

**Letter to the editor from Kirk & Stebbings: “The Impact of Gender-Affirming Hormone Therapy on Physical Performance”**

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1 Letter to the editor from Kirk & Stebbings: “The Impact of Gender-Affirming Hormone Therapy  
2 on Physical Performance”.

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22 The recent article by Cheung et al.[1] provided a review of studies examining the effects of gender-  
23 affirming hormone therapy (GAHT) on physical performance, with a focus on the inclusion of  
24 transgender people in competitive sports.

25 The authors state throughout that differences between sexes are mitigated when absolute measures are  
26 'corrected' by stature (termed height by the authors) or mass. The use of 'corrected' is questionable, as  
27 this suggests absolute data are 'incorrect'. When data are expressed relative to morphology they are  
28 'adjusted' not 'corrected'. Even accepting this terminology, much of the argument is based on  
29 adjustment of absolute measures by stature, rather than the standard mass, without justification.  
30 Nonetheless, there is no attempt to address performance advantages provided by greater stature that  
31 overwhelmingly occurs in males[2,3]. Importantly, when GAHT is applied prior to puberty, males still  
32 reach their expected stature[4]. Thus, taking the author's argument to its logical conclusion: if sex  
33 categories were to be removed (assuming relative measures based on stature are equal between the two  
34 sexes), stature categories would be required instead to ensure competition was still fair.

35 Differences in absolute measures[5] are reported but largely ignored by the authors. Whilst transwomen  
36 (TW) and females were found to have similar relative  $\dot{V}O_{2peak}$  and strength after 14 years, this likely  
37 only occurred due to TW being ~16kg heavier and ~13cm taller than females due to their male  
38 morphology. Relative measures of strength will always 'favour' the smaller person (who in this context  
39 will typically be female) due to the non-linear relationship between muscle mass and force[6]. Indeed,  
40 for two hypothetical athletes of 95kg and 65kg who have equal relative strength, the heavier person will  
41 always outperform the lighter person in a test of force. Even when matched by mass, males outperform  
42 females in strength events[7], therefore disparities in morphology between TW and females renders any  
43 extrapolation of relative measures to a real-world context null. As such, absolute measures should  
44 always be considered alongside relative measures, as TW retain significant advantages over females in  
45 absolute strength (16%),  $\dot{V}O_{2peak}$  (22%),  $\dot{V}O_2$  at the anaerobic threshold (18%), and  $O_2$  pulse (17%)[5].  
46 Omitting any discussion of these results was a questionable choice given the importance of these  
47 variables in understanding differences between performance standards[8].

48 The conclusions do not reflect the contents of the paper, instead focusing entirely on two studies from  
49 the same observational population without controls whilst ignoring the Alvares et al.[5] data in both the  
50 body of the conclusion and the abstract. Additionally, the conclusion states “*Reasonable*  
51 *accommodations for the inclusion of trans people are sport specific and could be based on the range of*  
52 *competitive advantages and abilities that are already accepted in the cisgender population*”. For this to  
53 be a relevant conclusion, the authors would need to: state which specific ‘advantages’ they are referring  
54 to; provide evidence that these ‘advantages’ explain performance differences within sex and  
55 performance standards; demonstrate that these ‘advantages’ are equal to or greater than the inherent  
56 male performance advantages outlined by the authors themselves. As none of these details are provided,  
57 this paragraph is unsupported opinion.

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