

Sport, exercise and the menstrual cycle: where is the research?

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Despite a decreasing gender gap in exercise participation, there still remains a significant underrepresentation of women included in sport and exercise medicine research studies.[1] A review of 1382 sport and exercise research studies involving over six million participants between 2011-2013 found the representation of women to be 39%.[1] The complexities of the menstrual cycle are considered major barriers to the inclusion of women in clinical trials.

Historically, partially due to concerns of potentially damaging unborn fetuses, medical trials including drug trials, were conducted solely in men. Further, women were perceived as more physiologically variable, therefore utilising only male subjects would allow meaningful results with fewer participants and less funding. Because men were viewed as adequate proxies for women, the years of exclusion of female subjects from research were considered inconsequential. However, it is now known that women can respond very differently than men to drug treatments. Evidence suggests that women are almost twice as likely to have an adverse reaction to a drug than a male counterpart, and 80% of drugs withdrawn from the market are due to unacceptable side effects in women.[2]

When research involving exercise metabolism includes women, participants are often tested in the early follicular phase of their menstrual cycle, when hormone levels are at their lowest, in order to minimise the possible impacts oestradiol and progesterone may have on the study outcomes.[3] This type of research practice leaves much ambiguity around how such hormones may influence the unique physiological processes in women, from blood pressure to substrate metabolism, thus perpetuating the significant gap in understanding how the menstrual cycle impacts exercise performance. Sheel (2016) recently described a number of sex differences in the physiological response to exercise, likely caused in part by ovarian hormones highlighting a lack of understanding and a need for further research.[4]

We recently reported that 41.7% of exercising women believe there to be a negative impact of their menstrual cycle on exercise training and performance.[5] However, largely due to the dearth of sports and exercise research in women, explanations for this are lacking. Heavy menstrual bleeding with unknown or undiagnosed iron deficiency could be a cause but this is speculative.

There is a clear need to gain a better understanding of female physiology and to define the effects of the cyclical variations in hormones, both positive and negative, upon athletic performance. A greater understanding of the menstrual cycle is needed to address the reported negative impacts on exercise training in order to encourage participation and avoid further disparity in gender representation.

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