabriella M.A. Blokland et al., *Sex-Dependent Shared and Non-Shared Genetic Architecture Across Mood and Psychotic Disorders*, 91 *J. Biological Psychiatry* 102 (Jan. 2022). <https://pubmed.ncbi.nlm.nih.gov/34099189/>

this may be considered less significant as these disorders are not caused by gender, but rather appear differently related to gender, or, possibly, gender-related socialization. Identifying the sex of the child may lead to faster and more accurate diagnosis of male children and avoid unnecessary testing of female children.

In considering sex discrimination, trends must be identified. Such trends can only be identified among sex groups, because of sex classification. Without having a pool of people designated as male and a separate group designated female, disparate treatments, patterns, and practices could not be addressed. A claim of discrimination may be supported by demonstrating disparate treatment or a pattern or practice of discrimination.⁴⁶ A disparate treatment claim cannot be based on statistical differences in treatment between females and males but statistical evidence of an imbalance in treatment may help to establish discriminatory intent.⁴⁷ A pattern and practice claim, on the other hand, can be supported by demonstrating statistical imbalance.⁴⁸ In a pattern or practice claim “the evidence establishes that the discriminatory actions were the defendant’s regular practice, rather than an isolated instance.”⁴⁹ A pattern or practice claim requires statistical support to demonstrate that discrimination is not isolated or motivated by other factors. “A ‘pattern or practice’ means that the defendant has a policy of discriminating, even if the policy is not always followed.”⁵⁰ Gross statistical markers of discrimination may be sufficient on their own to demonstrate that discrimination has occurred on its face.⁵¹ To capture whether sex based differences impact employment opportunities or pay, a determination of sex and aggregation of the distinctions in treatment on the basis of sex is necessary.

Finally, our seemingly intractable link between sex and gender makes early identification of sex important to a child’s psychosocial development. Development of gender identity begins before age three.⁵² The EO dismisses gender identity as irrelevant to sex and gender differentiation, but scientific and medical evidence has long understood that gender identity plays a critical role. Children early on begin the process of distinguishing genders. The gender cognitive ability of children has already been formed at an

⁴⁶ Lex K. Larson, *Employment Discrimination* (2013).

⁴⁷ Lex K. Larson, *Employment Discrimination* (2013).

⁴⁸ Lex K. Larson, *Employment Discrimination* (2013).

⁴⁹ United States Department of Justice, *A Pattern or Practice of Discrimination*, http://www.justice.gov/crt/about/hce/housing_pattern.php

⁵⁰ United States Department of Justice, *A Pattern or Practice of Discrimination*, http://www.justice.gov/crt/about/hce/housing_pattern.php

⁵¹ *Hazelwood School Dist. v. United States*, 433 U.S. 299 (1977).

⁵² Carol Lynn Martin et al., *Cognitive Theories of Early Gender Development*, 128 PSYCHOLOGICAL BULLETIN 903, 910 (2002).

initial level by ages 3-6.⁵³ “By the age of 2 1/2 or 3 years, most children can answer correctly the question ‘Are you a boy or a girl?’ but it is not until several years later that children attain gender constancy, that is, understand that their sex remains invariant across time and changes in surface appearance (e.g., hair length).”⁵⁴ The concept of gender cognition in young children mainly involves children’s understanding of their own and others’ gender identity, gender roles and the gradual formation of gender concepts.⁵⁵ The development of a gender identity steadily progresses through early and middle childhood. “It is apparent that by middle childhood children have developed fairly stable conceptions of (a) the degree to which they typify their gender category, (b) their contentedness with their gender assignment, (c) whether they are free to explore cross-sex options or are compelled to conform to gender stereotypes, and (d) whether their own sex is superior to the other.”⁵⁶

The development of gender identity is a critical component in psychosocial development. “These dimensions of gender identity are not strongly related to one another, yet all relate to psychosocial adjustment.”⁵⁷ Once children are aware of their gender, they can still borrow from the opposite sex and can more competently relate psychosocially to their peers, since they have a perspective from which to relate. For example, young children may use gender information to infer another child’s toy preferences.⁵⁸ In fact, knowledge of a gender identity appears important for self-identity, but gender identity does not lead to total gender role adherence. “It indicates that self-perceptions of gender typicality do not necessarily reflect an unhealthy gender-role straight jacket that undermines

⁵³ Yulu Du, *Study of the Relationship and Intervention between Role-swapping Games and Young Children's Gender Perception*, 17 *Int. J. Ed. & Humanity* 140 (Nov. 2024). <https://drpress.org/ojs/index.php/ijeh/article/view/27574>

⁵⁴ Susan K. Egan & David G. Perry, *Gender identity: A Multidimensional Analysis with Implications for Psychosocial Adjustment*, 37 *DEVELOPMENTAL PSYCHOLOGY* 451, 451 (2002).

⁵⁵ Yulu Du, *Study of the Relationship and Intervention between Role-swapping Games and Young Children's Gender Perception*, 17 *Int. J. Ed. & Humanity* 140 (Nov. 2024). <https://drpress.org/ojs/index.php/ijeh/article/view/27574>

⁵⁶ Susan K. Egan & David G. Perry, *Gender identity: A Multidimensional Analysis with Implications for Psychosocial Adjustment*, 37 *DEVELOPMENTAL PSYCHOLOGY* 451, 459 (2002).

⁵⁷ Susan K. Egan & David G. Perry, *Gender identity: A Multidimensional Analysis with Implications for Psychosocial Adjustment*, 37 *DEVELOPMENTAL PSYCHOLOGY* 451, 459 (2002).

⁵⁸ Bradford Pillow, Cara Allen, Natalie Low, & Taneisha Vilman, *Young Children's Use of Gender for Inductive Generalizations about Biological and Behavioral Characteristics*, 9 *J. Ed. & Developmental Psychology* 37 (Dec. 2024). <https://www.ccsenet.org/journal/index.php/jedp/article/view/0/40057>

well-being; rather, they appear to contribute positively and directly to a healthy sense of self.”⁵⁹

Pressure to adhere completely to gender lines may be negative. “Clearly, it is felt pressure for gender conformity, not a perception of the self as gender typical, that is harmful.”⁶⁰ Gender identity can provide a point of reference for children in developing an identity. Gender identity is about an individual's sense of themselves as male, female, or somewhere along the gender spectrum.⁶¹ Harm occurs when the child no longer can explore their gender identity and is instead pressured or coerced by parents or others to act in a particular gendered manner. For example, young boys may seemingly gravitate towards “masculine” play, such as playing with trucks and horseplay, while young girls may more frequently engage in “feminine” play, such as playing with dolls.⁶² However, these tendencies are not inherently sprung from biological differences between genders, but rather are significantly shaped from social cues and feedback that children receive from their social context.⁶³ “Thus, children’s adjustment is optimized when they (a) are secure in their conceptions of themselves as typical members of their sex yet (b) feel free to explore cross-sex options when they so desire.”⁶⁴ Some researchers thus conclude that allowing children to form a gender identity is positive if the child is given some flexibility in adhering to that identity. “Parents and educators might strive to instill in children a sense that they are free to investigate other-sex options, but these adults should also be respectful of children’s need to feel that they are typical and adequate members

⁵⁹ Susan K. Egan & David G. Perry, *Gender identity: A Multidimensional Analysis with Implications for Psychosocial Adjustment*, 37 DEVELOPMENTAL PSYCHOLOGY 451, 459 (2002).

⁶⁰ Susan K. Egan & David G. Perry, *Gender identity: A Multidimensional Analysis with Implications for Psychosocial Adjustment*, 37 DEVELOPMENTAL PSYCHOLOGY 451, 459 (2002).

⁶¹ Surya Monro, *Beyond Male and Female: Poststructuralism and the Spectrum of Gender*, 8 International J. Transgenderism 3 (2005)

⁶² Theodora Anggika Briella, *Understanding the Influence of Family Dynamics on Gender Identity Formation in Pre-school Children*, Pen en Light for Natural Union of Science, 2024

https://www.researchgate.net/publication/387340498_Understanding_the_Influence_of_Family_Dynamics_on_Gender_Identity_Formation_in_Pre-school_Children

⁶³ Theodora Anggika Briella, *Understanding the Influence of Family Dynamics on Gender Identity Formation in Pre-school Children*, Pen en Light for Natural Union of Science, 2024

https://www.researchgate.net/publication/387340498_Understanding_the_Influence_of_Family_Dynamics_on_Gender_Identity_Formation_in_Pre-school_Children

⁶⁴ Susan K. Egan & David G. Perry, *Gender identity: A Multidimensional Analysis with Implications for Psychosocial Adjustment*, 37 DEVELOPMENTAL PSYCHOLOGY 451, 459 (2002).

of their own gender.”⁶⁵ Failing to select a sex, and consequently denying gender identity formation, may result in psychosocial adjustment issues.

One highly publicized attempt at separating sex and gender is the case of Sasha.⁶⁶ Sasha was assigned male at birth and not Intersex.⁶⁷ Nonetheless, Sasha’s parents decided they did not want to raise him with a gender until they were forced to when he entered school at five years-old.⁶⁸ Before this period Sasha’s parents did not use gendered pronouns.⁶⁹ They did not reveal their child’s sex to others, including other family members.⁷⁰ Sasha’s parents felt that gendering him would preclude him from having more meaningful interactions and force him into materialized, socially constructed versions of his gender.⁷¹

The intertwined dimorphism of sex and gender is often difficult to tease out from our socialized interaction. Sasha’s parents’ actions betray their own views of gender and their desire to socialize Sasha under their assumptions of proper gender roles. Sasha was allowed to wear any clothing he wanted, “except hyper masculine clothing like shirts with skulls on them.”⁷² Sasha was also not allowed to play with Barbie “because yuck, she’s horrible.”⁷³ His parents also made him wear a girl’s blouse to school with his uniform but not because he chooses to dress that way but instead

⁶⁵ Susan K. Egan & David G. Perry, *Gender identity: A Multidimensional Analysis with Implications for Psychosocial Adjustment*, 37 DEVELOPMENTAL PSYCHOLOGY 451, 459 (2002).

⁶⁶ Piper Weiss, *Couple Finally Reveals Child's Gender, Five Years After Birth*, YAHOO! SHINE, Jan. 20, 2012, <http://shine.yahoo.com/parenting/couple-finally-reveals-childs-gender-five-years-birth-80300388.html>

⁶⁷ Piper Weiss, *Couple Finally Reveals Child's Gender, Five Years After Birth*, YAHOO! SHINE, Jan. 20, 2012, <http://shine.yahoo.com/parenting/couple-finally-reveals-childs-gender-five-years-birth-80300388.html>

⁶⁸ Piper Weiss, *Couple Finally Reveals Child's Gender, Five Years After Birth*, YAHOO! SHINE, Jan. 20, 2012, <http://shine.yahoo.com/parenting/couple-finally-reveals-childs-gender-five-years-birth-80300388.html>

⁶⁹ Piper Weiss, *Couple Finally Reveals Child's Gender, Five Years After Birth*, YAHOO! SHINE, Jan. 20, 2012, <http://shine.yahoo.com/parenting/couple-finally-reveals-childs-gender-five-years-birth-80300388.html>

⁷⁰ Piper Weiss, *Couple Finally Reveals Child's Gender, Five Years After Birth*, YAHOO! SHINE, Jan. 20, 2012, <http://shine.yahoo.com/parenting/couple-finally-reveals-childs-gender-five-years-birth-80300388.html>

⁷¹ Piper Weiss, *Couple Finally Reveals Child's Gender, Five Years After Birth*, YAHOO! SHINE, Jan. 20, 2012, <http://shine.yahoo.com/parenting/couple-finally-reveals-childs-gender-five-years-birth-80300388.html>

⁷² Piper Weiss, *Couple Finally Reveals Child's Gender, Five Years After Birth*, YAHOO! SHINE, Jan. 20, 2012, <http://shine.yahoo.com/parenting/couple-finally-reveals-childs-gender-five-years-birth-80300388.html>

⁷³ Piper Weiss, *Couple Finally Reveals Child's Gender, Five Years After Birth*, YAHOO! SHINE, Jan. 20, 2012, <http://shine.yahoo.com/parenting/couple-finally-reveals-childs-gender-five-years-birth-80300388.html>

because of his parent's gender predilections.⁷⁴ "I don't think I'd do it if I thought it was going to make him unhappy, but at the moment he's not really bothered either way. We haven't had any difficult scenarios yet."⁷⁵ Sasha's case illustrates the difficulty in living a life devoid of gender identity, in a world where gender roles still matter. The decision to raise Sasha as genderless also worked against the gender identity he was forming as part of his self-identity. Sasha was not allowed to wear the clothing he desired. Instead, those decisions were made for him. He was not allowed to wear certain masculine clothing and was forced to wear feminine clothing. These steps clearly denied Sasha his self-identity. The form of pressure Sasha experienced was not conformity to the aligned sex and gender, but it was pressure nonetheless, specifically pressure not to align his sex and gender.

Denying the existence of gender identity is difficult in a world that is gendered. Sasha's parents illustrate the difficulty in raising a child androgynously when identity and socialization are in part gender linked. It has been posited that sex-typed individuals tend to have gender-polarized thinking, which is often found to reinforce the gender inequality between men and women.⁷⁶ Along with this finding, androgynous people have been found to be better adjusted and, therefore, androgyny can be thought of as "a more human standard of psychological health."⁷⁷ A more effective manner of challenging gender identity and its link to sex is to allow for gender identity formation and then permitting and encouraging opposite sex behavior or identity when it is desired. Permitting children to form identities that move beyond their initial gender identity is more constructive than establishing pressure against the current gender norms.

Notably, if, as a society, we were able to decouple sex and gender, sex identification at birth would become less significant. Although early sex identification would continue to have health benefits, the statistical needs could be reduced, and the psychosocial needs might be diminished.

⁷⁴ Piper Weiss, *Couple Finally Reveals Child's Gender, Five Years After Birth*, YAHOO! SHINE, Jan. 20, 2012, <http://shine.yahoo.com/parenting/couple-finally-reveals-childs-gender-five-years-birth-80300388.html>

⁷⁵ Piper Weiss, *Couple Finally Reveals Child's Gender, Five Years After Birth*, YAHOO! SHINE, Jan. 20, 2012, <http://shine.yahoo.com/parenting/couple-finally-reveals-childs-gender-five-years-birth-80300388.html>

⁷⁶ Baumrind, D, *Are Androgynous Individuals More Effective Persons and Parents?* *Child Development*, 53(1), 44, 1982

⁷⁷ Bem, S. L, *The measurement of psychological androgyny*, *Journal of Consulting and Clinical Psychology*, 42(2), 155–162. 1974

B. The Historical Development of Perinatal Sex Assignment by Physical Attributes

Sex identification is most pressing with children who are born with ambiguous genitalia. It is important to note that both surgical action and inaction are considered controversial and involve long-term risk. It can be argued that irreversible surgical masculinization or feminization may pose long-term harm for the adult that the child must become. Equally, it is proffered that neglecting to intervene surgically commits the child to an existence of harmful genital ambiguity.⁷⁸ The first major wave of treatment for children born with ambiguous genitalia involved surgical intervention at or near birth.⁷⁹ At this time, surgical intervention was the best practice; this was not challenged until the early 1990s.⁸⁰ Under this model, surgical intervention was often dictated by the proximity of the genitalia to the norm.⁸¹ Perceptions of this norm are generally based on the size of clitoris/penis and the desire for alteration to move the genitalia to fit as closely within the norm as possible.⁸²

The size of the external genitalia holds some importance. It impacts the ability to engage in penetrative sex after puberty.⁸³ Another factor in the analysis is the function of the genitalia for urinating.⁸⁴ For a male, surgical intervention may be immediately pursued when the urinary tract or the genitalia do not permit standing while urinating. Depending on the size and shape of the external genitalia, a physician would alter the genitalia and

⁷⁸ Tatiana Prade Hemesath et al., *Controversies on Timing of Sex Assignment and Surgery in Individuals with Disorders of Sex Development: A Perspective*, 10 *Frontiers in Pediatrics* 419 (Jan. 2019). <https://www.frontiersin.org/journals/pediatrics/articles/10.3389/fped.2018.00419/full>

⁷⁹ Elizabeth Weil, *What if It's (sort of) a Boy and (Sort of) a Girl?*, *NY Times (Magazine)*, 48 (Sept. 24, 2006).

⁸⁰ Intersex Society of North America, *What's the history behind the intersex rights movement?*, <http://www.isna.org/faq/history>

⁸¹ Elizabeth Weil, *What if It's (sort of) a Boy and (Sort of) a Girl?*, *NY Times (Magazine)*, 49 (Sept. 24, 2006).

⁸² Elizabeth Weil, *What if It's (sort of) a Boy and (Sort of) a Girl?*, *NY Times (Magazine)*, 49 (Sept. 24, 2006). Some studies indicated that a clitoris ought not be larger than 0.9 centimeters at birth. Suzanne J. Kessler, *Lessons from the Intersexed*, (1998). The desired outcome for a male is to have a penis that will be at least 1 inch at the time of puberty. Suzanne J. Kessler, *Lessons from the Intersexed*, (1998).

⁸³ Elizabeth Weil, *What if It's (sort of) a Boy and (Sort of) a Girl?*, *NY Times (Magazine)*, 49 (Sept. 24, 2006).

⁸⁴ Kristin Zeiler & Anette Wickström, *Why Do 'We' Perform Surgery on Newborn Intersexed Children?: The Parental Experience of Having a Child with Intersex Anatomies*, 10 *Feminist Theory* 359, 365 (2009).

designate the child as either male or female.⁸⁵ As an example, surgical intervention that allows a child with ambiguous genitalia to be raised male, may be deemed necessary to enable the child to urinate while standing up. Under these circumstances under the traditional approach, earlier intervention is favored “before the school age, say 5 to 8 years. For psychological reasons it is obviously important that the boy at school should pass urine like his fellows.”⁸⁶ In the 1950’s David Innes Williams, considered the “father” of pediatric urology opined that surgical intervention functioned to stop ambiguity of biological sex becoming a “psychological problem,” which equally functioned to bolster the security of the parent–child relationship from anxiety related to this ambiguity.⁸⁷ The benefit appears to flow to the parent who may feel anxious about their child’s ambiguity. The biological reality of their genital ambiguity is resolved for the social psychological benefit of adhering to sex dimorphism.

Because a Vaginoplasty is often seen as an easier and more accurate surgery, many children born with ambiguous genitalia are designated female and are surgically altered to have more normal female genitalia.⁸⁸ These operations first began before there was wide recognition of Intersex children and the operation was conducted with or without the consent of the parents and it has been generally considered amongst those in the field that the priorities in this intervention are sexual function and psychosocial adjustment.⁸⁹ Intervention was seen as prudent by many surgeons to allow a child to live as either a male or female. Surgical intervention at an early age was deemed to limit physical trauma caused by surgery, as well as psycho-social inconsistencies.⁹⁰

⁸⁵ Kristin Zeiler & Anette Wickström, *Why Do ‘We’ Perform Surgery on Newborn Intersexed Children?: The Parental Experience of Having a Child with Intersex Anatomies*, 10 *Feminist Theory* 359, 365 (2009).

⁸⁶ David Innes Williams, *The Urology of Childhood* (1951)

⁸⁷ David Andrew Griffiths, *Diagnosing Sex: Intersex Surgery and ‘Sex Change’ in Britain 1930-1955*, 21 *Sexualities* 476 (Jan. 2018).

⁸⁸ John Money, *Sex Assignment in Anatomically Intersexed Infants*, in *HUMAN SEXUALITY: A HEALTH PRACTITIONER’S TEXT*, 136-49 (Richard Green ed., 2nd ed. 1979).

⁸⁹ Kurk Newman, Judson Randolph, and Kathryn Anderson, *The Surgical Management of Infants and Children with Ambiguous Genitalia Lessons Learned from 25 Years*, 644 *Annals of Surgery* 215 (June 1992). https://journals.lww.com/annalsofsurgery/abstract/1992/06000/the_surgical_management_of_infants_and_children.11.aspx

⁹⁰ Surgical intervention between 6 and 12 months is ideal because it reduces the potential for psychological and social issues such as aggressive or regressive behavior, night terrors, and anxiety. American Academy of Pediatrics, *Timing of Elective Surgery on the Genitalia of Male Children with Particular Reference to the Risks, Benefits, and Psychological Effects of Surgery and Anesthesia*, 97 *PEDIATRICS* 590, 590 (1996).

When greater acknowledgement of Intersex children began in the 1950s, psychologist John Money moved to the forefront in establishing a medical framework for gender development and Intersex treatment.⁹¹ Money recommended early intervention in assigning sex.⁹² He indicated that surgeons, with the consent of parents, ought to make a decision as early as possible to intervene and surgically assign a sex at or near birth.⁹³

Money had several reasons for arriving at these conclusions. First, Money contended that surgical intervention was necessary to allow a child to obtain gender normalcy.⁹⁴ The goal was to provide a clearly “sexed individual” and avoid issues with sex ambiguity.⁹⁵ Money argued that gender was more important than sex in healthy psychological interactions.⁹⁶ Money felt that parents would bond more quickly and effectively with a child that had a defined sex and gender.⁹⁷ In part, Money based his theory on the view that parents had a hard time bonding with a child that has a congenital defect.⁹⁸ In addition, Money theorized that a strong gender identity was necessary for healthy psychological development because it allowed for the child to identify with others and explore self-identity.⁹⁹ Second, Money contended that gender was socially constructed (not hormonally dependent) and that even surgical alteration of a biological male or female to make him or her a member of the opposite sex could be successful as long as there was sufficient gender normalizing.¹⁰⁰ Third, Money contended that early

⁹¹ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 591 (2004).

⁹² John Money, *Sex assignment in Anatomically Intersexed Infants*, in *Human Sexuality: A Health Practitioner’s Text*, 136-49 (Richard Green ed., 2nd ed. 1979).

⁹³ John Money, *Sex assignment in Anatomically Intersexed Infants*, in *Human Sexuality: A Health Practitioner’s Text*, 136-49 (Richard Green ed., 2nd ed. 1979).

⁹⁴ John Money, *Sex assignment in Anatomically Intersexed Infants*, in *Human Sexuality: A Health Practitioner’s Text*, 136-49 (Richard Green ed., 2nd ed. 1979).

⁹⁵ John Money, *Sex assignment in Anatomically Intersexed Infants*, in *Human Sexuality: A Health Practitioner’s Text*, 136-49 (Richard Green ed., 2nd ed. 1979).

⁹⁶ John Money & Anke A. Ehrhardt, *Man & Woman, Boy & Girl: Gender Identity from Conception to Maturity*, (1996).

⁹⁷ John Money & Anke A. Ehrhardt, *Man & Woman, Boy & Girl: Gender Identity from Conception to Maturity*, (1996).

⁹⁸ American Academy. of Pediatrics, *Timing of Elective Surgery on the Genitalia of Male Children with Particular Reference to the Risks, Benefits, and Psychological Effects of Surgery and Anesthesia*, 97 PEDIATRICS 590, 590 (1996).

⁹⁹ John Money & Anke A. Ehrhardt, *Man & Woman, Boy & Girl: Gender Identity from Conception to Maturity*, (1996); *see also* Kenneth I. Glassberg, Editorial, *Gender Identity and the Pediatric Urologist*, 161 J. UROLOGY 1308, 1308-09 (1999).

¹⁰⁰ John Money, *Sex assignment in Anatomically Intersexed Infants*, in *Human Sexuality: A Health Practitioner’s Text*, 136-49 (Richard Green ed., 2nd ed. 1979).

intervention facilitated parent child bonding.¹⁰¹ Money argued that bonding was more effective when parents have a gender identity to socialize toward.¹⁰² Thus, Money argued that a doctor and parent ought to make a decision early on about the preferred sex of the child, conduct an operation to conform the child to that sex, and socialize the child in the gender aligned with the selected sex immediately.¹⁰³

Under this form of treatment, parents are frequently instructed not to reveal intervention or the Intersex status to the child.¹⁰⁴ In fact, diagnoses of this kind were almost never disclosed to the child throughout the 20th century.¹⁰⁵ The goal of aligning the child's sex and gender is best met by nondisclosure because "any doubt may undermine development of a gender identity concordant with the assigned sex of rearing."¹⁰⁶ But the failure to disclose their Intersex status to the child complicates a study of Intersex health issues, as it limits the availability of follow-up care.¹⁰⁷

Early intervention alone is not always sufficient; often, even those with early intervention require further operations or treatment to normalize sex.¹⁰⁸ As the body moves toward and through puberty, various interventions may be necessary to maintain the assigned sex.¹⁰⁹ These interventions may include hormone therapy and other operations to alter physical appearance, such as breast reduction or augmentation. Even with these interventions, some doctors continue to counsel against revealing the child's sex ambiguity and the earlier intervention because the child may not have the cognitive or

¹⁰¹ John Money, *Sex assignment in Anatomically Intersexed Infants*, in *Human Sexuality: A Health Practitioner's Text*, 136-49 (Richard Green ed., 2nd ed. 1979).

¹⁰² John Money, *Sex assignment in Anatomically Intersexed Infants*, in *Human Sexuality: A Health Practitioner's Text*, 136-49 (Richard Green ed., 2nd ed. 1979).

¹⁰³ John Money, *Sex assignment in Anatomically Intersexed Infants*, in *Human Sexuality: A Health Practitioner's Text*, 136-49 (Richard Green ed., 2nd ed. 1979).

¹⁰⁴ John Money, *Sex assignment in Anatomically Intersexed Infants*, in *Human Sexuality: A Health Practitioner's Text*, 136-49 (Richard Green ed., 2nd ed. 1979).

¹⁰⁵ A.C. Lossie & Janet Green, *Building Trust: The History and Ongoing Relationships Amongst DSD Clinicians, Researchers, and Patient Advocacy Groups*, 47 *Hormone and Metabolic Research* 344 (May 2015).

¹⁰⁶ Bruce E. Wilson & William G. Reiner, *Management of Intersex: A Shifting Paradigm*, 9 *J. CLINICAL ETHICS* 360, 362 (1998).

¹⁰⁷ Fatih Gurbuz et al., *Gender Identity and Assignment Recommendations in Disorders of Sex Development Patients: 20 Years' Experience and Challenges*, 25 *J. Clinical Research Pediatric Endocrinology* 347 (Nov. 2020).

¹⁰⁸ See e.g., Sarah M. Creighton et al., *Objective Cosmetic and Anatomical Outcomes at Adolescence of Feminising Surgery for Ambiguous Genitalia Done in Childhood*, 358 *LANCET* 124, 124 (2001).

¹⁰⁹ Sarah M. Creighton et al., *Objective Cosmetic and Anatomical Outcomes at Adolescence of Feminising Surgery for Ambiguous Genitalia Done in Childhood*, 358 *LANCET* 124, 124 (2001).

psychosocial capabilities to fully comprehend their situation.¹¹⁰ A recommendation for gradual disclosure with increasing levels of sophistication is recommended to parallel cognitive and psychosocial development.¹¹¹

The success of early intervention is not clear. There are few studies examining the success of socialization and early intervention in the gender and sex identity health of children. There is some evidence that early interventions pose psychological risks for the child as they mature, due in part to their inevitable need for medical follow-up, and the frequent need for surgical revisions later, which has been indicated to lead to the development of psychological distress.¹¹² In addition, early intervention based on morphological aspects of the genitalia may lead to functional issues (for example, there is evidence that intervention causes significant genital insensitivity)¹¹³ as the child grows and enters puberty. These issues include, but are not limited to, differences between the appearance of the genitalia and their reproductive capacity¹¹⁴ and the impact of hormone increases at puberty on other aspects of physical appearance.¹¹⁵

Further complicating the early intervention socialization model advocated by Money was the 1997 revelation of the failed socialization of David Reimer.¹¹⁶ Reimer, referred to in medical literature as John, suffered a severe injury to his genitalia as an

¹¹⁰ See e.g., American Academy of Pediatrics, *Committee on Pediatrics AIDS. Disclosure of Illness Status to Children and Adolescents with HIV Infection*, 103 PEDIATRICS 164, 164-66 (1999).

¹¹¹ John Money, *Sex Errors of the Body and Related Syndromes: A Guide to Counseling Children, Adolescents, and Their Families*, (2nd ed., 1994).

¹¹² M. Joycelyn Elders, David Satcher, and Richard Carmona, *Re-Thinking Genital Surgeries on Intersex Infants*, (June 2017) <https://www.palmcenter.org/wp-content/uploads/2017/06/Re-Thinking-Genital-Surgeries-1.pdf>

¹¹³ Anibal Guimarães, Heloísa Helena Barboza, *Sex Assignment in Intersex Children: A Brief Analysis of "Ambiguous Genitalia" Cases*, 30 Cad Saude Publica 2177 (Oct. 2014).

¹¹⁴ For example, in John Money's intervention with David Reimer, David was operated to make his genitalia female, but he still had the ability to reproduce as a male. After the surgical intervention he no longer could reproduce. Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 591 (2004).

¹¹⁵ Puberty results in the release of hormones that alter physical appearance, in particular secondary sex characteristics. A child assigned a sex opposite of the sex hormones that are released at puberty could see physical changes such as the development of breast tissue or facial hair growth that does not align with their assigned sex.

¹¹⁶ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 595 (2004).

infant.¹¹⁷ Reimer's genitalia was altered because doctors determined that the construction of female genitalia would be more successful.¹¹⁸ Reimer was then raised as a girl.¹¹⁹ Money traced Reimer's progress.¹²⁰ When Reimer turned 10 and hit puberty, Money pronounced Reimer's intervention a success.¹²¹ But later, follow up by journalists and scholars, revealed that Reimer's intervention was unsuccessful.¹²² At 16, Reimer decided to live as a man.¹²³ He explained that he had felt he was a man for years and even had suicidal ideations resulting from these thoughts.¹²⁴ Reimer suffered severe long-term psychological effects from this experiment.¹²⁵ Reimer and his twin were studied in tandem.¹²⁶ The studies included the twins inspecting each other's genitals and simulating sex acts, resulting in both subsequently suffering from mental health issues.¹²⁷ Reimer's twin died as the result an overdose of antidepressants in 2002, and Reimer committed suicide in 2004.¹²⁸

Several studies report some number of early intervention patients rejecting their assigned sex.¹²⁹ Speculation about the cause of rejection varies. Some researchers contend that there is a

¹¹⁷ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 595 (2004).

¹¹⁸ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 595 (2004).

¹¹⁹ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 595 (2004).

¹²⁰ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 560 (2004).

¹²¹ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 560 (2004).

¹²² Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 560 (2004).

¹²³ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 560 (2004).

¹²⁴ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 560 (2004).

¹²⁵ Geoff Rolls, *Classic Case Studies in Psychology* (3rd ed.) (2015).

¹²⁶ Geoff Rolls, *Classic Case Studies in Psychology* (3rd ed.) (2015).

¹²⁷ Geoff Rolls, *Classic Case Studies in Psychology* (3rd ed.) (2015).

¹²⁸ Geoff Rolls, *Classic Case Studies in Psychology* (3rd ed.) (2015).

¹²⁹ See e.g., Morgan Holmes, *Rethinking the Meaning and Management of Intersexuality*, 5 SEXUALITIES 159, 169-70, 172 (2002).

neurobiological connection to gender identity.¹³⁰ Other researchers contended that certain Intersex conditions are prone to later rejection¹³¹ while others do not lead to rejection.¹³²

Money's early intervention model is notable because, while he acknowledges that gender is socially conditioned, he contends that sex can be altered as long as the conditioned gender is aligned with that sex.¹³³ This view moves away from the theory that gender is an innate result of the hormones and other biological conditions of sex. Nonetheless, Money's early intervention model pre-supposes the need for sex and gender to be aligned and dimorphic for a person to live a healthy well-adjusted life. Money contends that children are born psychosexually neutral.¹³⁴ The physical appearance of a child can be altered and then the gender is determined by rearing. The need to align sex and gender is desirable for the child to feel normal.¹³⁵ However, there has been some disagreement on this, as it has also been asserted that early surgical intervention is only ethically supportable when medically indicated as a necessity¹³⁶ (for example, when the child is unable to urinate without surgical intervention), which complicates a study of the issue.

The Money model does not move away from the view that sex and gender are connected and dimorphic. Instead, Money and others contend that gender is more important, and sex can be made to align with gender.

C. The Consensus Statement on the Management of Intersex Disorders

¹³⁰ Paula Jean Manners, *Gender Identity Disorder in Adolescence: A Review of the Literature*, 14 CHILD & ADOLESCENT MENTAL HEALTH 62, 62-68 (2009).

¹³¹ Sheri A. Berenbaum, *Management of Children with Intersex Conditions: Psychological and Methodological Perspectives*, 19 GROWTH, GENETICS, & HORMONES 1, 1 (2003).

¹³² Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e491 (2006) ("More than 90% of patients with 46,XX CAH and all patients with 46,XY CAIS assigned female in infancy identify as females." Meanwhile, "Approximately 60% of 5- α -reductase (5 α RD2)-deficient patients assigned female in infancy and virilizing at puberty (and all assigned male) live as males.").

¹³³ See e.g., John Money & Patricia Tucker, *Sexual Signatures on Being a Man or a Woman*, (1975).

¹³⁴ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 595-96 (2004).

¹³⁵ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 595-96 (2004).

¹³⁶ A.A. Kon, *Ethical Issues in Decision-Making for Infants with Disorders of Sex Development*, 47 Hormone and Metabolic Research 340, 340 (May 2015).

In 2006 a major review of medical intervention on Intersex children was conducted by the Lawson Wilkins Pediatric Endocrine Society and the European Society for Pediatric Endocrinology.¹³⁷ The review was prompted by, “progress in diagnosis, surgical techniques, understanding psychosocial issues, and recognizing and accepting the place of patient advocacy.”¹³⁸ Based on research conducted by 50 international experts including a series of literature reviews and myriad of questionnaires and investigations, a protocol for intervention was released called *The Consensus Statement on the Management of Intersex Disorders* (Consensus Statement).¹³⁹ The new protocol advances a more holistic approach to intervention, including examining social issues, genital appearance, reproductive function, sexual sensitivity, and psychology, among others.¹⁴⁰ The Consensus Statement advocates a five-step model to intervention.¹⁴¹

First, “gender assignment must be avoided before expert evaluation in newborns.”¹⁴² Expert evaluation requires team intervention: “Ideally, the team includes pediatric subspecialists in endocrinology, surgery, and/or urology, psychology/psychiatry, gynecology, genetics, neonatology, and, if available, social work, nursing, and medical ethics.”¹⁴³ The first step rejects surgical intervention on the basis of a physician’s assessment of the physical genitalia alone because it was an inadequate measure of the child’s health and best interests.¹⁴⁴ It also rejects physician intervention at the behest of parents.¹⁴⁵ Instead, the protocol requires expert evaluation of all aspects of the child’s sex.¹⁴⁶ The evaluation includes identification of the Intersex condition, assessment of the potential reproductive health and function of the child, the potential

¹³⁷ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 595-96 (2004).

¹³⁸ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 560 (2004).

¹³⁹ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e488 (2006).

¹⁴⁰ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e488 (2006).

¹⁴¹ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

¹⁴² Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

¹⁴³ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

¹⁴⁴ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

¹⁴⁵ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

¹⁴⁶ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

sexual health of the child, and psychological consequences of intervention, among other things.¹⁴⁷ This approach was intended to be an improvement over previous methodologies that either examined too few dimensions of sex in making an assessment to assign sex or gave too much deference to the parent's desire for an immediate medical resolution.

Second, "evaluation and long-term management must be performed at a center with an experienced multidisciplinary team."¹⁴⁸ A multidisciplinary team can help address all the medical, psychological, and social issues a child and their parents may face.¹⁴⁹ The second step further emphasizes the need to examine potential issues for an Intersex child on the various aspects that may impact health in both the short- and long-term. In addition, the second step requires long-term involvement. Research has indicated that although early intervention was often predicated on the emergency of a child being Intersex and the psychological trauma of sex ambiguity, little continued assistance or monitoring was provided to the parent or the child.¹⁵⁰ In part, the failure to provide continued assistance and intervention was based on the desire to establish the normalcy of the child's assigned sex and gender.¹⁵¹ Continued medical intervention would imply to the child that there was something wrong with them and doctors wanted to avoid sending that message.¹⁵² Additionally, many doctors believed that surgical intervention was sufficient to resolve the medical crisis and further intervention was unnecessary.¹⁵³ The new protocol rejects that view and instead requires continued intervention as vital for the

¹⁴⁷ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

¹⁴⁸ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

¹⁴⁹ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006); see also American Academy of Pediatrics, Council on Children with Disabilities, *Care Coordination in the Medical Home: Integrating Health and Related Systems of Care for Children with Special Health Care Needs*, 116 PEDIATRICS 1238, 1238-1244 (2005).

¹⁵⁰ Peter A. Lee, *A Perspective on the Approach to the Intersex Child Born with Genital Ambiguity*, 17 J. PEDIATRIC ENDOCRINOLOGY & METABOLISM 133, 133-40 (2004); Suzanne Cashman et al., *Developing and Measuring Progress Toward Collaborative, Integrated, Interdisciplinary Health Teams*, 18 J. INTERPROFESSIONAL CARE 183, 183-96 (2004).

¹⁵¹ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 595-96 (2004).

¹⁵² Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 595-96 (2004).

¹⁵³ Milton Diamond, *Sex, Gender, and Identity over the Years: A Changing Perspective*, 13 CHILD & ADOLESCENT PSYCHIATRIC CLINICS OF NORTH AMERICA 591, 595-96 (2004).

physical and psychological health of the child and for the management of the parents' relationship with the child.¹⁵⁴ The continued presence of a medical team helps ensure that both parent and child have a healthy and effective approach to a child's status as Intersex.

Third, "all individuals should receive a gender assignment."¹⁵⁵ The protocol does not require immediate intervention at or near birth, although it encourages intervention as early as possible. The Consensus Statement recommends early intervention because "[i]nitial gender uncertainty is unsettling and stressful for families."¹⁵⁶ Children are also less traumatized when surgical intervention occurs early.¹⁵⁷ In addition, early intervention is often necessary for healthy physical development.¹⁵⁸ Even if early surgical intervention is avoided, the new protocol strongly encourages gender assignment. The need for gender assignment is based on a desire to provide healthy psychological development both in bonding with parents and socializing with others.¹⁵⁹ The protocol ascribes significant psychological benefit to gender assignment, even if surgical intervention is postponed.¹⁶⁰ The

¹⁵⁴ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

¹⁵⁵ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

¹⁵⁶ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e491 (2006).

¹⁵⁷ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e491 (2006); see also, American Academy of Pediatrics, *Section on Urology, Timing of Elective Surgery on the Genitalia of Male Children with Particular Reference to the Risks, Benefits, and Psychological Effects of Surgery and Anesthesia*, 97 PEDIATRICS 590, 590-94 (1996).

¹⁵⁸ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e491-92 (2006). For example, the Consensus Statement argues that separation of the urethra and vagina in newborns is medically appropriate because "the beneficial effects of estrogen on tissue in early infancy, and the avoidance of potential complications from the connection between the urinary tract and peritoneum via the Fallopian tubes." Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e492 (2006).

¹⁵⁹ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006) ("The initial contact with the parents of [an Intersex child] is important because first impressions from these encounters often persist. A key point to emphasize is that [an Intersex child] has the potential to become a well-adjusted, functional member of society.")

¹⁶⁰ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490-93 (2006). The Consensus Statement in part focuses on early assignment because gender identity develops early. "Gender identity development begins before the age of 3 years, but the earliest age at which it can be reliably assessed remains unclear. The generalization that the age of 18 months is the upper limit of imposed gender reassignment should be treated with caution and viewed conservatively." *Id.* at e492. The Consensus Statement acknowledges that Intersex children are more prone to "atypical gender role

protocol also presents probability estimates on the success of gender assignment based on Intersex condition.¹⁶¹ Thus, while it rejects emergency intervention and presents a more holistic approach to assignment than the model advocated by Money and other predecessors, it nonetheless continues to see the vital importance of early assignment of a gender role.

The final two steps place emphasis on the interrelationship between the child and the parents and the need to encourage dialogue and respect the views of the patient and their family. Fourth, “open communication with patients and families is essential, and participation in decision-making is encouraged.”¹⁶² Fifth, “patient and family concerns should be respected and addressed in strict confidence.”¹⁶³

The Consensus Statement and its protocol address advancements in understanding Intersex children and the various conditions that may result in a child being Intersex. The Consensus Statement also takes a more holistic view and provides more options for the child and the parents. Nonetheless, even under the new protocol emphasis is placed on maintaining coherence between gender and sex. The goal remains closely aligning sex and gender to ensure healthy psychological development and social integration.

D. A Potential Delayed Gender Assignment Model

In response to concerns about sex identification, a new strategy has emerged. Recently, the approach has been to deny any need to assign sex during early childhood development and instead allow the child to make gender decisions as the child matures. Advocates of this model insist that children ought to be given the right to give informed consent about their sex assignment.

The Intersex Society of North America (ISNA) embraces many of the improvements in the treatment of Intersex children

behavior” but caution that such behavior is not necessarily indicative of a need to reassign gender or sex. *Id.* The Consensus Statement indicates that if the view is persistent then a specialist should be called in and a reassignment ought to be considered. *Id.*

¹⁶¹ For example, the Consensus Statements offers that, “More than 90% of patients with XX congenital adrenal hyperplasia and all patients with XY complete androgen insensitivity syndrome assigned female in infancy identify as females.” Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e491 (2006). Given this evidence the Consensus Statement recommends raising children with either of these conditions as female. *Id.*

¹⁶² Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

¹⁶³ Peter A. Lee et al., *Consensus Statement on Management of Intersex Disorders*, 118 PEDIATRICS e488, e490 (2006).

under the Consensus Statement.¹⁶⁴ ISNA contends that, although the protocol indicated by the Consensus Statement is a step in the right direction, more emphasis ought to be placed on the decision of the child and that the child's consent is necessary for surgical intervention.¹⁶⁵ Informed consent is advocated to preserve two interests: "bodily integrity and self-determination."¹⁶⁶

The informed consent model has been embraced by a series of scholars with varying approaches to the decisions as to when or if to designate a sex or gender. Some scholars advocate a child being raised with an Intersex assignment,¹⁶⁷ others advocate that a child should have a fluid assignment elected by the child,¹⁶⁸ others advocate the child have no gender assignment until the child can make an informed decision about the gender assignment,¹⁶⁹ still others advocate a legal mechanism for childhood intervention.¹⁷⁰ Under all of these options the decision for surgical intervention is avoided until puberty, but no consensus about the appropriate approach until surgical intervention has emerged.

Another issue with a consent-based theory on sex and gender selection is that puberty may set in before a child has made a decision about the sex and gender they want to live in. Puberty normally sets in as early as seven for girls and nine for boys.¹⁷¹ An eight- or nine-year-old may still have difficulty deciding about what sex and gender they would like to live in. Some have advocated the use of puberty delaying medication to stop the onset of puberty until a child decides.¹⁷² But, the use of puberty delaying drugs is controversial. The fact that medical intervention is necessary for a child to be able to have time to select a sex and gender is indicative to some that the decision should be made through the holistic medical-based approach advocated by the Consensus Statement with an emphasis on earlier assignment and intervention. Plus, it is

¹⁶⁴ The Intersex Society of North America, Our Mission, <http://www.isna.org/>

¹⁶⁵ The Intersex Society of North America, Our Mission, <http://www.isna.org/>

¹⁶⁶ Hazel Glenn Beh & Milton Diamond, *An Emerging Ethical and Medical Dilemma: Should Physicians Perform Sex Assignment on Infants with Ambiguous Genitalia?*, 7 MICH. J. GENDER & L. 1, 34 (2000).

¹⁶⁷ The Intersex Society of North America, Our Mission, <http://www.isna.org/>

¹⁶⁸ Karen Gurney, *Sex and the Surgeon's Knife: The Family Court's Dilemma . . . Informed Consent and the Specter of Iatrogenic Harm to Children with Intersex Characteristics*, 33 Am. J.L. & Med. 625, 625-661 (2007).

¹⁶⁹ Hazel Glenn Beh & Milton Diamond, *An Emerging Ethical and Medical Dilemma: Should Physicians Perform Sex Assignment on Infants with Ambiguous Genitalia?*, 7 MICH. J. GENDER & L. 1, 34 (2000).

¹⁷⁰ Anne Tamar-Mattis, *Exceptions to the Rule: Curing the Law's Failure to Protect Intersex Infants*, 21 BERKELEY J. GENDER & L. & JUSTICE 59, 98-101 (2006).

¹⁷¹ Deanna Adkins & Dennis Clements, *When Is Puberty Too Early?*, DUKE HEALTH (April 13, 2011).

¹⁷² The Intersex Society of North America, Congenital Adrenal Hyperplasia (CAH) Medical Risks, http://www.isna.org/faq/medical_risks/cah

unclear how long it may take for a child to be secure in deciding about their sex and gender. If eight is not old enough, why would twelve or fourteen be old enough?

Even under a system that embraces consent and advocates for later gender and sex assignment, the focus remains on aligning sex and gender. The choice to delay puberty is based on the increased physical manifestations of sex. The desire is to allow the child to remain in the more sex identity-neutral body that exists before puberty. When puberty occurs, sex identity becomes more central and the congruence between sex and gender is more relevant. Thus, a consent-based model does little to challenge the dimorphic view of sex.

III. There is a Long History of Participation by Trans and Intersex Athletes in Women's Sports, and the Rules Regulating Participation are more Permissive and Aligned with Health and Science Evidence over Time

The concept of “fair play” is invoked in sex segregation because female and male bodies are biologically different. These differences are understood to give a general advantage to male athletes. But the desire to segregate the sexes for competitive sports runs into one significant problem: when athletes do not neatly fit into traditional biological definitions of male or female.

The traditional view of sex segregated sports is that male athletes have a biological competitive advantage over female athletes. This view is rooted in biological generalities of the shape of male and female bodies. Males tend to have “longer arms, bigger and stronger legs, more muscle fiber, ten percent larger hearts and lungs, and stronger and broader shoulders.”¹⁷³ Males’ larger hearts result in 16 percent more blood pumped per heartbeat.¹⁷⁴ Larger male lungs result in 25 to 30 percent higher oxygen consumption; elite male athletes have maximum oxygen consumption that is about 10 percent higher than their female counterparts.¹⁷⁵ These attributes tend to give male athletes an advantage in competitions that require pure strength.

These physical differences between males and females are the primary reason there is such concern about male athletes competing in female competitions. The assumption is that these biological differences significantly advantage male athletes. If athletes who have genetic advantages resulting from higher androgen levels are competing with female athletes who do not have

¹⁷³ Syda Kosofsky, *Toward Gender Equality in Professional Sports*, 4 HASTINGS WOMEN S L.J. 209, 214 (1993).

¹⁷⁴ Diane Hales, *An Invitation to Health* (2010).

¹⁷⁵ *Id.*

similarly elevated levels of androgens, the view is that the latter will be at a significant disadvantage.

This section explores the history of sex testing in sports, focusing on both Trans and Intersex athletes participating in female competition. By delineating the mechanism and rationale behind sex testing and the history and impact sex testing has had on Trans and Intersex athletes, it is possible to highlight the issues and consequences of sex testing and sex segregated sports. Sex testing illuminates the difficulty in arriving at bright-line rules in distinguishing male from female in certain cases. Sex testing also has the unforeseen consequence of asserting that female athletes are disadvantaged as compared to male athletes.

This section begins by tracing the history of sex testing in international sports. This section then traces the significant events in participation by Trans and Intersex athletes. Finally, this section explores the underlying assumption that female athletes are disadvantaged and why this assumption may be inaccurate.

A. The History of Sex Testing in International Sports

Formalized sex testing in competitive athletic competitions began in the 1960s.¹⁷⁶ The Olympics instituted their first official sex testing practices for the 1968 Games.¹⁷⁷ During the 1968 Olympics, sex testing consisted of a visual inspection of each female athlete to ensure a proper female phenotype.¹⁷⁸ Athletes complained that the test was invasive and degrading.¹⁷⁹ Phenotype testing was imprecise and at times led to inconclusive or erroneous results. Results from genetic studies can be affected by various factors including statistical power, disequilibrium linkage, quality control, confounding and selection bias, as well as real differences from interactions and effect modifiers, which may be informative about

¹⁷⁶ See Jill Pilgrim, David Martin, & Will Binder, *Far From the Finish Line: Transsexualism and Athletic Competition*, 13 *FORDHAM INTELL. PROP. MEDIA & ENT. L.J.* 495, 509 (2003).

¹⁷⁷ See Jill Pilgrim, David Martin, & Will Binder, *Far From the Finish Line: Transsexualism and Athletic Competition*, 13 *FORDHAM INTELL. PROP. MEDIA & ENT. L.J.* 495, 509 (2003). The Summer Olympics were held in Mexico City, Mexico and the Winter Olympics were held in Grenoble, France.

¹⁷⁸ Jill Pilgrim, David Martin, & Will Binder, *Far From the Finish Line: Transsexualism and Athletic Competition*, 13 *FORDHAM INTELL. PROP. MEDIA & ENT. L.J.* 495, 509 (2003).

¹⁷⁹ See Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 *TEXAS REV. OF ENT. & SPORTS L.* 133, 159-160 (2011).

the mechanisms of traits and disease.¹⁸⁰ Phenotype testing was imprecise and at times led to inconclusive or erroneous results.

Both the inaccurate testing and the athletes' privacy concerns led most sporting events to change to a chromosomal test (such as the Barr body test) or a DNA test (such as a polymerase chain reaction test).¹⁸¹ The most often used test was the Barr body test. The Barr body test detects the presence of two X chromosomes indicating that a person is female or an X and a Y chromosome indicating that a person is a male. The Barr body test has been criticized as leading to the detection of genetic abnormalities that confer no gender related advantage, but which nevertheless sufficiently disqualify and stigmatize an athlete.¹⁸² For example, British geneticist Ferguson-Smith and former British Olympian Elizabeth Ferris posited that the Barr body test barred competitors with androgen insensitivity syndrome, gonadal dysgenesis, Klinefelter syndrome, and mosaicism unfairly.¹⁸³

The International Amateur Athletic Federation (IAAF), the governing body of amateur athletics, officially ceased subjecting all female athletes to sex testing in 1991.¹⁸⁴ DNA testing was again at Lillehammer in 1994 and at Atlanta in 1996, but in view of the strong opposition from medical specialists, the IOC agreed in 1999 to suspend compulsory tests based on sex chromosomes at the 2000 Olympic Games in Sydney.¹⁸⁵ The International Olympic Committee (IOC) officially ceased subjecting all female athletes to sex testing in 2000.¹⁸⁶ Yet, both the IAAF and the IOC continue to subject select individual female athletes to sex testing.¹⁸⁷ The number of individual sex tests conducted is unknown because the IOC and the IAAF attempt to conduct these tests confidentially to

¹⁸⁰ Jonathon Weakley, *Testing and Profiling Athletes: Recommendations for Test Selection, Implementation, and Maximizing Information*, National Strength and Conditioning Association 2023

¹⁸¹ See Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEXAS REV. OF ENT. & SPORTS L.133, 159-160 (2011).

¹⁸² Arne Ljungqvist, *The History and Current Policies on Gender Testing in Elite Athletes*, International SportMed Journal, January 2006

¹⁸³ onathan Ospina-Betancurt, *The End of Compulsory Gender Verification: Is It Progress for Inclusion of Women in Sports?*, Archives of Sexual Behaviour, October 2021

¹⁸⁴ See e.g. Joe Leigh Simpson et al., *Gender Verification in the Olympics*, 284 JAMA 1568, 1568-69 (2000).

¹⁸⁵ *Natural Selection for Genetic Variants in Sport: The Role of Y Chromosome Genes in Elite Female Athletes with 46,XY DSD*

¹⁸⁶ See e.g. Joe Leigh Simpson et al., *Gender Verification in the Olympics*, 284 JAMA 1568, 1568-69 (2000).

¹⁸⁷ See Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEXAS REV. OF ENT. & SPORTS L.133, 159-160 (2011).

secure the privacy of athletes.¹⁸⁸ This continued ‘private’ testing has equally been criticized, with some asserting that the imposition of sex testing is not made more ethical by increased confidentiality in the practice. In other words, bolstering athletes’ privacy and gender verification practices cannot both be defended by an appeal to fairness.¹⁸⁹

The individual athlete testing protocol is more elaborate and undertakes to evaluate multiple components of sex in determining the sex of an athlete.¹⁹⁰ Individualized testing can include the use of a gynecologist, endocrinologist, internist, psychologist, and gender expert.¹⁹¹ The rules first established in 2006 created five categories of athletes eligible to compete in female athletic events.¹⁹²

First, if an athlete is phenotypically and genotypically female.

Second, “if [gender affirming surgery] as well as appropriate hormone replacement therapy are performed before puberty then the athlete is allowed to compete as a female.”¹⁹³ The implication is that gender affirming surgery before puberty ensures that a transgender woman does not obtain the advantages associated with a major influx of testosterone during puberty.

Third, “if [gender affirming surgery] is done after puberty then the athlete has to wait two years after gonadectomy before physical and endocrinological evaluation is conducted.”¹⁹⁴ The rationale for this rule is once again centered on the advantage of being exposed to elevated testosterone levels. “The crux of the

¹⁸⁸ See Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEXAS REV. OF ENT. & SPORTS L.133, 159-160 (2011).

¹⁸⁹ Maren Behrens, *In the Halfway House of Ill Repute: Gender Verification under a Different Name, Still No Contribution to Fair Play, Sport Ethics and Philosophy*, December 2013

¹⁹⁰ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

¹⁹¹ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

¹⁹² The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

¹⁹³ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

¹⁹⁴ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

matter is that the athlete should not be enjoying the benefits of natural testosterone predominance normally seen in a male.”¹⁹⁵

Fourth are a series of Intersex conditions that “accord no advantage over other females.”¹⁹⁶ They include: androgen insensitivity syndrome, gonadal digenesis, and Turner’s syndrome.¹⁹⁷

Fifth are a series of Intersex conditions that, “accord some advantages but nevertheless [are] acceptable.”¹⁹⁸ The list includes: congenital adrenal hyperplasia, androgen producing tumors, and an ovulatory androgen excess (polycystic ovary syndrome).¹⁹⁹

This leaves an unspoken sixth class of applicants: those who are determined not to be female and are excluded from completion.

For the 2008 Summer Olympics in Beijing, China, the IOC established a laboratory to conduct sex testing.²⁰⁰ In 2010 the IOC announced the expansion of the laboratory program and the desire to set up more testing centers.²⁰¹ In 2010 the IOC and the IAAF once again revisited the issue of sex testing, given concerns over whether and how to include Intersex athletes with hyperandrogenism.²⁰² Researchers at King’s College London stated in 2012 that the sex testing policies introduced in time for that summers games, were significantly flawed, and urged that their imposition should be withdrawn.²⁰³

The conferences held to examine this issue resulted in two general conclusions. First, “in order to protect the health of the athlete, sports authorities should have the responsibility to make

¹⁹⁵ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

¹⁹⁶ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

¹⁹⁷ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

¹⁹⁸ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

¹⁹⁹ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

²⁰⁰ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

²⁰¹ The IAAF Medical and Anti-Doping Commission, IAAF Policy on Gender Verification, at 1-7 (2006) (available at <http://www.iaaf.org/mm/document/imported/36983.pdf>).

²⁰² The IOC Communications Department, IOC Addresses Eligibility of Athletes with Hyperandrogenism (April 5, 2011) (available at <http://www.olympic.org/about-ioc-institution?articleid=124006>).

²⁰³

sure that any case of female hyperandrogenism that arises under their jurisdiction receives adequate medical follow-up.”²⁰⁴ Second, rules needed to be put in place to regulate the participation of athletes with hyperandrogenism in competitions for women.”²⁰⁵ The final rules established for the 2012 Summer Olympics in London, England, held that if competitive advantage (because it is functional and the androgen level is in the male range), the investigated athlete may be declared ineligible to compete in the 2012 [Olympics].”²⁰⁶

The conferences dealing with hyperandrogenism led the IOC to reexamine its general rules for sex testing. First, “A female recognized in law should be eligible to compete in female competitions provided that she has androgen levels below the male range . . . or, if within the male range, she has an androgen resistance such that she derives no competitive advantage from their status. Additionally, the rule places the responsibility on legal institutions to make determinations about an athlete’s sex.

Second, all evaluations must be anonymous and, “Should an athlete be considered ineligible to compete, she would be notified of the reasons why, and informed of the conditions she would be required to meet should she wish to become eligible again.”²⁰⁷ In order to supplement the anonymity required by these evaluations, an anonymous panel would be employed to carry out testing.²⁰⁸ The second rule presents a possibility for athletes to seek further treatment to reduce competitive advantage and bring them within the eligibility requirement for a female athlete.

Finally, the IOC explained the rationale behind testing protocols. “Although rare, some women develop male-like body characteristics due to an overproduction of male sex hormones, so-called ‘androgens,’ The androgenic effects on the human body explain why men perform better than women in most sports and are, in fact, the very reason for the distinction between male and female

²⁰⁴ The IOC Communications Department, IOC Addresses Eligibility of Athletes with Hyperandrogenism (April 5, 2011) (available at <http://www.olympic.org/about-ioc-institution?articleid=124006>).

²⁰⁵ The IOC Communications Department, IOC Addresses Eligibility of Athletes with Hyperandrogenism (April 5, 2011) (available at <http://www.olympic.org/about-ioc-institution?articleid=124006>).

²⁰⁶ International Olympic Committee, IOC Regulations of Female Hyperandrogenism (June 22, 2012) (available at http://www.olympic.org/Documents/Commissions_PDFfiles/Medical_commission/2012-06-22-IOC-Regulations-on-Female-Hyperandrogenism-eng.pdf).

²⁰⁷ The IOC Communications Department, IOC Addresses Eligibility of Athletes with Hyperandrogenism (April 5, 2011) (available at <http://www.olympic.org/about-ioc-institution?articleid=124006>).

²⁰⁸ The IOC Communications Department, IOC Addresses Eligibility of Athletes with Hyperandrogenism, April 5, 2011

competition in most sports.”²⁰⁹ The IOC’s policy is entirely dependent on creating a rationale for sex separation where female athletes are protected from competing with “better” male athletes. This rationale has been criticized as being myopic however, as the superiority and dominance of some female athletes is attributed to natural talent when there is an absence of scrutiny over the individual’s gender.²¹⁰

The history of the participation of transgender and intersex athletes illustrates why these changes have occurred and the consequences for Trans and Intersex athletes, as well as female athletes. This section continues by examining the case of Renee Richards and her participation in the U.S. Open Tennis Tournament before examining several high-profile instances involving intersex athletes.

1. Game, Set, and Match: Renee Richards and the standard for transgender women participating in women’s sports

Dr. Renee Richards case is unique because she was the first, and to date only, athlete to obtain a judgment from a US court to compete as a female athlete. The basis for this determination should define our approach to Trans participation in women’s sports. The court’s decision is also illustrative of the concerns underpinning sex testing and its role in sport.

Dr. Renee Richards was born Richard Raskind and assigned male at birth.²¹¹ She had been an ophthalmologist, husband, and father when she underwent a gender affirmingsurgery.²¹² Before her surgery she was “an accomplished male tennis player” and ranked 3rd in the East and 13th in the United States overall for men over 35 years old.²¹³ After her operation Richards wanted to again participate in competitive tennis tournaments, but in the women’s division. Before applying for the 1976 United States Open, Richards entered nine women’s tennis tournaments winning twice and finishing as a runner-up three times.²¹⁴

²⁰⁹ The IOC Communications Department, IOC Addresses Eligibility of Athletes with Hyperandrogenism (April 5, 2011) (available at <http://www.olympic.org/about-ioc-institution?articleid=124006>).

²¹⁰ Eric Vilain, The End of Compulsory Gender Verification: Is It Progress for Inclusion Of Women in Sports?, Archives of Sexual Behaviour, October 2020

²¹¹ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 175 (2011).

²¹² *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²¹³ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 268 (Sup. Ct. 1977).

²¹⁴ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 268 (Sup. Ct. 1977).

In 1976 the United States Tennis Association (USTA) and the United States Open Committee (USOC) for the first time implemented the Barr body test (sex-chromatin test) to confirm the sex of female athletes.²¹⁵ The Barr body test had been employed by the International Olympic Committee starting in the 1968 Olympics.²¹⁶ Both the USTA and the USOC acknowledged that they implemented the Barr body test as a direct result of Richards' application to enter the U.S. Open as a female tennis player.²¹⁷ Previously, the U.S. Open only implemented a phenotype test (an observation of primary and secondary sexual characteristics) in establishing the sex of an athlete.²¹⁸

The USTA and the USOC contended the Barr body test was implemented to ensure fairness.²¹⁹ Their primary claim was that those who have had gender affirming surgery have a competitive advantage over natural-born female athletes. The advantage is gained from "physical training and development as a male."²²⁰ George E. Gowen of the USTA noted, "We have reason to believe that there are as many as 10,000 transsexuals in the United States and many more female impersonators or imposters. The total number of such persons throughout the world is not known."²²¹ Gowen indicated that the USTA was concerned about cheating and the use of " 'experiments . . . , to produce athletic stars by means undreamed of a few years ago.'"²²² USTA's apparent concern was over the infusion of male athletes having gender affirming surgery in order to enter into female competitions.²²³ The Barr body test would bar those athletes who had undergone gender affirming surgery to maintain "its obligation to assure fairness."²²⁴ It is important to note, however, that this notion has been criticized by experts, due to the belief that this form of testing is ineffective regarding the detection of an unfair athletic advantage.²²⁵

The USTA and the USOC introduced testimony by Dr. Daniel Federman, professor and chairman of the Department of Medicine at Stanford University, who, in part, testified that the

²¹⁵ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 268 (Sup. Ct. 1977).

²¹⁶ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 268 (Sup. Ct. 1977).

²¹⁷ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 268 (Sup. Ct. 1977). In applying to compete in the U.S. Open Richards had sent a letter to Mike Blanchard, chairman of the U.S. Open, discussing her sex status and sex reassignment.

²¹⁸ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 268 (Sup. Ct. 1977).

²¹⁹ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²²⁰ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²²¹ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²²² *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²²³ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²²⁴ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²²⁵ Caster Semenya and the "Question of Too": Sex Testing in Elite Women's Sport and the Issue of Advantage

presence of the Y chromosome provides ““physical characteristics in the normal male that affect an individual’s competitive athletic ability.””²²⁶ Federman explained that the Y chromosome and the correspondingly higher levels of androgen (male sex hormones) to estrogen (female sex hormone) result in ““greater height, different body proportions, and a higher muscle mass.””²²⁷ He also testified that gender affirming surgery would not impact many of these advantages. ““In the adult male beyond puberty, neither the removal of the testes by [gender affirming] surgery, nor any subsequent treatment with estrogen can affect the individual’s achieved height or skeletal structure.””²²⁸ Indeed, gender affirming surgery alone would not reduce male musculature either.²²⁹ ““Removal of the testes plus ingestion of estrogens can reduce male strength, but any such effect is partial and depends upon continued ingestion of estrogen to be sustained.””²³⁰ Thus, a transgender woman would still possess the competitive physical attributes of a male and could only hope to reduce male musculature through continued use of estrogen.²³¹ Federman’s testimony supported the view that transgender women athletes would possess an unfair advantage physically because they retained male physical attributes.²³²

The USTA and the USOC also introduced affidavits from professional female tennis players attesting to the advantage of transgender women in competing against “natural-born” female athletes.²³³ Francoise Durr, Janet Newberry, and Kristen K. Shaw each testified that, assuming similar skill levels, a former male has a significant advantage both from being taller and stronger.²³⁴ The position supports the conclusion that inherent height and strength advantage conferred by being born male (or possessing a Y chromosome) can result in competitive advantage.²³⁵ Vicki Berner, Director of Women’s Tennis for the USTA, a former successful professional tennis player, stated, “she was unable to find a record of any woman player over age 40 who has had such a successful competitive record as [Richards], a record unparalleled in the history of women’s professional tennis.”²³⁶ The implication of Berner’s statement is that Richards’ success could only be explained by the

²²⁶ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²²⁷ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²²⁸ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²²⁹ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²³⁰ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²³¹ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²³² *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 269 (Sup. Ct. 1977).

²³³ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 270 (Sup. Ct. 1977).

²³⁴ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 270 (Sup. Ct. 1977).

²³⁵ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 270 (Sup. Ct. 1977).

²³⁶ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 270 (Sup. Ct. 1977).

competitive advantage she obtained by being born male.²³⁷ The testimony of these professional tennis players all indicated that Richards had a competitive advantage.

Dr. Roberto Granato, the surgeon who performed Richards' gender affirming surgery, testified that Richards did not possess a competitive advantage over female athletes.²³⁸ Granato testified that the removal of the testes and estrogen therapy reduced androgen levels and decreases muscular mass.²³⁹ Granato also stated that Richards' muscle to fat ratio corresponded to a female body, including breast development.²⁴⁰ His contention was that Richards' "muscle development, weight, height, and physique fit within the female norm."²⁴¹ His ultimate conclusion was that Richards, "should be considered a woman, classified as a female and allowed to compete as such."²⁴²

Dr. Jon Money, a psychologist and professor practitioner at Johns Hopkins Medical School, whom Richards had consulted, testified that Richards was female and did not have a competitive advantage.²⁴³ Money testified that the Bar body test would have an unjust effect if applied to Richards because all other indicators were that she was female.²⁴⁴ He explained:

[Dr. Richards] external genital appearance is that of a female; her internal sex is that of a female who has been hysterectomized and ovariectomized; Dr. Richards is psychologically a woman; endrochronologically female; *somatically (muscular tone, height, weight, breasts, physique) Dr. Richards is female and her muscular and fat composition has been transformed to that of a female*; socially Dr. Richards is female; Dr. Richards' gonadal status is that of an ovariectomized female.²⁴⁵

Money argued that all of these factors meant that Richards must be recognized as a female "and for anyone in the medical or legal field to find otherwise is completely unjustified."²⁴⁶ He argued that Richards would "have no unfair advantage when competing against

²³⁷ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 270 (Sup. Ct. 1977).

²³⁸ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 271 (Sup. Ct. 1977).

²³⁹ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 271 (Sup. Ct. 1977).

²⁴⁰ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 271 (Sup. Ct. 1977).

²⁴¹ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 271 (Sup. Ct. 1977).

²⁴² *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 271 (Sup. Ct. 1977).

²⁴³ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²⁴⁴ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²⁴⁵ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977) (emphasis added).

²⁴⁶ *Richards v U.S. Tennis Ass'n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

other women.”²⁴⁷ This conclusion was based on Richards fitting within the “female norm” for “muscle development, weight, height and physique.”²⁴⁸

Finally, Richards introduced the testimony of professional tennis player Billie Jean King who supported Richards’ competing as a female in tennis tournaments.²⁴⁹ King had participated as a doubles teammate with Richards and had competed in two singles tournaments where Richards also participated.²⁵⁰ King testified: “[Richards] does not enjoy physical superiority or strength so as to have an advantage over women competitors in the sport of tennis.”²⁵¹

The court ruled in Richards’ favor, deciding that she did not have an advantage over other female athletes and ought to be considered a female and admitted as such in the U.S. Open.²⁵² The court held, “the requirement of [the USTA and the USOC] that [Richards] pass the Barr body test in order to be eligible to participate in the women's singles of the U.S. Open is grossly unfair, and violative of her rights under the Human Rights Law of [New York].”²⁵³ But the court did not eliminate the Barr body test as a method of determining sex, “as it appears to be a recognized and acceptable tool for determining sex. However it is not and should not be the sole criterion, whereas here, the circumstances warrant consideration of other factors.”²⁵⁴ Instead the court noted that “[t]he only justification for using a sex discrimination test in athletic competition is to prevent fraud, i.e. men masquerading as women, competing against women.”²⁵⁵

Ultimately, the court did not find justification for precluding Richards because she was advantaged, noting “the unfounded fears and misconceptions of [the USTA and the USOC] must give way to the overwhelming medical evidence that this person is now a female.”²⁵⁶

The *Richards* decision represents a significant victory for the recognition of transgender women both in sport and in society. The case remains the only legal decision regarding transgender women participating in sports in their affirmed sex. But Richards’ case also presents a significant problem in the way we conceptualize female athletic competition. The decision was predicated on Richards not

²⁴⁷ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²⁴⁸ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²⁴⁹ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²⁵⁰ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²⁵¹ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²⁵² *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²⁵³ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²⁵⁴ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272-73 (Sup. Ct. 1977).

²⁵⁵ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

²⁵⁶ *Richards v U.S. Tennis Ass’n*, 400 N.Y.S.2d 267, 272 (Sup. Ct. 1977).

having an advantage over other female competitors. The advantage was her retaining any male characteristics. The court concluded that her competing with other females was appropriate because she no longer possessed those advantages. Her gender affirming surgery and hormone therapy suppressed the benefits of her Y chromosome. The court's reasoning supports the view that femaleness is a disability as compared to maleness. From an athletic standpoint possessing a Y chromosome and obtaining its benefits is an enhancement for a female athlete. It has equally been opined that the complexity and sensitivity of the matter means sports authorities should stop looking for a biological marker to determine the propriety of an athlete's competing. "Instead, we ought to go simply with an athlete's self-identity as a man or woman (only requiring, perhaps, that it be confirmed by her or his legal status)."²⁵⁷

Richards has since spoken controversially on the issue, stating that "Having lived for the past 30 years, I know if I'd had surgery at the age of 22, and then at 24 went on the tour, no genetic woman in the world would have been able to come close to me. And so I've reconsidered my opinion."²⁵⁸ Richards goes further, to insist that being allowed to compete in professional sporting events is something that transgender women cannot expect – bluntly quipping, "that's just life."²⁵⁹

After the Richards decision several sports now include transgender women that compete as female athletes. Among those athletes are: Mianne Bagger a Danish born Australian golfer who competes on the Ladies European Tour, Canadian cyclist Kristen Worley, and Canadian mountain biker Michelle Dumaresq.²⁶⁰ In Mianne Bagger's case, the issue is somewhat fraught, as the Ladies Professional Golf Association (LPGA) had previously amended their membership clause which required that competitors in the ladies category must be assigned female at birth.²⁶¹ However, this has lapsed following a decision in late 2024 to update their policy, with the United States Golf Association, along with the LPGA, stating that "Current scientific and medical research shows that sports performance differences exist between biological sexes and such differences begin to occur during the onset of puberty". The

²⁵⁷ If "Ifs" and "Buts" Were Candy and Nuts: The Failure of Arguments Against Trans and Intersex Women's Full and Equal Inclusion in Women's Sport, *Feminist Philosophy Quarterly*, June 2021

²⁵⁸ Franklin Foer, Marc Tracy, *Jewish Jocks: An Unorthodox Hall of Fame*, Twelve Publishing House, November 29 2012

²⁵⁹ *Id.*

²⁶⁰ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 *TEX. REV. ENT. & SPORTS L.* 133, 172 (2011).

²⁶¹ Stina Sternberg, LPGA votes to banish "female at birth" clause, *GolfDigest*75, December 1 2010

change, which will be implemented in the 2025 season, will require that competitors in the ladies category must be assigned female at birth or be assigned male at birth, but undergo gender transitioning before experiencing male puberty²⁶².

2. Case studies of Intersex athletes participating in women's sports

The history of Intersex athletes in the Olympics illustrates the difficulty with sex testing protocols. Often intersex athletes are unaware of their condition and are raised as female. Sex testing can expose their condition to the world and to themselves. In addition, because of changes in sex-testing protocols the timing of an athlete's exposure to testing can often be the difference between being labeled female or male. Finally, while the protocols may change, the focus has always remained on eliminating competitive advantages that intersex athletes may possess.

Stainislaw Walasiewicz, known as Stella Walsh, was a Polish immigrant living in the United States when she competed for Poland in the 1932 and 1936 Summer Olympics.²⁶³ Walsh was a very successful sprinter in the 1930s, setting or matching the 100 meter sprint world record time on six occasions.²⁶⁴ Her final world record time stood for 11 years.²⁶⁵ One of her world record times was captured at the 1932 Olympics in Los Angeles, California.²⁶⁶ Four years later in Berlin she attempted to duplicate her feat.²⁶⁷ Instead, she was defeated by United States sprinter Helen Stephens.²⁶⁸ Polish media questioned the victory claiming that Stephens was male and

²⁶² Lauren Merola, LPGA, USGA restrict gender policies, citing 'competitive advantages', New York Times, The Athletic, December 4 2024

²⁶³ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁶⁴ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁶⁵ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁶⁶ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁶⁷ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁶⁸ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

masquerading as female.²⁶⁹ Responding to the accusations, the IOC conducted a visual inspection of Stephen's external genitalia and confirmed that she was female.²⁷⁰

In December 1980, Stella Walsh was shot and killed during a robbery in Cleveland, Ohio.²⁷¹ During her autopsy the coroner, Samuel Gerber, discovered that Walsh "had no internal female reproductive organs, and possessed an underdeveloped and non-functioning penis, 'masculine' breasts and an abnormal urinary opening."²⁷² Gerber determined that Walsh's sex was "likely ambiguous at birth" and that her parents chose to raise her as a girl.²⁷³ Gerber concluded, "Walsh 'lived and died a female Socially, culturally and legally, Stella Walsh was accepted as female for 69 years."²⁷⁴ Walsh, in fact, had "mosaicism, a mutation that causes some cells to be XY and others to be XX."²⁷⁵ The IOC decided not to strip Walsh of her medals.

The 1936 Olympics also included a controversy surrounding Dora Ratjen (aka Heinrich Ratjen).²⁷⁶ Ratjen competed in the Olympics as a female high jumper and placed fourth. At birth he was identified as female and his parents raised him as female.²⁷⁷ When

²⁶⁹ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁷⁰ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁷¹ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁷² Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁷³ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁷⁴ Paul Farhi, *The Runner's Secret*, Wash. Post. (Aug. 22, 2008) (available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/08/21/AR2008082103680.html>).

²⁷⁵ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 172 (2011).

²⁷⁶ Stefan Berg, *How Dora the Man Competed in the Woman's High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>). Ratjen is sometimes referred to as Hermann. Some publications claim that Ratjen was intentionally deceitful and was a male masquerading as a female. See e.g. Samantha Glazer, Note, *Sporting Chance: Litigating Sexism Out of the Olympic Intersex Policy*, 20 J.L. & POLICY 545, 556 (2012).

²⁷⁷ Stefan Berg, *How Dora the Man Competed in the Woman's High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at

he hit puberty he realized that his outward appearance was not female and began to think he was male.²⁷⁸ Nonetheless Ratjen continued to compete as a female in athletic competitions.²⁷⁹ In 1938, on a train ride from Vienna to Cologne the conductor reported that a male was on the train dressed as a woman.²⁸⁰ Police investigated and Ratjen explained his story and produced documents identifying him as male.²⁸¹ A physician examined Ratjen and identified him as male.²⁸² He concluded, “‘The secondary sexual characteristics are entirely male.’ However the doctor did note one distinctive feature: ‘A thick band of scar tissue running backwards from the underside of the penis in a relatively broad line.’”²⁸³ Ratjen’s scarring is the likely reason he was identified at birth as female.²⁸⁴ Prosecutors ultimately dropped the fraud charges against Ratjen.²⁸⁵ The lead prosecutor noted, “‘Fraud cannot be deemed to have taken place, . . . [h]is activities and relations were

<http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁷⁸ Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁷⁹ Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁸⁰ Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁸¹ Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁸² Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁸³ Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁸⁴ Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁸⁵ Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

always feminine.”²⁸⁶ Despite the decision, Ratjen was stripped of his competitive success and participation in sports as a female.²⁸⁷ Unfortunately Ratjen’s sex was left in limbo for a period of time while authorities attempted to determine if he should be considered male or female, precluding him from participating in sports altogether.²⁸⁸

In the 1964 Summer Olympics in Tokyo, Japan, Ewa Klobukowska, representing Poland, won a gold medal in the 4 x 100 relay and a bronze medal in the 100 meter sprint.²⁸⁹ In the 1965 World Championships in Prague, Czechoslovakia, she set the world record in the 100 meter sprint.²⁹⁰ In 1966 she earned gold medals in the 4 x 100 relay and the 100 meter sprint and a silver medal in the 200 meter sprint.²⁹¹ But, at the 1967 European Cup in Kiev, Ukraine, Klobukowska failed a phenotype sex test.²⁹² She was later diagnosed with XX/XXY mosaicism.²⁹³ During her childhood Klobukowska had testes surgically removed and underwent estrogen treatment.²⁹⁴ She was stripped of her medals and records and banned from competition as a female athlete,²⁹⁵ despite the fact that her rare genetic condition imbued her with no genetic advantage over other female athletes.²⁹⁶ If Klobukowska had foregone the

²⁸⁶ Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁸⁷ Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁸⁸ Stefan Berg, *How Dora the Man Competed in the Woman’s High Jump*, SPIEGEL ONLINE (Sept. 15, 2009) (available at <http://www.spiegel.de/international/germany/1936-berlin-olympics-how-dora-the-man-competed-in-the-woman-s-high-jump-a-649104.html>).

²⁸⁹ M.A. Ferguson-Smith & Elizabeth A. Ferris, *Gender Verification in Sport: the Need for Change?*, 25 BRITISH J. SPORTS MED. 17, 18 (1991).

²⁹⁰ M.A. Ferguson-Smith & Elizabeth A. Ferris, *Gender Verification in Sport: the Need for Change?*, 25 BRITISH J. SPORTS MED. 17, 18 (1991).

²⁹¹ M.A. Ferguson-Smith & Elizabeth A. Ferris, *Gender Verification in Sport: the Need for Change?*, 25 BRITISH J. SPORTS MED. 17, 18 (1991).

²⁹² M.A. Ferguson-Smith & Elizabeth A. Ferris, *Gender Verification in Sport: the Need for Change?*, 25 BRITISH J. SPORTS MED. 17, 18 (1991).

²⁹³ M.A. Ferguson-Smith & Elizabeth A. Ferris, *Gender Verification in Sport: the Need for Change?*, 25 BRITISH J. SPORTS MED. 17, 18 (1991).

²⁹⁴ M.A. Ferguson-Smith & Elizabeth A. Ferris, *Gender Verification in Sport: the Need for Change?*, 25 BRITISH J. SPORTS MED. 17, 18 (1991).

²⁹⁵ M.A. Ferguson-Smith & Elizabeth A. Ferris, *Gender Verification in Sport: the Need for Change?*, 25 BRITISH J. SPORTS MED. 17, 18 (1991).

²⁹⁶ J. Michael Bostwick and Michael J. Joyner, *The Limits of Acceptable Biological Variation in Elite Athletes: Should Sex Ambiguity Be Treated Differently From Other Advantageous Genetic Traits?*, 87 Mayo Clinic Proceedings 508 (June 2012).

European Cup and instead participated only in the 1968 Olympics in Mexico City, she would have been exposed to a Barr body test and would have been eligible to compete.²⁹⁷

In 1966 Austrian Erik Schinegger (then known as Erika) won the gold medal in women's downhill skiing at the World Championships in Portillo, Chile.²⁹⁸ Schinegger was even named Austrian athlete of the year.²⁹⁹ In 1968 Schinegger was set to compete in the Olympics in Grenoble, France.³⁰⁰ Schinegger was subjected to the Barr body test and was identified as having male chromosomes which precluded him from participating in the Olympics.³⁰¹ Further medical testing determined that Schinegger had male genitalia that had not descended before birth or after.³⁰² Schinegger was raised as a female because an external examination indicated a female phenotype.³⁰³ Schinegger eventually underwent surgery and treatment.³⁰⁴ He went on to marry and have children.³⁰⁵ Schinegger was never stripped of his World Championship medal.³⁰⁶

María José Martínez-Patiño was a Spanish hurdler.³⁰⁷ In 1983 she underwent sex verification at the World Track & Field Championships in Helsinki, Finland.³⁰⁸ The test result indicated that she was female, and she competed.³⁰⁹ In 1985 at the World University Games in Kobe, Japan, her Barr body test indicated that she was male and she was not allowed to compete.³¹⁰ She was told

²⁹⁷ M.A. Ferguson-Smith & Elizabeth A. Ferris, *Gender Verification in Sport: the Need for Change?*, 25 BRITISH J. SPORTS MED. 17, 18 (1991).

²⁹⁸ John Fry, *The Story of Modern Skiing*, 131-32 (2006).

²⁹⁹ John Fry, *The Story of Modern Skiing*, 131-32 (2006).

³⁰⁰ John Fry, *The Story of Modern Skiing*, 131-32 (2006).

³⁰¹ John Fry, *The Story of Modern Skiing*, 131-32 (2006).

³⁰² John Fry, *The Story of Modern Skiing*, 131-32 (2006).

³⁰³ John Fry, *The Story of Modern Skiing*, 131-32 (2006).

³⁰⁴ John Fry, *The Story of Modern Skiing*, 131-32 (2006).

³⁰⁵ John Fry, *The Story of Modern Skiing*, 131-32 (2006).

³⁰⁶ John Fry, *The Story of Modern Skiing*, 131-32 (2006).

³⁰⁷ Cyd Zeigler Jr., *Moment #27: María José Martínez-Patiño Kicked off Spanish Track Team, Titles Stripped*, OUT SPORTS (Sept. 7, 2011) (available at <http://outsports.com/jocktalkblog/2011/09/07/moment-27-hurdler-maria-jose-martinez-patino-kicked-off-spanish-track-team-stripped-of-titles>).

³⁰⁸ Cyd Zeigler Jr., *Moment #27: María José Martínez-Patiño Kicked off Spanish Track Team, Titles Stripped*, OUT SPORTS (Sept. 7, 2011) (available at <http://outsports.com/jocktalkblog/2011/09/07/moment-27-hurdler-maria-jose-martinez-patino-kicked-off-spanish-track-team-stripped-of-titles>).

³⁰⁹ Cyd Zeigler Jr., *Moment #27: María José Martínez-Patiño Kicked off Spanish Track Team, Titles Stripped*, OUT SPORTS (Sept. 7, 2011) (available at <http://outsports.com/jocktalkblog/2011/09/07/moment-27-hurdler-maria-jose-martinez-patino-kicked-off-spanish-track-team-stripped-of-titles>).

³¹⁰ Cyd Zeigler Jr., *Moment #27: María José Martínez-Patiño Kicked off Spanish Track Team, Titles Stripped*, OUT SPORTS (Sept. 7, 2011) (available at <http://outsports.com/jocktalkblog/2011/09/07/moment-27-hurdler-maria-jose-martinez-patino-kicked-off-spanish-track-team-stripped-of-titles>).

to feign injury and no longer compete as a female.³¹¹ In 1986 she competed in the Spanish championships as a female and won the 60 meter hurdles.³¹² Martínez-Patiño was later stripped of her victory and kicked off of the Spanish national team.³¹³ Martínez-Patiño challenged her disqualification.³¹⁴ She explained, “I knew that 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.”³¹⁵ Martínez-Patiño demonstrated that her condition made her insensitive to the “excess” testosterone in her blood, underlining her argument that her genetic difference gave her no unfair advantage. In 1988 the IAAF reinstated her eligibility.³¹⁶ Martínez-Patiño demonstrated that she had Androgen Insensitivity Disorder.³¹⁷ While she possessed XY chromosomes, her body did not properly process androgen leaving her with female sex characteristics.³¹⁸ Unfortunately, Martínez-Patiño’s reinstatement came too late in her career, and she failed to qualify for the 1992 Olympics.³¹⁹ Martínez-Patiño demonstrated the

³¹¹ Cyd Zeigler Jr., *Moment #27: María José Martínez-Patiño Kicked off Spanish Track Team, Titles Stripped*, OUT SPORTS (Sept. 7, 2011) (available at <http://outsports.com/jocktalkblog/2011/09/07/moment-27-hurdler-maria-jose-martinez-patino-kicked-off-spanish-track-team-stripped-of-titles>).

³¹² Cyd Zeigler Jr., *Moment #27: María José Martínez-Patiño Kicked off Spanish Track Team, Titles Stripped*, OUT SPORTS (Sept. 7, 2011) (available at <http://outsports.com/jocktalkblog/2011/09/07/moment-27-hurdler-maria-jose-martinez-patino-kicked-off-spanish-track-team-stripped-of-titles>).

³¹³ Cyd Zeigler Jr., *Moment #27: María José Martínez-Patiño Kicked off Spanish Track Team, Titles Stripped*, OUT SPORTS (Sept. 7, 2011) (available at <http://outsports.com/jocktalkblog/2011/09/07/moment-27-hurdler-maria-jose-martinez-patino-kicked-off-spanish-track-team-stripped-of-titles>).

³¹⁴ Cyd Zeigler Jr., *Moment #27: María José Martínez-Patiño Kicked off Spanish Track Team, Titles Stripped*, OUT SPORTS (Sept. 7, 2011) (available at <http://outsports.com/jocktalkblog/2011/09/07/moment-27-hurdler-maria-jose-martinez-patino-kicked-off-spanish-track-team-stripped-of-titles>).

³¹⁵ Cyd Zeigler Jr., *Moment #27: María José Martínez-Patiño Kicked off Spanish Track Team, Titles Stripped*, OUT SPORTS (Sept. 7, 2011) (available at <http://outsports.com/jocktalkblog/2011/09/07/moment-27-hurdler-maria-jose-martinez-patino-kicked-off-spanish-track-team-stripped-of-titles>).

³¹⁶ Cyd Zeigler Jr., *Moment #27: María José Martínez-Patiño Kicked off Spanish Track Team, Titles Stripped*, OUT SPORTS (Sept. 7, 2011) (available at <http://outsports.com/jocktalkblog/2011/09/07/moment-27-hurdler-maria-jose-martinez-patino-kicked-off-spanish-track-team-stripped-of-titles>).

³¹⁷ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 159 (2011).

³¹⁸ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 159 (2011).

³¹⁹ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 159 (2011).

need to have a more efficient system and rules in arriving at sex determination for organized sports.³²⁰

Edinanci Silva was a judoka competitor for Brazil.³²¹ She competed in the 1996, 2000, and 2004 Olympics.³²² Silva was born with both male and female genitalia and had surgery in the 1990s choosing to live her life as a female.³²³ After her surgery the IOC recognized her as female for competition purposes.³²⁴

Santhi Soundarajan was an elite middle distance runner representing India in international competition before being disqualified after a sex test.³²⁵ Soundarajan was born into the Dalits, the lowest caste in India, previously known as the untouchables.³²⁶ She learned to run when she was 13, and her abilities catapulted her to victories on the track and to scholarships in the classroom.³²⁷ She attended university on a track scholarship and was successful in international meets.³²⁸ In 2005 she took the silver medal in the 800 meters at the Asian Athletics Championships in South Korea.³²⁹ A year later she represented India in the Asian Games in Doha,

³²⁰ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 159 (2011).

³²¹ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³²² Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³²³ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³²⁴ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³²⁵ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine).

³²⁶ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³²⁶ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine).

³²⁷ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³²⁷ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine).

³²⁸ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³²⁸ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine).

³²⁹ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³²⁹ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine).

Qatar.³³⁰ She again claimed the silver medal in the 800 meters.³³¹ The day after the race she was brought in for a sex test.³³² She was subjected to examination by a gynecologist and endocrinologist and a series of lab tests.³³³ The next day she was told to leave the Asian Games.³³⁴

Soundarajan was diagnosed with Androgen Insensitivity Disorder.³³⁵ She was stripped of her medals and banned from competing as a female athlete.³³⁶ After the controversy surrounding her sex, Soundarajan attempted suicide.³³⁷ She eventually recovered and now works making bricks at a kiln in her home and coaching

³³⁰ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³³⁰ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine)

³³¹ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³³¹ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine)

³³² Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³³² Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine)

³³³ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³³³ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine)

³³⁴ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³³⁴ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine)

³³⁵ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³³⁵ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine)

³³⁶ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³³⁶ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine)

³³⁷ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³³⁷ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine)

other runners.³³⁸ But, she still wishes that she could run competitively.³³⁹

The most recent sex testing controversy surrounds South African middle distance runner Caster Semenya.³⁴⁰ Semenya made her international debut at the 2008 World Junior Championships in Poland.³⁴¹ At the 2008 Commonwealth Youth Games she won gold in the 800 meters.³⁴² At the 2009 African Junior Championships she won gold in both the 800 and 1,500 meters.³⁴³ Her 800 meter time set a junior national record, a meet record, and was the fastest time by a female athlete at that stage of the 2009 track season.³⁴⁴ Semenya's time qualified her for the 2009 World Championship in Berlin, Germany.³⁴⁵ She took gold at the World Championship and improved on her earlier time.³⁴⁶

Citing the drastic improvements in Semenya's times between the 2008 and 2009 track season, the IAAF launched an investigation.³⁴⁷ She was subjected to both drug and sex testing.³⁴⁸

³³⁸ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³³⁸ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine)

³³⁹ Emine Saner, *The Gender Trap*, THE GUARDIAN (July 30, 2008) (available at <http://www.guardian.co.uk/sport/2008/jul/30/olympicgames2008.gender>).

³³⁹ Samantha Shapiro, *Caught in the Middle*, ESPN THE MAGAZINE (Aug. 1, 2012) (available at http://espn.go.com/olympics/story/_/id/8192977/failed-gender-test-forces-olympian-redefine-athletic-career-espn-magazine)

³⁴⁰ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137 (2011).

³⁴¹ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137 (2011).

³⁴² Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137 (2011).

³⁴³ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137 (2011).

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³⁴⁵ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137 (2011).

³⁴⁶ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137 (2011).

³⁴⁷ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137 (2011).

³⁴⁸ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 155 (2011).

In November 2009, the IAAF announced that Semenya was still undergoing testing to determine her eligibility.³⁴⁹ In March 2010, the IAAF announced that no further progress had been made in Semenya's case.³⁵⁰ Later in the same month, Semenya announced her intention to return to competition, she confirmed her commitment in June indicating that she was neither banned nor declared ineligible.³⁵¹ In July 2010, the IAAF announced that Semenya was eligible to compete.³⁵²

The IAAF attempts to keep sex testing confidential and has not made any official announcement about Semenya's diagnosis.³⁵³ Reports indicated that Semenya likely had an intersex condition including the presence of internal testes and male reproductive organs.³⁵⁴ The length of the delay in announcing her ability to compete is also assumed to correspond to increased levels of androgens and testosterone in her system.³⁵⁵ Her eligibility determination is linked either to treatment to reduce the advantage she gained from her intersex condition or a determination that she gained no advantage from the condition.³⁵⁶ The Court of Arbitration for Sports held that Caster Semenya, under an IAAF regulation, would be required to take testosterone suppressants in order to compete in the women's division. Due in part to Semenya's case the IAAF launched further meetings to discuss sex testing practices and specifically to focus on the inclusion of athletes with hyperandrogenism.³⁵⁷

³⁴⁹ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 155 (2011).

³⁵⁰ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 157 (2011).

³⁵¹ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 157 (2011).

³⁵² Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 157 (2011).

³⁵³ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137 (2011).

³⁵⁴ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137 (2011).

³⁵⁵ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137 (2011).

³⁵⁶ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 158 (2011).

³⁵⁷ Shawn M. Crincoli, *You Can Only Race if You Can't Win? The Curious Case of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 137

This is not an exhaustive list of female athletes who have either been identified as intersex or failed sex testing in some other fashion. Part of the reason this list is incomplete is that the IAAF attempts to maintain the privacy of athletes, and test results are often not released. Nonetheless, there are indications that during the 1972, 1976, and 1984 Olympics nine athletes were determined to be ineligible as a result of sex testing.³⁵⁸ During the 1996 Summer Olympics in Atlanta eight athletes failed sex testing.³⁵⁹ Reports indicate that of the eight, seven had Androgen Insensitivity Disorder, and the eighth had 5-alpha-reductase deficiency.³⁶⁰ All eight were allowed to compete.³⁶¹

These vignettes illustrate the difficulty in making sex determinations for female athletes. They also highlight the human element involved in these cases. In the majority of cases the women who are sex tested and found to be intersex had no idea of their condition. The results were as much a surprise to them as they were to the officials conducting the tests. Athletic competitions are concerned about the advantage that intersex athletes may have over other female athletes. It is under the banner of fairness that sex testing policies are enacted.

B. The Assumptions in Sex Testing Female Athletes and Why they may be Inaccurate

Sex segregation in sport is based on the assumption that males have more athletic bodies. The larger skeletal frame, muscle mass, lungs, and heart provide males with greater strength. Greater strength results in a competitive advantage for male athletes.

The views expressed by the *Richards* court and the various rules established by the IAAF and the IOC focus on eliminating this advantage. The inherent assumption in this view is that the female athlete is disabled or disadvantaged as compared to the male athlete and the Trans and Intersex athlete who possess elevated levels of androgens or some other advantage conferred by the presence of a male chromosome. This does not discount the very real benefit of the expanded view of sex exemplified by the *Richards* court, nor the attempts by the IAAF and the IOC to be more inclusive over the

(2011). Hyperandrogenism is any of a number of conditions resulting in the secretion of larger than normal levels of androgens.

³⁵⁸ M.A. Ferguson-Smith & Elizabeth A. Ferris, *Gender Verification in Sport: the Need for Change?*, 25 BRITISH J. SPORTS MED. 17, 19 Table 1 (1991).

³⁵⁹ Robert Ritchie et al., *Intersex and the Olympic Games*, 101 J. Royal Soc'y Med. 395, 398 (2008).

³⁶⁰ Robert Ritchie et al., *Intersex and the Olympic Games*, 101 J. Royal Soc'y Med. 395, 398 (2008).

³⁶¹ Robert Ritchie et al., *Intersex and the Olympic Games*, 101 J. Royal Soc'y Med. 395, 398 (2008).

years. It rather forms the covert premise that underlies the rules that govern female sports. In fact, there is no sex testing in male sports, because the assumption is that if a female were to participate, she would possess no genetic advantage.

But a straight comparison between the biological differences between males and females paints an incomplete picture of the dynamic of competitive sports. First, it inherently ignores some of the advantages that female athletes may have over male athletes. Second, it ignores the role that social and economic conditions play in the development of sports.

1. The biological advantages of female athletes

The first major assumption that is ignored in sex testing's assumption that male athletes are biologically advantaged is that female athletes also possess biological advantages. Female athletes' burn fat at a higher ratio to carbohydrates than male athletes during endurance exercises.³⁶² Burning more fat and less carbohydrates is a more efficient use of energy and provides a marked endurance advantage for female athletes.³⁶³ Females also possess more uniformly distributed and efficient sweat glands; helping both with endurance and energy efficiency.³⁶⁴ While females tend to weigh less, they have a higher percentage of body fat.³⁶⁵ A study on intersexual differences within rock-climbing gleaned interesting results regarding the perceived gulf between gender and specific muscle strength, showing in part that there are non-existing or negligible gender differences of specific muscle strength.^{366 367}

³⁶² S.L. Carter, C. Rennie, & M.A. Tarnopolsky, *Substrate Utilization during Endurance Exercise in Men and Women after Endurance Training*, 6 AM. J. PHYSIOLOGY 208 (2001).

³⁶³ S.L. Carter, C. Rennie, & M.A. Tarnopolsky, *Substrate Utilization during Endurance Exercise in Men and Women after Endurance Training*, 6 AM. J. PHYSIOLOGY 208 (2001).

³⁶⁴ Carol L. Rose, *The ERA and Women's Sports: An Hypothetical Trial Case*, in WOMEN AND SPORTS: FROM MYTH TO REALITY 239 (Carole Oglesby ed., 1978) (internal citations omitted).

³⁶⁵ Carol L. Rose, *The ERA and Women's Sports: An Hypothetical Trial Case*, in WOMEN AND SPORTS: FROM MYTH TO REALITY 239 (Carole Oglesby ed., 1978) (internal citations omitted).

³⁶⁶ Kristína Němá, Tomáš Kozák, Patrik Berta, Patrik Bereš, *Intersexual Differences and Relationship of Specific and General Muscle Strength of Young Sports Climbers*, Montenegrin Journal of Sports Science and Medicine, January 2025

³⁶⁷ Carol L. Rose, *The ERA and Women's Sports: An Hypothetical Trial Case*, in WOMEN AND SPORTS: FROM MYTH TO REALITY 239 (Carole Oglesby ed., 1978) (internal citations omitted).

Body fat distribution also makes women more buoyant and thus more efficient swimmers, in particular over^{368,369}

The composition of female bodies establishes some advantages in endurance capabilities. The distribution of sweat glands, the more efficient use of fat and carbohydrates, and the distribution of fat make females more efficient endurance athletes. Interestingly, it has been demonstrated that within ultra-marathon races, the performance gap between sexes reduced with age; elderly female ultra-marathoners (those of 75 years and older) displayed a performance difference of less than 4% compared to male ultra-marathoners.³⁷⁰ This raises the question of whether the supposed gender advantage of males is truthfully less tenuous than is purported, or whether elderly female ultra-marathoners are more individually selected for their exceptional performance.

In competitive ultra-marathon races females fatigue less quickly than males providing them with a distinct biological advantage.³⁷¹ Ultra-marathon runners like Laura McDonough, Rhonda Provost, Pam Reed, and Ann Trason have on several occasions beaten similarly trained men in ultra-marathon races sometimes by hours.³⁷² Courtney Dauwalter won the Moab 240 ultra-marathon by 10 hours over male and female athletes.

Similarly, in the endurance event of ultra-cycling, female racers are competitive with male racers. Seana Hogan, for example, has been competitive with male racers in various ultra-cycling events and on several occasions has beaten male competitors and set race records.³⁷³ Fiona Kolbinger beat male and female athletes in

³⁶⁹ Carol L. Rose, *The ERA and Women's Sports: An Hypothetical Trial Case*, in *WOMEN AND SPORTS: FROM MYTH TO REALITY* 239 (Carole Oglesby ed., 1978) (internal citations omitted).

³⁷⁰ Beat Knechtle, Anja Witthöft, David Valero, Mablidy Thuany, Pantelis T. Nikolaidis, Volker Scheer, Pedro Forte, & Katja Weiss Elderly female ultra-marathoners reduced the gap to male ultra-marathoners in Swiss running races, *Nature Portfolio Scientific Reports*

³⁷¹ J. Bam et al., *Could Women Outrun Men in Ultramarathon Races?* 29 *Med. & Sci. in Sports & Exercise* 244 (1997).

³⁷² Patricia Nell Warren, *Kelly Kulick and Woman vs. Man*, *Outsports* (Feb. 2, 2010) (available at <http://outsports.com/jocktalkblog/2010/02/02/10448/>); Lisa Jung, *Why Women Rule*, *Runner's World* (June 21, 2010) (available at <http://www.runnersworld.com/cda/microsite/article/0,8029,s6-238-511--13593-F,00.html>); Fit and Feminist, *The Secret Feminism of "Born to Run" Pt.1: Women and Ultrarunning*, (Sept. 1, 2011) (available at <http://fitandfeminist.wordpress.com/2011/09/01/the-secret-feminism-of-born-to-run-pt-1-women-and-ultrarunning/>).

³⁷³ Ed Fleming & John Hughes, *UltraCycling Hall of Fame 2004 Inductee Seana Hogan*, http://ultracycling.com/old/about/hof_hogan.html (last accessed October 3, 2012).

the 2019 Transcontinental Race, she was 10 hours ahead of second place.

Two women have won the Iditarod Trail Sled Dog Race.³⁷⁴ Libby Riddles won in 1985, and Susan Butcher won four times between 1986 and 1990, including three consecutive races.³⁷⁵ Butcher is one of only six people to win the Iditarod at least four times.³⁷⁶

In addition to endurance benefits, female athletes' fat distribution makes them more efficient distance swimmers.³⁷⁷ Female athletes are routinely faster than male athletes in open water distance swims and their advantage increases as the distance increases.³⁷⁸ Between 1900 to 2010, in English Channel swim times women regularly performed equal to or better than men.³⁷⁹ Additionally, the typically shorter limbs of women have been found to result in a more horizontal and streamlined position in the water,³⁸⁰ making them more efficient performers. In open-water long-distance swimming events that make up the "Triple Crown of Open Water Swimming" which includes the "Catalina Channel Swim," the "English Channel Swim" and the "Manhattan Island Marathon Swim," women were about 0.06 km/h (0.037 mph) faster than men^{381 382}

In the 10-meter air rifle - the current world records in the qualification rounds as well as finals for women (634 and 252.9 respectively) are higher than those for men (633.5 and 252.8).

Other sports that segregate between female and male athletes focus on the differences in biology. The quintessential example is artistic gymnastics. The two competitions only share two events, the vault and the floor exercise. Females additionally participate in balance beam and uneven bars. Males compete in the pommel horse,

³⁷⁴ Iditarod, *Champions & Record Holders*, <http://iditarod.com/about/champions-records/> (last accessed Oct. 3, 2012).

³⁷⁵ Iditarod, *Champions & Record Holders*, <http://iditarod.com/about/champions-records/> (last accessed Oct. 3, 2012).

³⁷⁶ Iditarod, *Champions & Record Holders*, <http://iditarod.com/about/champions-records/> (last accessed Oct. 3, 2012).

³⁷⁷ Steven Munatones, *Men vs. Women In Endurance Sports*, Active, <http://www.active.com/swimming/Articles/Men-Vs-Women-in-Endurance-Sports.htm?page=3> (last accessed October 3, 2012).

³⁷⁸ Steven Munatones, *Men Vs. Women In Endurance Sports*, Active, <http://www.active.com/swimming/Articles/Men-Vs-Women-in-Endurance-Sports.htm?page=3> (last accessed October 3, 2012).

³⁷⁹ Evelyn Eichenberg et al. (2011)

³⁸⁰ Pendergast DR, di Prampero PE, Craig AB, Wilson DR, Rennie DW, Quantitative analysis of the front crawl in men and women, *J Applied Physiological Respiration Environmental Exercise Physiol.* 1977

³⁸² Beat Knechtle et al. (2020)

high bar, parallel bars, and the still rings. The male events place a greater emphasis on upper body strength, an area where biological factors benefit male athletes. The balance beam advantages a lower center of gravity and the nimbleness that corresponds to smaller body size. The uneven bars are designed to require the athlete to travel from a lower to a higher bar. The position of the bar and the need to travel between the two bars is advantageous to smaller athletes.

The differences in competitive achievement between male and female athletes may have less to do with the advantages of male athletes and more to do with having more sports that prize the athletic advantages that males possess. If sports were instead focused on the advantages of female athletes, female athletes would (and sometimes do) outperform males. Fostering an environment that prizes female athletic advantages may even eliminate the need for sex comparison and reduce the tension over participation by Trans or Intersex athletes.

2. The impact of social and economic conditions on female athletes

At the start of the modern Olympics in 1896 female athletes were excluded. Pierre de Coubertin, the founder of the modern Olympics, explained that female participation would be, “impractical, uninteresting, unaesthetic, and incorrect.”³⁸³

Female athletes began limited participation at the 1900 Olympics in Paris, France.³⁸⁴ More significant participation by female athletes did not begin until the 1930s.³⁸⁵ During this early period female athletic participation was generally discouraged because sports were thought to be too violent.³⁸⁶ The medical community even indicated that participation was bad for reproductive health.³⁸⁷ Criticism of female participation in sports often centered on the erosion of femininity associated with athletic bodies.³⁸⁸ With this in mind, it appears that gender equality in sports cannot be separated from gender equality in the sociocultural sector, and it is therefore necessary to invest economically and take

³⁸³ Paul Caridad, *The First Modern Summer Olympics*, VISUAL NEWS (Aug. 9, 2012) (available at <http://www.visualnews.com/2012/08/09/1896-olympics/>).

³⁸⁴ Paul Caridad, *The First Modern Summer Olympics*, VISUAL NEWS (Aug. 9, 2012) (available at <http://www.visualnews.com/2012/08/09/1896-olympics/>).

³⁸⁵ Kosofsky, *Toward Gender Equality in Professional Sports*, 4 HASTINGS WOMEN S L.J. 209, 218 (1993).

³⁸⁶ Kosofsky, *Toward Gender Equality in Professional Sports*, 4 HASTINGS WOMEN S L.J. 209, 218 (1993).

³⁸⁷ Kosofsky, *Toward Gender Equality in Professional Sports*, 4 HASTINGS WOMEN S L.J. 209, 218 (1993).

³⁸⁸ Kosofsky, *Toward Gender Equality in Professional Sports*, 4 HASTINGS WOMEN S L.J. 209, 218 (1993).

proactive measures to achieve real equity, both in the social and sports contexts alike.

Participation by female athletes increased markedly in the United States with the passage of Title IX of the Education Amendments of 1972.³⁸⁹ Title IX established, “No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance.”³⁹⁰ Title IX required schools to provide equal opportunities for athletic participation for both female and male athletes. The result was a significant increase in the female athletic opportunities in schools from primary through post-secondary. Despite the increased opportunities for female athletes, many of the social attitudes against female participation in sport have been slow to change.³⁹¹ For example of this, it has been determined that women were four times more likely than men to report that their gender or sexual orientation influenced their opportunities in elite sport.³⁹²

Unfortunately, Title IX does not require equal funding for college athletes. The 2021 NCAA men’s and women’s basketball tournament was held in the same location due to the Corona Virus. The event gained viral attention when participants in the women’s tournament posted pictures on social media showing the stark disparities in exercise facilities for men and women, who were separated by a curtain. The men had full gym with multiple sets of various weight and exercise equipment. The women had a set of dumbbells. After the social media backlash, the NCAA commissioned an external report on the disparities between the two events. The NCAA External Gender Equity Review determined that during the 2019 NCAA men’s and women’s basketball tournaments there was a \$35 million funding gap.

NCAA women’s basketball continues to grow in viewership. ESPN reported that the 2022-23 National Championship was viewed by 9.9 million Americans and the Final Four was viewed by an average of 6.5 million, both records.

An analysis of total expenses indicates that Division I athletics departments are generally spending twice as much on their

³⁸⁹ Kosofsky, *Toward Gender Equality in Professional Sports*, 4 HASTINGS WOMEN S L.J. 209, 218 (1993).

³⁹⁰ Although Title IX is primarily seen through the lens of athletic participation, it in fact impacts all areas of education.

³⁹¹ Kosofsky, *Toward Gender Equality in Professional Sports*, 4 HASTINGS WOMEN S L.J. 209, 218 (1993).

³⁹² Sallie M Cowan, You have to work twice as hard as a woman to show that you are competent. Experiences, opportunities and workplace gender harassment for Sport and Exercise Medicine practitioners working in elite sport in Australia, *British Journal of Sports Medicine*, October 2024,

men's programs than on their women's programs. The largest gap in spending occurs at the Football Bowl Subdivision level.

Title IX revolutionized opportunities for female participation in amateur sports, but there has yet to be similar opportunities for professional female athletes. The longest lasting professional organization for female athletes is the Women's National Basketball Association. Although the WNBA provides opportunities for female athletes to participate in professional basketball, the pay for WNBA players is significantly lower than their male counterparts.

The median salary for an NBA player is \$2.5 million.³⁹³ The minimum salary for an NBA player is \$473,604.³⁹⁴ The salary cap for a team of 11 WNBA players is \$878,000.³⁹⁵ There may be a myriad of reasons for the discrepancy that range from the profitability of the two leagues to their age (the NBA has been around for 50 more years). The point remains that there are fewer opportunities for female athletes and fewer incentives to participate even when those opportunities exist. The incentive to put in the time and effort necessary to become a professional athlete is far higher for male athletes than for female athletes because they can obtain significantly higher salaries.³⁹⁶

NBA players currently receive approximately 50% of shared revenue with owners, while WNBA players receive only 20%. WNBA salaries range from \$62,285 to \$234,936. NBA salaries range from \$1,017,781 to \$48,070,014. The NBA salary cap is \$156.98 million, while the WNBA salary cap is \$1.34 million.

The disparity in WNBA and NBA salaries resulted in many WNBA players playing in the Russian league during the offseason. The most profound result of these financial decisions was the arrest of WNBA superstar Brittney Griner for allegedly possessing a vape pen containing marijuana. Griner spent significant time in a Russian prison before President Joe Biden secured her release.

The social and economic conditions associated with female participation in athletics impacts the success of female athletes. Female athletes have participated in organized sports for far fewer

³⁹³ David Woods, *Equal Pay? Not on the Basketball Court*, USA TODAY (May 15, 2012) (available at <http://usatoday30.usatoday.com/sports/basketball/story/2012-05-19/nba-wnba-basketball-salary-disparity/55079608/1>).

³⁹⁴ David Woods, *Equal Pay? Not on the Basketball Court*, USATODAY (May 15, 2012) (available at <http://usatoday30.usatoday.com/sports/basketball/story/2012-05-19/nba-wnba-basketball-salary-disparity/55079608/1>).

³⁹⁵ David Woods, *Equal Pay? Not on the Basketball Court*, USATODAY (May 15, 2012) (available at <http://usatoday30.usatoday.com/sports/basketball/story/2012-05-19/nba-wnba-basketball-salary-disparity/55079608/1>).

³⁹⁶ These are the 2012 or 13 numbers.

years than their male counterparts. Female athletes have fewer opportunities to participate in professional sports. Even when those opportunities exist, they are often paid less. The result is fewer opportunities and fewer incentives for females who do participate in sports, to take the time and training to attain the same athletic performance of male athletes. When younger females are presented with the opportunity to participate in sports they may not have the same level of desire to play at an elite level as males. A study of the promotion of female sports in Switzerland concluded that specific bodies for the promotion of women and girls should be provided with sufficient financial and human resources to have impact beyond visibility³⁹⁷. This same study indicated that attempts to redistribute resources more equally has barring impacts on funding opportunities, underlining the notion that a several-pronged approach considering external pressures, steering impulses and organizational goals are necessary in order to ensure the successful promotion of women and girls in organized sport. The social and economic realities of female sports may be in part responsible for the relative underperformance of female athlete as compared to male athletes.

Sex testing in sports is primarily directed at ensuring fair play and eliminating any advantages that certain female athletes or male athletes masquerading as females may have in participating in female athletic events. The push for fairness has resulted in two unforeseen consequences. First, many Trans and Intersex athletes have been excluded from participating in female sports even though they were considered female in other aspects of life. The sports community has taken steps to attempt to broaden participation by recognizing that some Intersex and Trans athletes may not possess advantages associated with male biology. Nonetheless, certain Intersex and Trans athletes are still excluded because they are perceived to possess those advantages. The persistent view about these advantage leads to the second consequence. Female athletes under this mechanism are treated as disadvantaged or less-than male athletes. This view is problematic for two reasons: (1) female athletes do have some physical advantages over male athletes, but most sports prize male athletic ability, and (2) social and economic conditions have created decades of advantages for male athletes that are not present for female athletes. The presence of Trans and Intersex athletes highlights these two issues and further illustrates the problems with perceptions of sex as fixed and divided.

³⁹⁷ Sarah Vögli, Matthias Buser, Siegfried Nagel, The promotion of women and girls in Swiss sports associations: Addressing, launching, and implementing decision-making structures and promotion programmes, *Current Issues in Sports Sciences*, February 2023

IV. Conclusion

The Executive Order on “Defending Women from Gender Ideology Extremism and Restoring Biological Truth to the Federal Government” asserts the reality of biological sex is easy and straightforward. It asserts a simplistic, binary stance: at conception men have a small reproductive cell, and women have a large reproductive cell. The size of the reproductive cell establishes your sex and gender as dimorphic and immutable. Under this view, gender identity is not part of biological reality and is irrelevant to sex or gender. Examination of scientific and medical evidence reveals, however, that the actual biological reality of sex cannot be determined at fertilization and even in embryonic and fetal growth it involves “[a] bewildering number of hormones and growth factors.” Gender identity is part of the biological reality of sex and has been identified as playing an important role in medical and scientific journals and practice for decades. Far from being straightforward, sex is a complicated set of factors most of which are not immutable. Denying the actual biological reality of sex for an allegedly simple rule not only denies the scientific and medical reality but also peoples lived experiences.