

Your Cycle, Your Strength

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It's time to shed the narrative that the menstrual cycle directly correlates to performance outcomes.

Many individuals are led to believe that they can only optimize their training during just two weeks out of the month, but a widespread of research demonstrates that the menstrual cycle itself does not impact performance outcomes (Colenso-Semple *et al.*, 2023). Research shows a lack of data supporting any evidence that training should be periodized based on the phases of the menstrual cycle (Julian & Sargent, 2020). However, shifts in hormone levels and shedding of the uterine lining can cause some substantial changes in the body on top of menstrual-related symptoms that can influence one's motivation to train.

Physiology of the Menstrual Cycle

The menstrual cycle, which tends to occur between 21-35 days, is a series of events preparing the uterus for pregnancy. While traditionally divided into the follicular phase and the luteal phase, research often utilizes sub-phases (early/late follicular, ovulatory, early/mid/late luteal) to better reflect the dynamic hormonal changes. These sub-phases are characterized by fluctuations in estrogen, progesterone, follicular stimulating hormone (FSH), and luteinizing hormone (LH) acting as powerful chemical messengers that orchestrate a symphony of physiological changes throughout the menstrual cycle (Carmichael *et al.*, 2021). The follicular phase, *beginning* with menstruation and low hormone levels, sees a rise in estrogen that

leads to an LH surge that triggers ovulation. Following ovulation, the early luteal phase involves the corpus luteum (temporary hormone-producing structure for potential pregnancy) forming and secreting estrogen and a significant amount of progesterone which will then peak in the mid-luteal phase to prepare for potential conception. If conception does not occur, hormone levels decline, leading to menstruation where the cycle restarts (Carmichael *et al.*, 2021).

Symptoms

While many athletes feel their physical abilities decline leading up to and during their period, as previously mentioned, existing studies do not support this perception. It is important to recognize and acknowledge that this perceived decline in performance often goes hand-in-hand with experiencing menstrual-related symptoms that can negatively impact an individual's ability and/or motivation to train. Due to the changes in hormones and shedding of the corpus luteum, menstrual-related symptoms can:

- cause discomfort
- result in a struggle to focus
- affect moods
- increase stress and/or anxiety levels

More seriously, if these symptoms become severe resulting in significant hindrances in training where training sessions and competitions are missed, it is important to

refer to a physician and/or gynecologist as symptom severity could potentially relate to something more serious such as iron deficiency (ID), relative energy deficiency syndrome (REDs), or polycystic ovary syndrome (PCOS).

Tracking

Unless symptoms become severe (where a consultation with a medical professional is important), athletes should be proactive in managing their menstrual-related symptoms to avoid/reduce any impediments from their cycle. Therefore, it is more important than ever to track the menstrual cycle which is considered one of the best ways to monitor and alleviate symptoms. Tracking helps to:

- predict onset of menstrual-related symptoms that might be experienced
 - anticipating these symptoms leads to taking appropriate steps to manage them
- acknowledge if additional:
 - recovery time is needed
 - nutritional support is needed
 - stress management techniques are needed
- identify irregularities in the cycle, which can be a sign of underlying health issues

By tracking the cycle, athletes can become more body aware which can provide them with empowerment to take control of their health and performance.

Contraceptives

Even individuals who take hormonal contraceptives, commonly known as "the pill," should track their cycle as well. Hormonal contraceptives utilize synthetic hormones to prevent pregnancy. Unlike a

natural menstrual cycle, hormonal contraceptives suppress ovulation, meaning an egg is not released. This fundamental difference in hormonal function means that the hormonal profile of someone using hormonal contraceptives is altered compared to those experiencing a natural menstrual cycle (Smith *et al.*, 2024). However, symptoms and irregularities can arise even when using hormonal contraceptives regardless of if the cycle is not natural. Much like a eumenorrheic cycle, contraceptives do not have a direct impact on performance but can foster symptoms that may hinder training.

Injury

While enhancing sports performance is a top priority in athletics, injury prevention and reduction are equally, if not more, crucial. Many athletes wonder if their menstrual cycle influences their risk of injury, similar to how it might affect performance. While there may be a suspected link between the menstrual cycle and injury predisposition, a definitive correlation has yet to be established (Martínez-Fortuny *et al.*, 2023). Despite this, it is important to understand the nuances of this relationship, as factors like hormonal fluctuations and menstrual irregularities can indirectly influence an athlete's overall well-being and potentially contribute to injury risk.

The Future for Females

With all this being acknowledged, it is extremely clear that more research is needed! Research highlights a significant gender gap in sports and exercise science where women are severely underrepresented as participants in studies, and very few studies focus specifically on women's physiology.

This lack of research hinders the understanding of how sex and gender impact sports and exercise outcomes (Cowley *et al.*, 2021). To address this imbalance, future research must prioritize the inclusion of

women and utilize best practices to ensure equitable and high-quality research for both sexes. This will lead to better support and optimized health and performance outcomes for female athletes.

References:

- Carmichael, M.A., Thomson, R.L., Moran, L.J., Wycherley, T.P. (2021). The Impact of Menstrual Cycle Phase on Athletes' Performance: A Narrative Review. *Int J Environ Res Public Health*. DOI: 10.3390/ijerph18041667
- Colenso-Semple L.M., D'Souza A.C., Elliott-Sale K.J., Phillips S.M. (2023) Current evidence shows no influence of women's menstrual cycle phase on acute strength performance or adaptations to resistance exercise training. *Front Sports Act Living*. DOI: 10.3389/fspor.2023.1054542.
- Cowley, E.S., Olenick, A.A., McNulty, K.L., Ross, E.Z. (2021). "Invisible Sportswomen": the Sex Data Gap in Sport and Exercise Science Research. *Women in Sport and Physical Activity Journal*. DOI: 10.1123/wspaj.2021-0028
- Julian, R., & Sargent, D. (2020). Periodisation: tailoring training based on the menstrual cycle may work in theory but can they be used in practice? *Science and Medicine in Football*. DOI: 10.1080/24733938.2020.1828615
- Martínez-Fortuny, N., Alonso-Calvete, A., Da Cuña-Carrera, I., Abalo-Núñez, R. (2023). Menstrual Cycle and Sport Injuries: A Systematic Review. *Int J Environ Res Public Health*. DOI: 10.3390/ijerph20043264.
- Smith, E.S., Weakley, J., McKay, A.K.A., McCormick, R., Tee, N., Kuikman, M.A., Harris, R., Minahan, C., Buxton, S., Skinner, J., Ackerman, K.E., Elliott-Sale, K.J., Stellingwerff, T., Burke, L.M. (2024). Minimal influence of the menstrual cycle or hormonal contraceptives on performance in female rugby league athletes. *Eur J Sport Sci*. DOI: 10.1002/ejsc.12151.