# Female cycle - Performance, Recovery, Injury Prevention and Nutrition

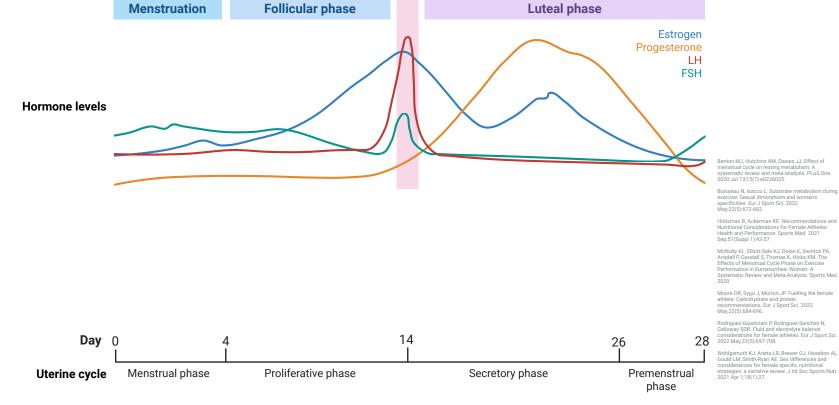


Christian Puta, PhD, apl. Prof.

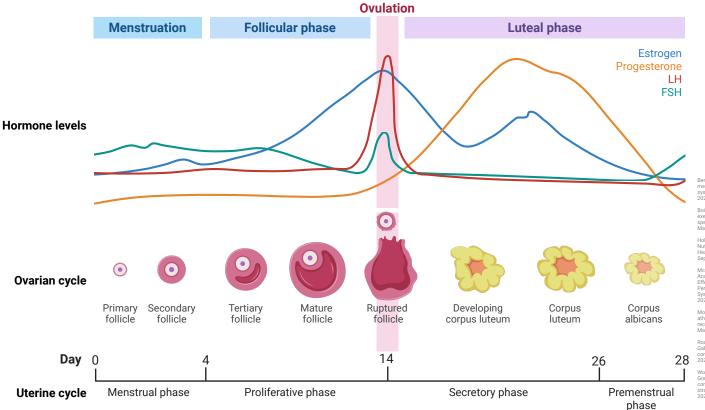
Friedrich-Schiller-University Jena, Dpt. Sports Medicine and Health Promotion Jena University Hospital, Department for Internal Medicine IV (Gastroenterology, Hepatology and Infectious Diseases) Jena University Hospital, Center for Sepsis Control and Care (CSCC)

# Ovarian hormones and folliculogenesis throughout the human menstrual cycle

**Ovulation** 



# Ovarian hormones and folliculogenesis throughout the human menstrual cycle



Benton MJ, Hutchins AM, Dawes JJ. Effect of menstrual cycle on resting metabolism: A systematic review and meta-analysis. PLoS One. 2020 Jul 13:15(7):e0236025.

Boisseau N, Isacco L. Substrate metabolism during exercise: Sexual dimorphism and women's specificities. Eur J Sport Sci. 2022 May:22(5):672-683.

Holtzman B, Ackerman KE. Recommendations and Nutritional Considerations for Female Athletes: Health and Performance. Sports Med. 2021 Sep;51(Suppl 1):43-57.

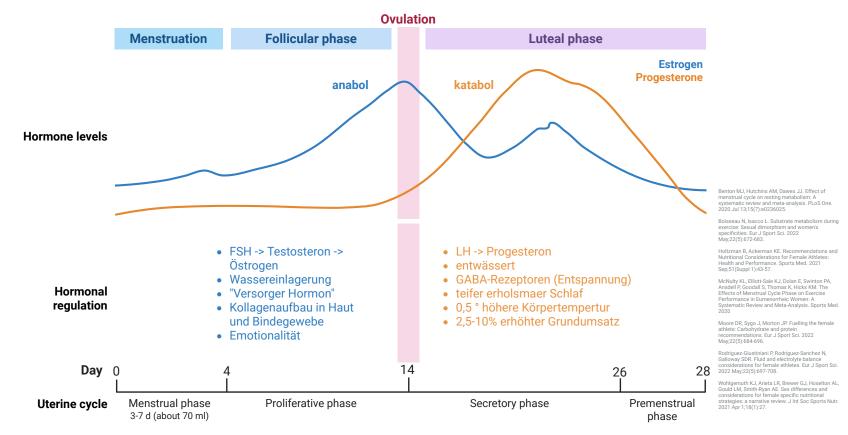
McNulty KL, Elliott-Sale KJ, Dolan E, Swinton PA, Ansdell P, Goodall S, Thomas K, Hicks KM. The Effects of Menstrual Cycle Phase on Exercise Performance in Eumenorrheic Women: A Systematic Review and Meta-Analysis. Sports Med 2020

Moore DR, Sygo J, Morton JP. Fuelling the female athlete: Carbohydrate and protein recommendations. Eur J Sport Sci. 2022 May:22(5):684-696.

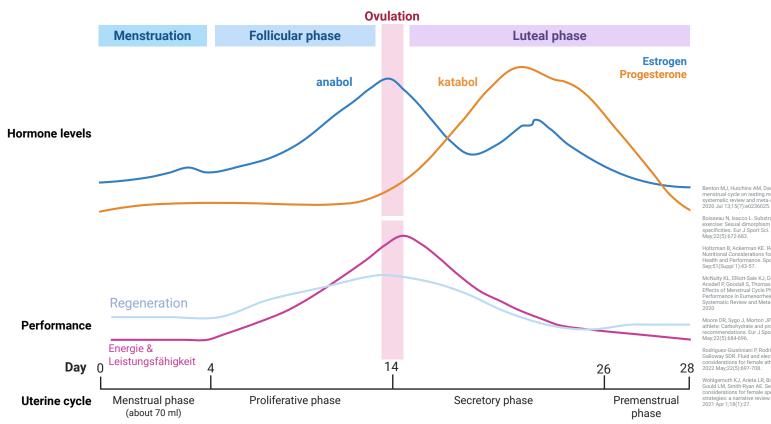
Rodriguez-Giustiniani P, Rodriguez-Sanchez N, Galloway SDR. Fluid and electrolyte balance considerations for female athletes. Eur J Sport Sci 2022 May;22(5):697-708.

Wohlgemuth KJ, Arieta LR, Brewer GJ, Hoselton AL, Gould LM, Smith-Ryan AE. Sex differences and considerations for female specific nutritional strategies: a narrative review. J Int Soc Sports Nutr. 2021 Apr 1;18(1):27.

#### Female cycle and hormonal effects



# Female cycle and performance



Benton MJ, Hutchins AM, Dawes JJ. Effect of menstrual cycle on resting metabolism: A systematic review and meta-analysis. PLoS One.

Boisseau N, Isacco L. Substrate metabolism during exercise: Sexual dimorphism and women's specificities. Eur J Sport Sci. 2022 May;22(5):672-683.

Holtzman B. Ackerman KE. Recommendations and Nutritional Considerations for Female Athletes: Health and Performance. Sports Med. 2021 Sep:51(Suppl 1):43-57.

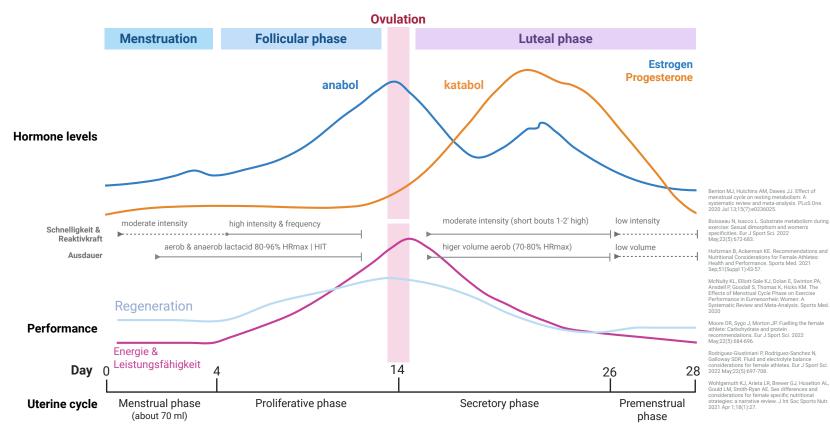
McNulty KL, Elliott-Sale KJ, Dolan E, Swinton PA, Ansdell P. Goodall S. Thomas K. Hicks KM. The Effects of Menstrual Cycle Phase on Exercise Performance in Eumenorrheic Women: A Systematic Review and Meta-Analysis, Sports Med.

Moore DR, Sygo J, Morton JP. Fuelling the female athlete: Carbohydrate and protein recommendations. Eur J Sport Sci. 2022 May:22(5):684-696.

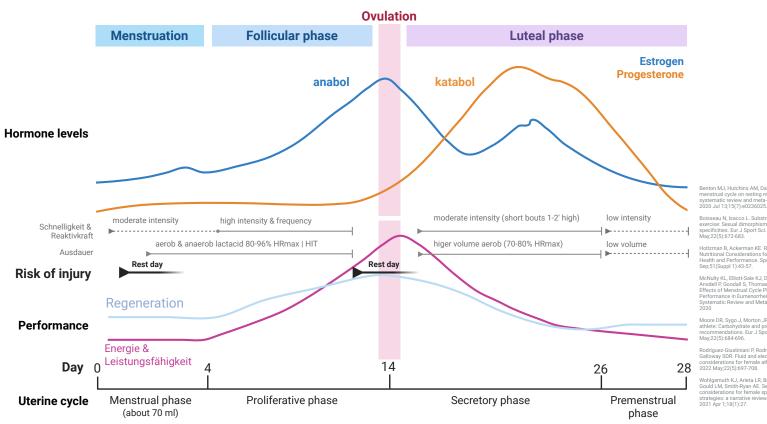
Rodriguez-Giustiniani P, Rodriguez-Sanchez N, Galloway SDR. Fluid and electrolyte balance considerations for female athletes. Eur J Sport Sci 2022 May;22(5):697-708.

Wohlgemuth KJ, Arieta LR, Brewer GJ, Hoselton AL, Gould LM, Smith-Ryan AE. Sex differences and considerations for female specific nutritional strategies: a narrative review. J Int Soc Sports Nutr. 2021 Apr 1:18(1):27.

### Female cycle and Performance sweet spots



### Female cycle and risk of injury



Benton MJ, Hutchins AM, Dawes JJ. Effect of menstrual cycle on resting metabolism: A systematic review and meta-analysis. PLoS One.

Boisseau N, Isacco L. Substrate metabolism during exercise: Sexual dimorphism and women's specificities. Eur J Sport Sci. 2022 May:22(5):672-683.

Holtzman B. Ackerman KE. Recommendations and Nutritional Considerations for Female Athletes: Health and Performance, Sports Med. 2021 Sep:51(Suppl 1):43-57.

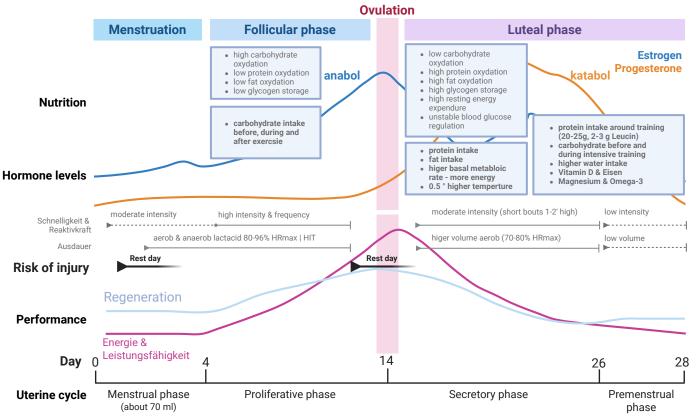
McNulty KL, Elliott-Sale KJ, Dolan E, Swinton PA, Ansdell P. Goodall S. Thomas K. Hicks KM. The Effects of Menstrual Cycle Phase on Exercise Performance in Eumenorrheic Women: A Systematic Review and Meta-Analysis, Sports Med

Moore DR, Sygo J, Morton JP. Fuelling the female athlete: Carbohydrate and protein recommendations. Eur J Sport Sci. 2022 May:22(5):684-696.

Rodriguez-Giustiniani P, Rodriguez-Sanchez N, Galloway SDR. Fluid and electrolyte balance considerations for female athletes. Eur J Sport Sci 2022 May;22(5):697-708.

Wohlgemuth KJ, Arieta LR, Brewer GJ, Hoselton AL, Gould LM, Smith-Ryan AE. Sex differences and considerations for female specific nutritional strategies: a narrative review. J Int Soc Sports Nutr. 2021 Apr 1:18(1):27.

## Female cycle and nutrition



Benton MJ, Hutchins AM, Dawes JJ. Effect of menstrual cycle on resting metabolism: A systematic review and meta-analysis. PLoS One. 2020 Jul 13:15(7):e0236025.

Boisseau N, Isacco L. Substrate metabolism during exercise: Sexual dimorphism and women's specificities. Eur J Sport Sci. 2022 May:22(5):672-683.

Holtzman B, Ackerman KE. Recommendations and Nutritional Considerations for Female Athletes: Health and Performance. Sports Med. 2021 Sep:51(Suppl 1):43-57.

McNulty KL, Elliott-Sale KJ, Dolan E, Swinton PA, Ansdell P, Goodall S, Thomas K, Hicks KM. The Effects of Menstrual Cycle Phase on Exercise Performance in Eumenorrheic Women: A Systematic Review and Meta-Analysis. Sports Med 2020

Moore DR, Sygo J, Morton JP. Fuelling the female athlete: Carbohydrate and protein recommendations: Eur J Sport Sci. 2022 May:22(5):684-696.

Rodriguez-Giustiniani P, Rodriguez-Sanchez N, Galloway SDR. Fluid and electrolyte balance considerations for female athletes. Eur J Sport Sci 2022 May:22(5):697-708.

Wohlgemuth KJ, Arieta LR, Brewer GJ, Hoselton AL, Gould LM, Smith-Ryan AE. Sex differences and considerations for female specific nutritional strategies: a narrative review. J Int Soc Sports Nutr. 2021 Apr 1;18(1):27.