

Menstrual cycles and impact upon performance in elite athletes; a longitudinal study

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Introduction and Objectives

Athletic performance is a multifaceted concept, comprising a variety of physical, psychological, emotional, and environmental variables. Whilst the primary effect of the menstrual cycle is on the reproductive system, the pulsatile release of ovarian hormones can impact physiological functioning throughout the body, and as such has the potential to positively or negatively impact sporting performance. Whilst data remains scarce, it suggests that athletic performance is inconsistent across the menstrual cycle, and symptoms of menstruation itself can impact training and performance potential.(4) As women compete at every phase of the menstrual cycle, and during menstruation itself, understanding its impact on athletes’ performance, and whether any detrimental effect is caused is essential. The aim of this study is to assess for menstrual disorders and the effect of menstrual cycles upon performance in elite British track and field athletes.

Methodology

A questionnaire was sent to participants every 6 months, over a five-year period between 1st October 2014 and 1st October 2019. The questions assessed details about their menstrual cycles and premenstrual symptoms, as well as their perception of the impact of these on athletic performance.

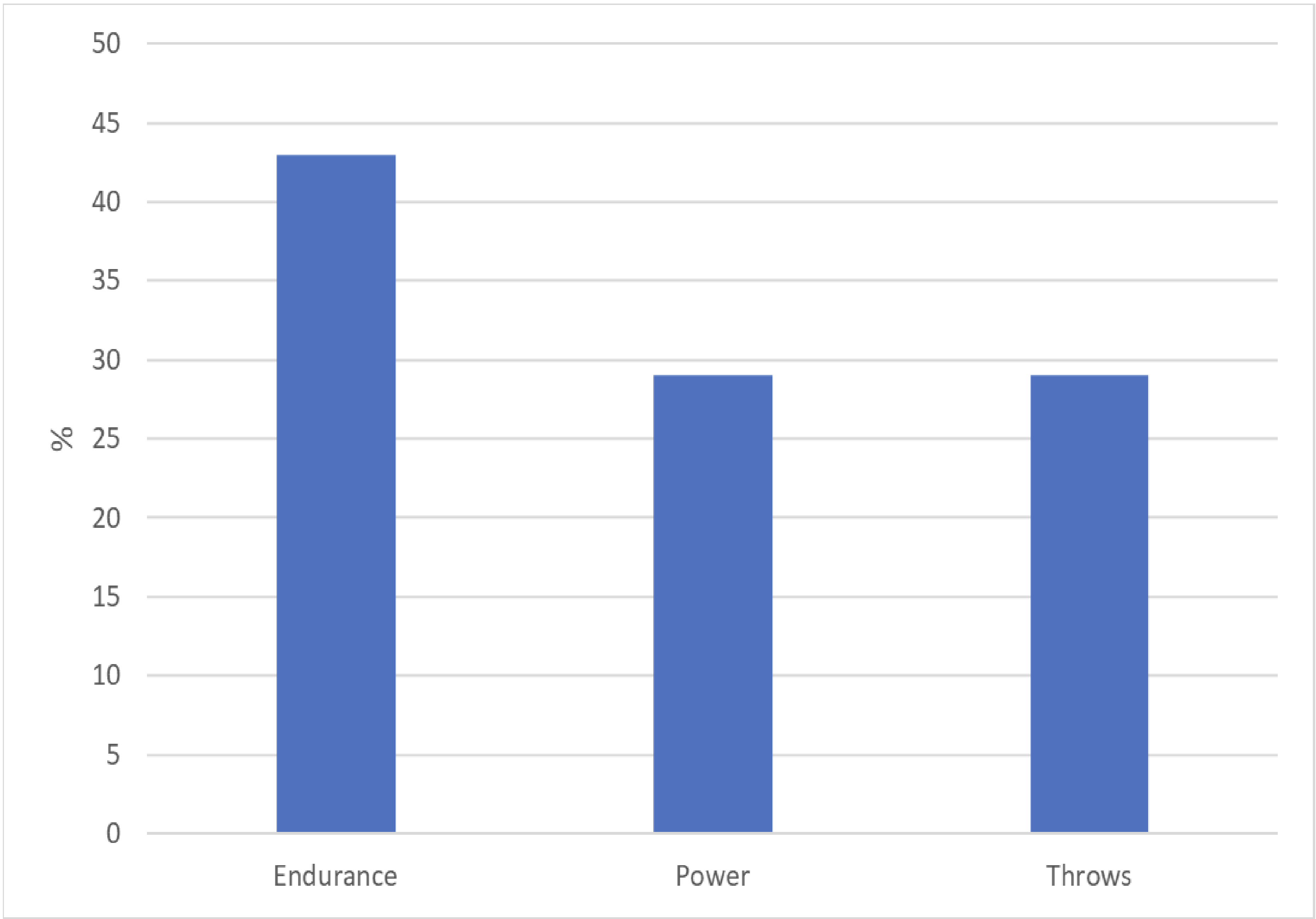


Figure 1 - Proportion of athletes with menstrual dysregulation by event

Results

128 athletes responded to the questionnaires, a mean number of 4.2 (+/- 2.9) occasions. The mean age at menarche was 13.5±1.4 years. Endurance athletes had a significantly later mean age of menarche at 14.2 ± 1.4 years, compared to power athletes (13.4 ± 1.3 years), and the throwers who were the youngest at 12.8 ±1.4 years (p<0.05). Two-thirds of the athletes reported that their cycles were consistently regular (66%; n=82), 30% (n=37) reported their cycles to be irregular at some point throughout the period of observation and 4% (n=5) women reported themselves to be amenorrhoeic. In those who described their cycles as regular, 43% (n=35) had intercycle variation of >5days in the preceding six months, suggesting objective irregularity. 87 athletes (68%) reported painful periods and 40 athletes (31%) reported heavy menstrual bleeding. More than three quarters (76.8%%; n=96) described that their cycle negatively affected performance. Of those who reported when this impact was (n=91), 40% (n=36) reported it in the late luteal phase and 35% (n=32) reported it during the early follicular phase. 79% (n=100) of the athletes reported at least one premenstrual syndrome symptom, the most frequent of which were bloating, lower back pain and pelvic pain.

Conclusion

This study gives a unique insight into the menstrual cycles of elite track and field athletes in the UK, by clearly highlighting the prevalence and subsequent impact of menstrual-related symptoms and irregularities. Despite the absence of high-quality data identifying any significant impact of menstrual phase upon performance, we clearly identify herein that top-level athletes perceive their performance to vary throughout the menstrual cycle, with the majority reporting inferior performance during the late luteal or early follicular phases, whilst circulating estrogen levels are low. The data presented herein underscores the need for more comprehensive support and education for female athletes regarding menstrual health, and the need for individualised, multi-disciplinary strategies to help mitigate the negative impact of menstrual dysfunction to optimise athlete health as well as their performance.