

February 13, 2023

The Hon. Vanessa E. Atterbeary, Chair
Ways & Means Committee
Maryland General Assembly
House Office Building, Room 131
6 Bladen St. Annapolis MD 21401

Written testimony opposing bill HB0359

Dear Chairperson Atterbeary:

My name is Justin Gibson. I have a bachelor's degree in kinesiology and a master's degree in biomechanics, both from the University of Kentucky. I was a certified personal trainer for more than 10 years and worked with countless cis and trans men and women during my career. It is my professional opinion that the aim of HB 359 is untenable on scientific grounds.

Categories are necessary to achieve some level of fairness in sport, whether they are based on age, weight, or sex. But the reasoning behind sex categories in sport is in no way supported by this bill's definition of sex as binary and immutable.

We have male and female categories because starting at puberty, males –on average– have much higher levels of testosterone that lead to the athletic advantages outlined in the text of this bill: larger muscles, stronger bones, tendons, and ligaments, and more oxygen-carrying capacity in the blood [1]. We have male and female categories because *hormonal differences* directly and primarily determine the performance gap between men and women [2-6]. Hormonal differences are *not* binary and *absolutely* subject to change. Specifically, the exact hormones responsible for the sex categorization in sport are also the hormones involved in puberty suppression and gender-affirming hormone replacement therapy. To say that sex is “objectively determined by genetics and anatomy existing at the time of birth” would be to use a definition of sex that has nothing to do with sport and that your reproductive anatomy determines your athletic success. This is, of course, ridiculous.

The bill tries to address this issue by quoting a study by Hilton and Lundberg [7], which argued that the muscle mass advantage of trans women is maintained after a year of testosterone suppression. The bill, incorrectly, uses this study to claim that “the benefits that natural testosterone provides to male athletes are not diminished through the use of puberty blockers and cross-sex hormones.” This is false. Hormone replacement therapy substantially decreases the muscle mass and oxygen-carrying capacity of trans women, as shown by the Hilton and Lundberg paper itself. The question is whether or not those factors were reduced to the level of cis women, which the paper argues they were not. However, the trans women in these studies were on average quite a few inches taller than the reference cis women. Taller people, regardless of sex, require more muscle on their frame to meet the same standards of fitness [8]. To meet this standard Hilton and Lundberg set, the average untrained 5'9” trans woman would

have to possess no more muscle mass than the average untrained 5'4" cis woman [\[9\]](#). This would render the trans woman emaciated, a walking skeleton far more at home in the ICU than on the athletic field. Combine this with the national uproar anytime a trans girl or woman wins a competition and you have a standard of fairness that demands they never stood a chance.

This bill does not agree with itself. It creates a binary and immutable category of biological sex that has no direct bearing on sports performance (anatomy at birth), then justifies this category with adaptable and fluid characteristics that do (hormones and their effects). Trans boys and men will dominate the female category of sport because of their birth anatomy, and trans girls and women will be effectively excluded from athletics because of their hormones. Instead of saving women's sport, this bill not only guarantees the problem it set out to solve but ensures that certain girls and women are denied the opportunities to demonstrate their skill, strength, and athletic abilities in fair competition. It fails in its stated purpose on scientific grounds and only serves to target an already marginalized group to further rob them of opportunity.

Protect women and girls. Vote against this bill.

Respectfully submitted,

Justin Gibson, MS

References

1. Handelsman, D. J., Hirschberg, A. L., & Berman, S. (2018). Circulating testosterone as the hormonal basis of sex differences in athletic performance. *Endocrine reviews*, 39(5), 803-829.
2. Griggs, R. C., Kingston, W. I. L. L. I. A. M., Jozefowicz, R. F., Herr, B. E., Forbes, G. I. L. B. E. R. T., & Halliday, D. A. V. I. D. (1989). Effect of testosterone on muscle mass and muscle protein synthesis. *Journal of Applied Physiology*, 66(1), 498-503.
3. Thum, T., & Borlak, J. (2002). Testosterone, cytochrome P450, and cardiac hypertrophy. *The FASEB Journal*, 16(12), 1537-1549.
4. Tuck, S., & Francis, R. (2009). Testosterone, bone and osteoporosis. *Advances in the management of testosterone deficiency*, 37, 123-132.
5. BOURGUIGNON, J. P., VANDEWEGHE, M., VANDERSCHUEREN-LODEWEYCKX, M. A. G. D. A., Malvaux, P., WOLTER, R., CAJU, M. D., & ERNOULD, C. (1986). Pubertal growth and final height in hypopituitary boys: a minor role of bone age at onset of puberty. *The Journal of Clinical Endocrinology & Metabolism*, 63(2), 376-382.
6. Bachman, E., Travison, T. G., Basaria, S., Davda, M. N., Guo, W., Li, M., ... & Bhasin, S. (2014). Testosterone induces erythrocytosis via increased erythropoietin and suppressed hepcidin: evidence for a new erythropoietin/hemoglobin set point. *Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences*, 69(6), 725-735.
7. Hilton, E. N., & Lundberg, T. R. (2020). Transgender Women in the Female Category of Sport: Perspectives on Testosterone Suppression and Performance Advantage. *Sports Medicine*, 1-16.
8. Ford, L. E., Dettlerline, A. J., Ho, K. K., & Cao, W. (2000). Gender-and height-related limits of muscle strength in world weightlifting champions. *Journal of Applied Physiology*, 89(3), 1061-1064.
9. Forbes, G. B. (1974). Stature and lean body mass. *The American journal of clinical nutrition*, 27(6), 595-602.