

Coaching Athletes to Train & Race With a Period

Elizabeth Carey
Wildwood Running Wednesday, June 2020

OUTLINE

- Taboo
- The menstrual cycle refresher
- Breakdown of phases
- Tips
- Questions



Photo credit: Steens Mountain Running Camp/Kevin Jantzer

EXPERTS

- Healthcare provider (MD, DO, RN, NP, endocrinologist, PA)
- Registered dietitian (RD)
- Exercise physiology/sports med researchers (PhD)
- Mental health experts (Psych, certifications/licenses)



Photo credit: Steens Mountain Running Camp/Kevin Jantzer

Disclaimer: Not medical advice

OUTLINE

- Taboo





POLL

What's your understanding of the menstrual cycle? How about how it affects health, performance, and longevity in sport?

TABOO

74% reported their menstrual cycle negatively affected their performance

1 out of 3 women have missed work as result of their menstrual cycle

82% of female athletes reported that they never discussed their menstrual cycle with their coach

72% received no education regarding exercise and cycle

—*St. Mary's University/FitrWoman/Strava survey, March 2019 (14,184)*

Silence around periods.

Normalizing amenorrhea.

Confusion, denial, misunderstanding around physiology

OUTLINE

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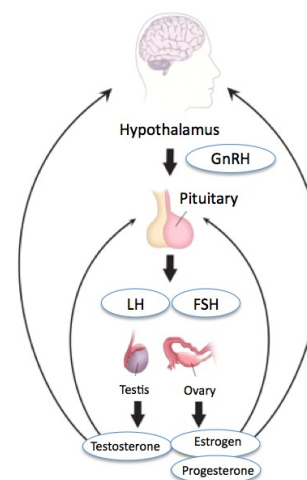


Photo credit: Steens Mountain Running Camp/Kevin Jantzer

THE MENSTRUAL CYCLE

BIOLOGICAL RHYTHMS

- Endocrine
- Nervous
- Reproductive



<https://www.ncbi.nlm.nih.gov/books/NBK539692/figure/article-24535.image.f1/>

BIOLOGICAL RHYTHMS

Circadian rhythms/internal clock

Seasonal, daily (for ex: melatonin)

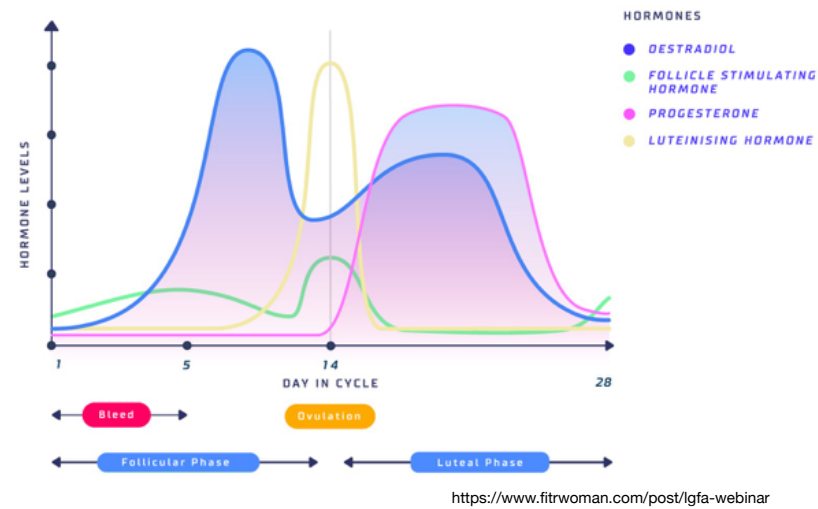
Ovarian cycle: hypothalamus-pituitary-ovary axis

Regulated by gonadotropin-releasing hormone (GnRH) secretion from hypothalamus, which regulates gonadotropins: follicle-stimulating hormone (FSH) and luteinizing hormone (LH) from pituitary

FSH and LH stimulate ovaries to produce estrogen and progesterone, which fluctuate through cycle

Neurotransmitters facilitate process

Sensitive, time-specific



THE MENSTRUAL CYCLE

ON AVERAGE ~ 1 month. ~5-7 days bleeding.

1-3 yrs after puberty starts.

Reproduction + health + performance.

Estrogen: initiates ovulation, stimulates egg growth, maintains uterine lining

Progesterone: maintains lining, prepares for potential pregnancy

FSH, LH

Levels (& ratios) of hormones fluctuate throughout cycle



MIA: A RED FLAG
First 1 or 2 years? Maybe NBD
Pregnancy
Stress
Medication/birth control
Illness
PCOS
Thyroid
Energy imbalance (RED-S/Hypothalamic amenorrhea)



OTHER RED FLAGS: CALL THE DOC

Lightheadedness/dizzy

Frequently unpredictable/abnormal/disrupting daily life

Severe pain, anxiety or depression with period

Bleeding between periods

16 yo and no period

< 21 days

> 45 days

Amenorrhea: No period for 6+ months

Oligomenorrhea: < 9 menstrual cycles per year

*OCP contains estrogen and progesterone; prevents ovulation. Withdrawl bleed is not a “natural” period or indicator of healthy hormone/energy levels.

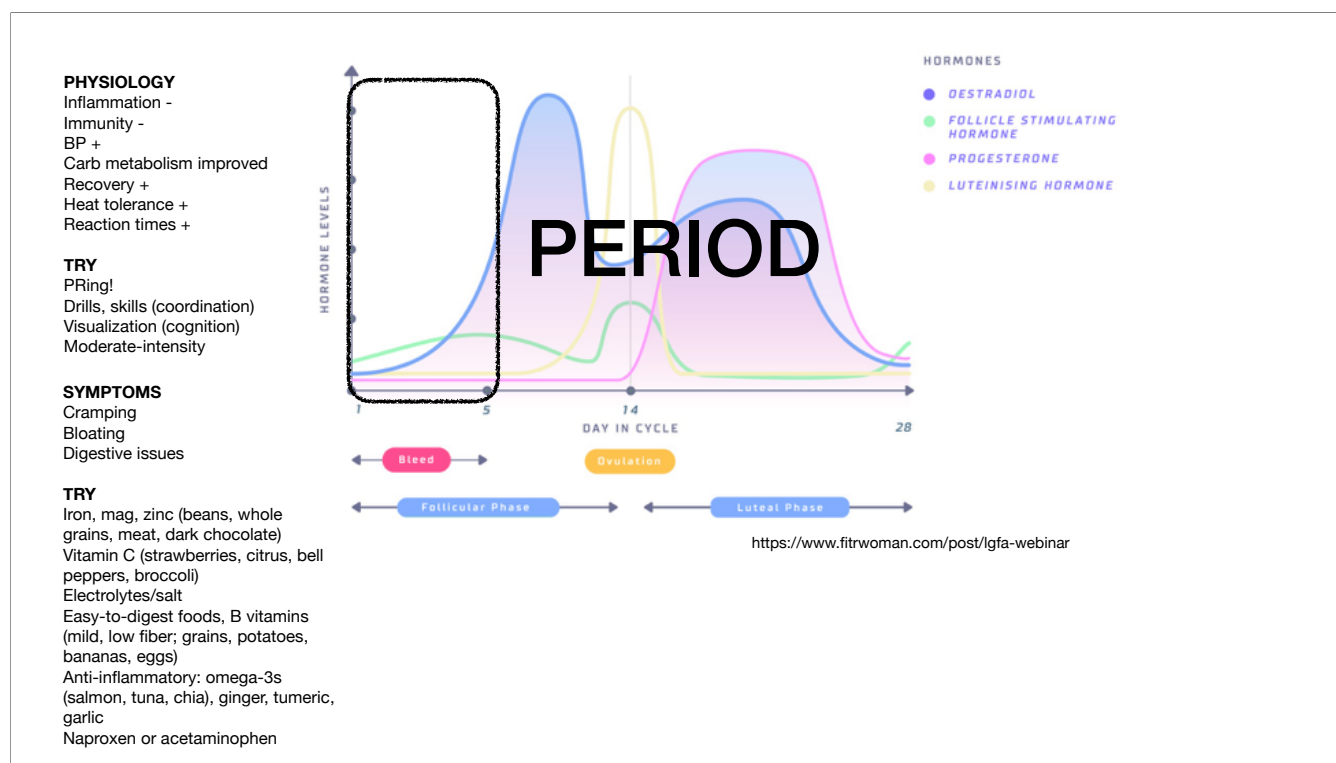
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Photo credit: Steens Mountain Running Camp/Kevin Jantzer

Peaks, valleys, and plateaus—and ratios between the hormonal landscapes—may influence how you feel and perform. Everybody is different. Insomnia vs cramps vs breakout vs OK.



Prostaglandins: cramps, inflammation, immunity

Limited research on performance + period, but Sims says Vo2max and LT aren't affected; but carb metabolism, recovery potential, health tolerance, reaction times are improved/increased.

[Sunitha. G, Ravi. B.N, Sudhir G.K. "Study of VO2 Max during Phases of Menstruation in Young Female Athletes". Journal of Evolution of Medical and Dental Sciences 2013; Vol2, Issue 23, June 10; Page: 4070-4078.]

[Bleed .5-2 oz/4-6 tablespoons – less than a shot glass – causes decrease in hemoglobin and iron but not significant enough to affect performance, Relentless Athletics & Sargent, D., Barker, K. (2018). Strength and Conditioning for Female Athletes. The Menstrual Cycle, Exercise, and Performance. Marlborough: Crowood. pp 190-201.]

[Symptoms: De Sanctis, Vincenzo et al. "Primary Dysmenorrhea in Adolescents: Prevalence, Impact and Recent Knowledge." Pediatric endocrinology reviews : PER vol. 13,2 (2015): 512-20. <https://pubmed.ncbi.nlm.nih.gov/26841639/>]

[Exercise as treatment: Armour M, Smith CA, Steel KA, Macmillan F. The effectiveness of self-care and lifestyle interventions in primary dysmenorrhea: a systematic review and meta-analysis. BMC Complement Altern Med. 2019;19(1):22. Published 2019 Jan 17. doi:10.1186/s12906-019-2433-8]

Basic research of estrogen's effects on both aerobic capacity and muscle strength. For example, one animal study demonstrated the effects of estrogen particularly well, in which rats who had had their ovaries removed received low-dose estrogen supplementation and showed improvement in time to exhaustion in a prolonged sub-maximal treadmill run by 20% compared with placebo-injected rats (Kendrick, 1987). Estrogen has been found to have a number of beneficial metabolic effects when it comes to endurance including increasing storage of glycogen in muscles, free fatty acid availability, ability to burn fat, and oxidative capacity (muscles' ability to use oxygen) in exercise (Oosthuysen, 2010, Charkoudian, 1997; Charkoudian, 1999; Hiroshoren, 2002; Houghton, 2002).

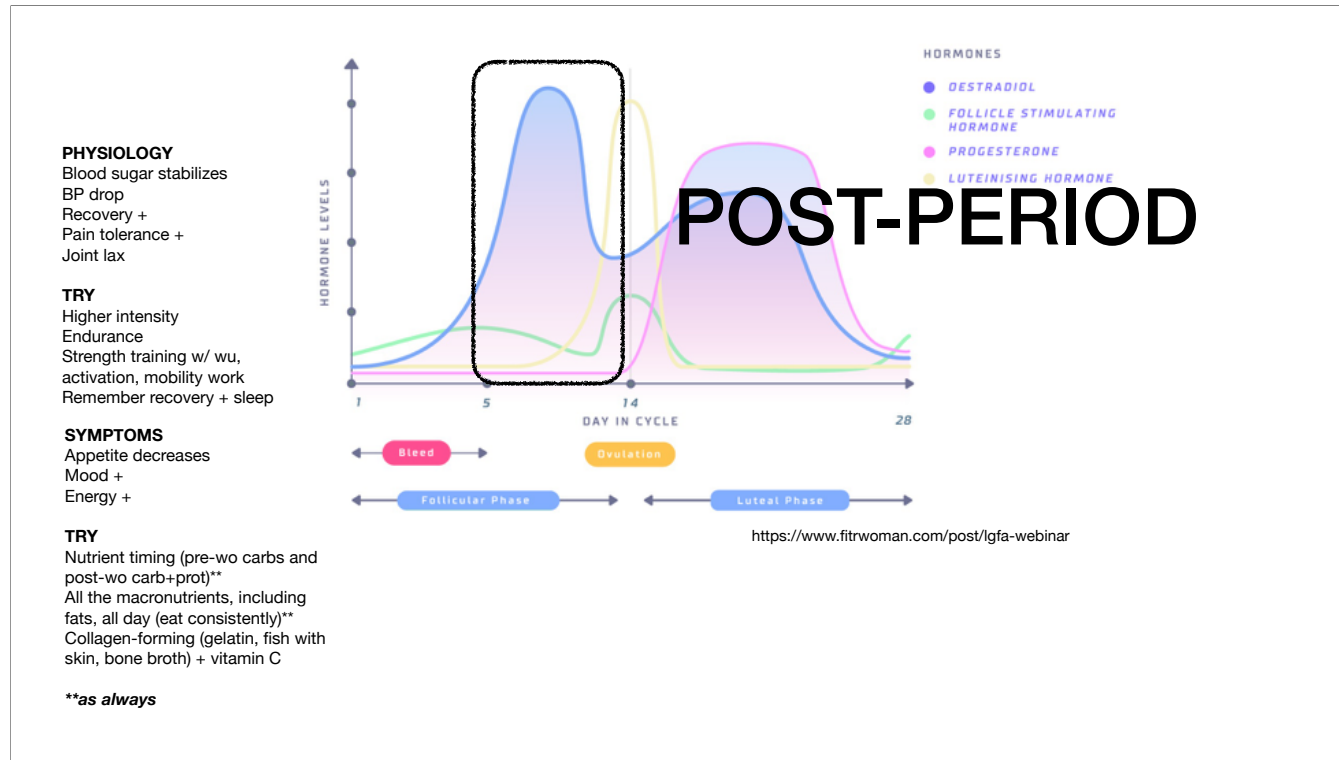
Sims, Stacy. ROAR. New York: Rodale, 2016.

FitrWoman. "Moving Female Physiology Mainstream." FitrWoman Blog, April 2019. <https://www.fitwoman.com/post/fitrcoach-moving-female-physiology-mainstream>.

Keay, Nicky. "What's so good about menstrual cycles?" Blog. British Journal of Sports Medicine, Feb. 8, 2019. <https://blogs.bmj.com/bjbm/2019/02/08/whats-so-good-about-menstrual-cycles/>.

Roche, Megan. "How the Menstrual Cycle Impacts Running—and What You Can Do About It." Trail Runner Magazine, Sept. 8, 2016. <https://trailrunnermag.com/training/menstrual-cycle-impacts-running-can.html>.

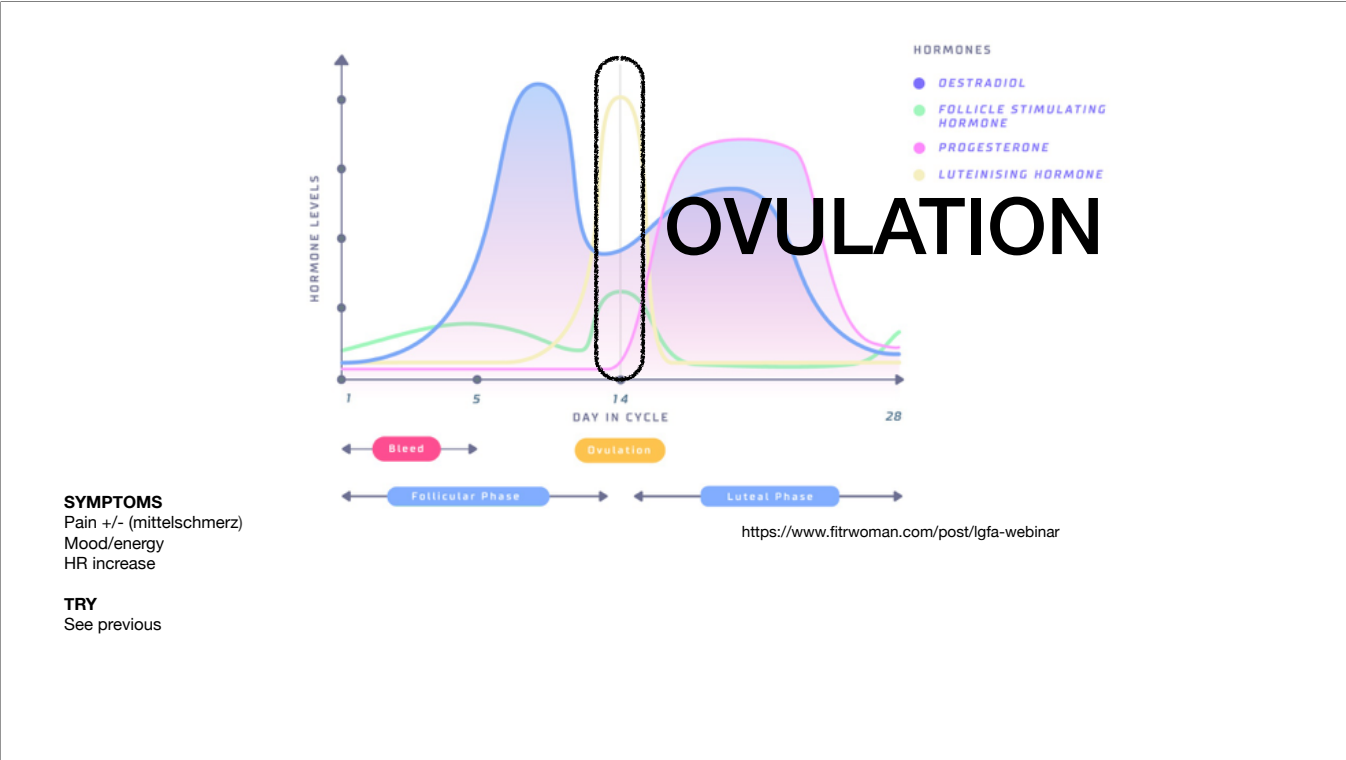
Opal Food and Body Wisdom. "Diet, Exercise, and Your Period: What You Need to Know." The Appetite Podcast. Nov. 8, 2019. <https://podcasts.apple.com/us/podcast/the-appetite/id1321778204?i=1000456263827>.



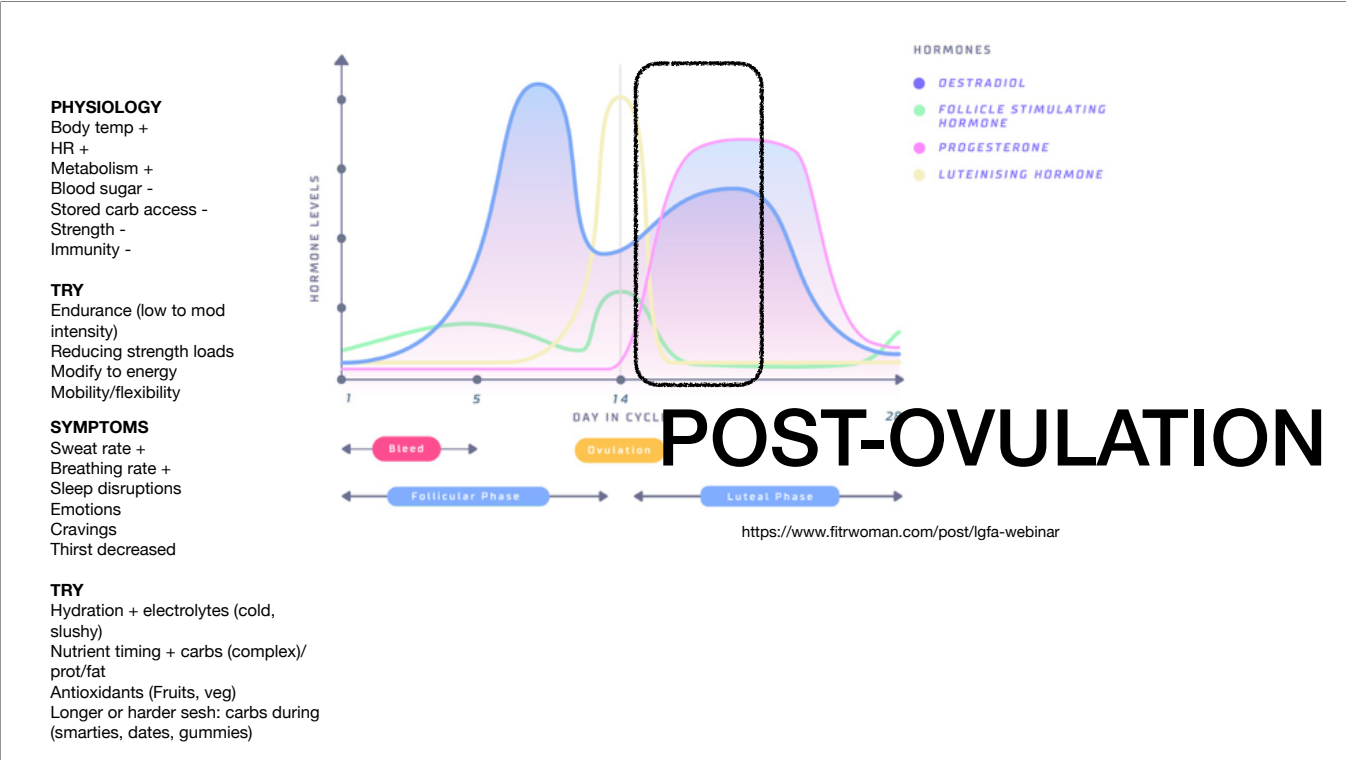
[**https://www.dyestat.com/gprofile.php?mgroupp_id=44531&do=news&news_id=598287](https://www.dyestat.com/gprofile.php?mgroupp_id=44531&do=news&news_id=598287)

Blood pressure decrease: [Adkisson, Eric J, Darren P Casey, Darren T Beck, Alvaro N Gurovich, Jeffery S Martin, and Randy W Braith. "Central, Peripheral and Resistance Arterial Reactivity: Fluctuates during the Phases of the Menstrual Cycle." Experimental Biology and Medicine 235, no. 1 (January 2010): 111–18. doi:10.1258/ebm.2009.009186.]

Increase insulin sensitivity + blood glucose uptake = glycogen to energy faster [https://www.relentlessathleticllc.com/education/2019/01/training-on-your-period?rq=training%20on%20your%20period – cite D'Eon, T., Sharoff C., Chipkin S., Grow D., Ruby B., et al. (2002) Regulation of exercise carbohydrate metabolism by estrogen and progesterone in women. American Journal of Physiology-Endocrinology and Metabolism.vol: 283 (5) pp: E1046-E1055]



Leading up to this testosterone peaks too [<https://www.self.com/story/menstrual-cycle>]
~1 day, can feel great or pain in abdomen
This triggers ovulation, when an egg is released for fertilization.



Luteal phase: thermoregulation issues, low blood sugar, body using more fat trying to spare glycogen (carbs in exercise, says Sims, Strickler, etc.), immunity hit

Progesterone: catabolic (breaks muscles down)

Serotonin/melatonin/mood & sleep: Barth, Claudia et al. "Sex hormones affect neurotransmitters and shape the adult female brain during hormonal transition periods." Frontiers in neuroscience vol. 9 37. 20 Feb. 2015, doi:10.3389/fnins.2015.00037. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4335177/>.

temperature: Plasma volumes decreases (on average) 8 percent [Stachenfeld NS, Keefe DL, and Palter SF. "Estrogen and progesterone effects on transcapillary fluid dynamics." American Journal of Physiology, Regulatory Integrative & Comparative Physiology, 281: R1319-1329, 2001] —> slower to sweat; body temperature rises on average 0.3-0.5 percent Celsius. [Kolka MA and Stephenson LA. "Effect of luteal phase elevation in core temperature on forearm blood flow during exercise." Journal of Applied Physiology, 82: 1079-1083, 1997.] —> thicker blood concentration —> slower blood flow between muscles

[perf affected in luteal phase in hot, humid conditions: Janse DE Jonge XA, Thompson MW, Chuter VH, Silk LN, Thom JM. Exercise performance over the menstrual cycle in temperate and hot, humid conditions. Med Sci Sports Exerc. 2012;44(11):2190–2198. doi:10.1249/MSS.0b013e3182656f13]

Pre-hydrate w/ electrolytes [Sims ST, Rehrer NJ, Bell ML, Cotter JD. "Pre-exercise sodium loading aids fluid balance and endurance for women exercising in the heat." Journal of Applied Physiology, 103: 534–541, 2007.]

Blood sugar: [Janse de Jonge, Xanne A.K., "Effects of the menstrual cycle on exercise performance." Sports Medicine, 2003; 22 (11): 833-851]

immunity: [Cutolo M, Sulli A, Capellino S, et al. Sex hormones influence on the immune system: basic and clinical aspects in autoimmunity. Lupus. 2004;13(9):635–638. doi:10.1191/0961203304lu1094oa]

PREMENSTRUAL

PHYSIOLOGY

Inflammatory response
Recovery -
Metabolism +

TRY

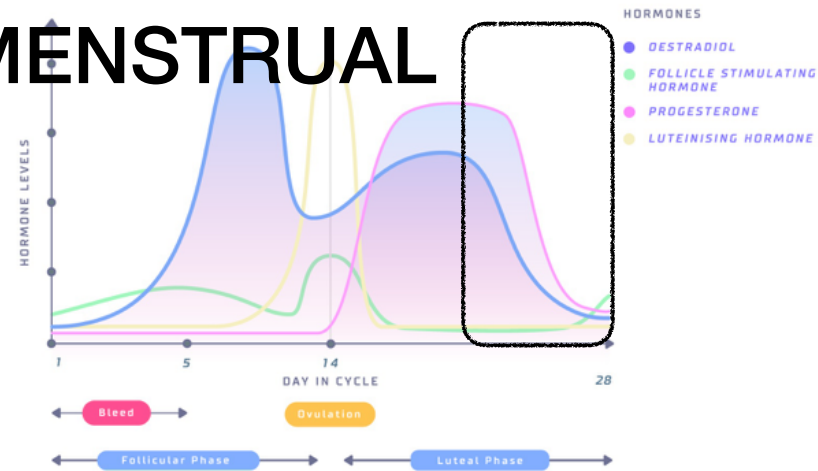
Gentle exercise
Low intensity (Down week)

SYMPTOMS

Cramps
Back pain
Sore breasts
Diarrhea
Headaches
Tiredness
Mood swings
Appetite increase
Motivation -
Energy -
Sleep -

TRY

Gentle exercise
Bright light, Sleep, Limit stress, Mindfulness/relax
Nutrient-dense, antioxidant foods plus all macronutrients and lots of micronutrients including:
Vit D, calcium, omega 3s/fish oil, B vitamins; Iron, mag, vit c (get ahead of mineral losses)
Melatonin (tart cherry juice, red grapes, bananas)
Serotonin (Seeds, peas, legumes, soy, eggs, whey)
Mood (BCAA in protein-rich foods like red meat, yogurt)



<https://www.fitwoman.com/post/lga-webinar>

[Young, SN. "How to increase serotonin in the human brain without drugs." J Psychiatry Neurosci. 32, no. 6 (2007):394–399. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2077351/>.]

[Gold, EB, C Wells, MO Rasor. "The Association of Inflammation with Premenstrual Symptoms." J Womens Health. 25, no. 9 (2016):865–874. doi:10.1089/jwh.2015.5529.]

[Yesildere Saglam, H, O. Orsal. "Effect of exercise on premenstrual symptoms: A systematic review." Complement Ther Med. 48 (2020):102272. doi:10.1016/j.ctim.2019.102272.]

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TIPS

- Stock period gear (pads/liners, tampons)
- Address it & importance for health, development, performance
 - early season, parents, team mtgs, 1:1s, circles (See Marie's Girls Talks)
- Tracking (log, learn, adjust — training logs, pen/phone, apps, RHR)
- Listen, trust, respect athletes
- Resources (articles, podcasts, books, experts, community)
- Adjust training (& recovery)
- Get enough (& fine-tune) nutrition, hydration, sleep
- Mental skills training (including mindfulness/meditation)

RESOURCES

- Athletic trainer
- School nurse
- Health teacher
- Community (See: experts, network, parents)



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MYTH	TRUTH
A period is a death sentence for a race or workout	It's possible to PR and nail key workouts while menstruating! And/but some symptoms may cause pain (potentially mitigated w/ specific interventions)
I can't talk about the menstrual cycle	It's biology! It has implications for training, competition, and well-being of your athletes—a "signpost"
Periods are something to fear and shun	Nope, they're natural, essential processes
Not getting a period is normal and acceptable for runners	Wrong! Periods are one indicator of functioning hormones and bodies with benefits beyond reproduction, including bone health

(Sexism and shame of women's bodies is a result of white male supremacy too)

EMPOWER



Research by University of Washington's Center for Leadership in Athletics

To have sustained peak athletic performance (team and individual, coaches must attend to social-emotional growth. The two factors are mutually reinforcing. **AMBITIOUS COACHING CORE PRINCIPALS**

Questions?!

THANK YOU

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