

## Differences between Men and Women as Athletes: The Science

This is provided as written material to accompany the testimony of Cynthia GH King

### 1.) Height and Weight – the most obvious difference

- In the United States, men average 5'10" in height and 199 pounds in weight, and women average 5'4" in height and 169 pounds in weight.
- Proportionately men are 9% taller and 18% heavier than women.
- In a physical confrontation, men are 6 inches taller and 30 pounds heavier than women.
- While statistics vary by country, out of 130 countries for which data is reported, in every country without exception, men are not both taller and heavier, on average, than women.
- This is true for both more-developed and less developed countries. Living in a more-developed country provides no field-leveling effect for women.
- Americans having a larger difference in height between men and women, the worldwide average by country is that men are 7% taller.

I learned the above from: <https://www.worlddata.info/average-bodyheight.php> (Data converted from metric to US measures.)

### 2.) Less Obvious Differences between Men and Women

- A. Men have greater muscle mass, bone mass, and less body fat than women proportional to height and weight. A man and a woman who eat and exercise in identical amounts will not receive the same increase in muscle and bone for the same effort.
- B. Men have larger lungs, wider airways, and greater lung diffusion capacity than women. This difference is greater than would be predicted by simply adjusting for men's greater height.
- C. The left side of a man's heart is larger, both the walls and the left ventricle chamber, than the same areas of a woman's heart.
- D. One stroke of a man's heartbeat moves disproportionately more blood volume than one stroke of a woman's heart, when, proportionally, the woman's heart is working just as hard.
- E. Women have a lower resting blood pressure and a higher resting heart rate: See above statement, that women's hearts have to work harder to move blood.
- F. Women have 80% of the cases of osteoporosis; which is a gradual disease and may relate to thinning of bones much earlier. This is partially related to the ratio of testosterone and estrogen in bone metabolism.

I learned the above from:

Sex-based differences in physiology: what should we teach in the medical curriculum? Marth L. Blair, January 1, 2007, <https://journals.physiology.org/doi/full/10.1152/advan.00118.2006>

### 3. Health Issues Only Biological Women Have That Can Interfere With Sports Performance:

- A. For women with medium to large breasts, bouncing during strenuous movement such as running is both painful and damaging. To keep from bouncing, women wear “sports bras” which dampen breast movement by crushing them against her ribs which inhibits her ability to breathe freely during exercise. Many women wear 2 sports bras at the same time to be effective.
- B. A woman’s stride length averages 52 inches, a man’s averages 62 inches, or nearly 20% longer. Therefore, it takes more steps for a woman to cover the same distance as a man.
- C. Women have both shorter and narrower feet than men, both because the women are smaller, and in proportion of their height.
- D. Menstrual cramps – which tend to be worse in teens and young women.
- E. Menstrual headaches
- F. Bleeding for up to 7 days as the maximum normal range. The bleeding may begin suddenly, and unexpectedly and, because women’s bodies do not work like clockwork, women often do not know when this is going to happen.
- G. Menstruation-related nausea, diarrhea, and constipation
- H. Iron deficiency anemia related to blood loss during menstruation
- I. Water retention and bloating affects up to 92% of women during their periods. To be clear: when women gain weight each month, it is not fat or muscle or bone. It is bloating: that means additional fluid to carry around without additional muscle to carry it.
- J. Backache
- K. Many articles discuss irritability or mood swings as a separate, direct effect of menstruation, but it is worth pointing out: if anyone of any age or either sex experienced sudden bleeding lasting days, bloating, stomach cramps, headaches, backaches, and bowel symptoms, they would be cranky.
- L.
- M. In spite of all of this happening to most women every month for 40 years, women carry on doing their jobs, caring for their families, and participate in sports. Demanding that women must only participate in sports if they compete against men, people in male bodies, even if those men sincerely wish and believe they should have been born women, is unfair to women.

My sources:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4362892/>

<https://www.womenshealth.gov/menstrual-cycle/premenstrual-syndrome>

Mayo Clinic on line,

<https://ouhsc.edu/bserdac/dthompso/web/gait/knematics/stride.htm> – University of Oklahoma, stride analysis, done by Murray, Drought, Kory, and Sepic.

[https://journals.lww.com/acsm-](https://journals.lww.com/acsm-msse/Fulltext/2001/04000/Gender_differences_in_adult_foot_shape_.15.aspx)

[msse/Fulltext/2001/04000/Gender\\_differences\\_in\\_adult\\_foot\\_shape\\_.15.aspx](https://journals.lww.com/acsm-msse/Fulltext/2001/04000/Gender_differences_in_adult_foot_shape_.15.aspx) - Gender differences in adult foot shape: implications for shoe design, R.E. Wunderlich and P.R. Cavanaugh, April 2001, Journal of American College of Sports Medicine

And 60+ years’ experience being a woman.