Twitter Thread by Kirsti Miller

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Initial methods used to verify the gender of female athletes involved physical inspection of the athlete’s external genitalia.

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To spare athletes such embarrass- ment, from the outset Olympic officials relied on the technology of medical genetics for an alternative, less invasive solution.

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After successful trialling of the protocol at the 1968 Winter Olympics held in Grenoble, France, all female athletes participating in the Mexico City Summer Games later that year were tested by histological (micro- scopic) inspection for the presence of a Barr body...
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in cells scraped from the buccal (cheek) mucosa. Although such laboratory based testing held certain advantages, there were also acknowledged limitations to the methodology.
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Beginning with the 1992 Albertville Winter Olympics, in an effort to further improve on the sensitivity and specificity of testing, gender verification was performed by polymerase chain reaction (PCR) determination of the absence or presence of DNA sequences.....
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from the testes-determining gene located on the Y chromosome.

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Although the PCR technique was supposed to identify uniquely male DNA sequences, further investigation revealed that at least one of the DNA sequences used to prime the PCR...
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was in fact not specific to males, and may have contributed to an unfortu- nate number of false positive test results.

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Over time, it therefore became evident that laboratory based methods of determining an athlete’s sex were simply inadequate for the task at hand.
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The attempt to rely on genetic testing methods of sex determination had opened up a veritable Pandora’s box of problems for both athletes and officials.
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Not infrequently, the genetic based testing identified an athlete whose phenotype was clearly female as having an apparently male genotype.
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The most common of these ‘‘intersex states’’ is the condition of androgen insensitivity,12 affecting about 1 in 60 000 males.
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Individuals with this condition have a 46XY genotype (the typical male chromo- somal make up), but fail to develop male sex characteristics because their cells cannot respond to the circulating male hormone (testosterone) in their bodies.
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Although the presence of the Y chromosome makes these individuals genetically male, they are phenotypically female—that is, they have a female morphotype and physiology—and they are usually raised socially as females.
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The presence of the Y chromosome (and more importantly, circulating testoster- one) confers no physical advantage on them.
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Seven of the eight athletes with non-negative gender verification tests (performed by PCR) during the 1996 Atlanta Summer Olympic Games were determined to have the condition of androgen insensitivity and were ultimately permitted to compete in the Games.
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The eighth athlete was confirmed to have a less common intersex condition and was also allowed to compete.
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The accepted laboratory based scientific methodology of verifying an athlete’s sex during the period leading up to the Sydney Olympic Games therefore relatively frequently, but unfairly,...
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singled out female athletes whose genetic make up (although not ‘‘normal’’) did not provide them with an undue competitive advantage.
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Moreover, genetic testing alone also commonly failed to identify female athletes whose physiology would in fact give them a competitive advan- tage—for example, individuals with virilising forms of congenital adrenal hyperplasia.
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Further complicating mat- ters, it had become painfully obvious that genetic based testing also failed to account for the psychosocial components of gender.
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Numerous athletes suffered tremendous psycho- logical harm from the public scrutiny that ensued following the public disclosure of abnormal test results.
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For these reasons, the scientific and sports medicine communities ultimately stood unanimous in their public opposition to the practice of genetic based gender verification testing.
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By 2000, 29 of the 34 international sports federations had abandoned routine gender verification testing.3 In some instances sports federations devised alternative strategies to solve the perceived problem of potential sex fraud.
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For example, in the early 1990s the IAAF replaced genetic based testing with a mandatory, comprehensive health assessment for male and female athletes alike.
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Interestingly, the FIVB was one of the five international sports federations that had yet to rescind their requirement for gender verification before the Sydney Games.
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In the 4 Summer Olympic Games and the 5 Winter Games that have transpired since that decision, there have been no published reports of attempted gender misrepresentation and,...
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given the media and public attention lavished on Olympic athletes in this day and age, it seems highly unlikely to occur in the future.
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Ironically, one additional deterrent to widespread (or even attempted) gender misrepresentation is the requirement that the athlete’s urethral meatus be visualised upon submission of a urine sample for doping control.
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Although clearly not meant to substitute for the crude femininity testing used decades ago, in practical terms it almost assuredly serves a similar, if unintended, role in that regard.

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I will address from 2009 to 2020 the @WorldAthletics disasters in a separate thread later this week.
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