

COMPARING BIOLOGICAL SEX TRAITS FOR PURPOSES OF GIRLS' AND WOMEN'S SPORT

from IAAF Exhibit in Semenya and ASA v. IAAF

	Typical Male	Person with 5-ARD (not on hormones)	Person who is Transgender MTF (not on hormones)	Typical Female
Chromosomes	46 XY	46 XY	46 XY	46 XX
Gonads and Gametes	Testes & Sperm	Testes & Sperm	Testes & Sperm	Ovaries & Eggs
Endocrine system and sex hormones¹	Androgenic T levels in male range	Androgenic T levels in male range	Androgenic T levels in male range	Estrogenic T levels in female range
Primary sex characteristics (develop in utero)	Testes, epididymis & vas deferens, prostate	Testes, epididymis & vas deferens, prostate ²	Testes, epididymis & vas deferens, prostate	Ovaries, fallopian tubes, uterus, vagina
Virilisation on puberty	Yes	Yes	Yes	No
Secondary sex characteristics (develop at puberty)	Male	Male	Male	Female
External genitalia³	Penis, scrotum	Varies	Penis, scrotum	Clitoris, labia
Legal sex⁴	Male	Varies	Varies	Female
Gender identity	Male	Varies	Female	Female

¹ Circulating testosterone concentration is used here as a marker of hormonal sex. When measured by LCMS, the 95% confidence limits are for the male range 7.7 to 29.4 nmol/L and for the female range (no PCOS) 0.06 to 1.68 nmol/L. Readings for females with PCOS may extend to 4.8 nmol/L (99.99% confidence limits). David J. Handelsman et al., Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance, *Endocrine Reviews*, Oct. 2018, available at https://academic.oup.com/edrv/article/39/5/803/5052770?itm_medium=sidebar&itm_content=edrv&itm_source=trendmd-widget&itm_campaign=trendmd-pilot

² Individuals with 5-ARD have an un- or -underdeveloped prostate.

³ Phenotype depends on the degree of the individual's AR deficiency. Presentations range from almost fully masculinized to feminized. See Kang et al., 5 α -reductase-2 Deficiency's Effect on Human Fertility, Fertility and Sterility, Feb. 2014, available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4031759/>

⁴ Some jurisdictions and legal systems allow change in legal sex before/without physical transition, others do not.

Figure 3: Exhibit from the [Court of Arbitration for Sport case](#), Mokgadi Castor Semenya vs Athletics South Africa. First republished in Doriane Lambelet Coleman, "[Semenya and ASA v IAAF: Affirming the Lawfulness of a Sex-Based Eligibility Rule for the Women's Category in Elite Sport](#)," 19 *Sweet & Maxwell's International Sports Law Review* 83-90 (2019)