

The Menstrual Cycle

2026 Report

Your cycle has a signature. Now you can finally see it.
A study of how sleep, heart rate and body composition shift across the menstrual cycle.

69,000
WOMEN

11
COUNTRIES

469,000
CYCLES

KEY FINDINGS

What 69,000 Women and 469,000 Cycles *Reveal*

Worldwide averages, natural cycles only (no hormonal contraception). Each phase compared to the same woman's follicular baseline.

−3.4

Sleep score dips before the period

Sleep score slides to its monthly low in the premenstrual days, seen in 76% of women.

+2.8

Night heart rate climbs

Night-time heart rate rises before the period in 90% of women, the most consistent signal in the data.

−3.0

Overnight HRV falls

Heart-rate variability, a marker of recovery, drops as the period approaches (72% of women).

−7.0

The heart and sleep link

Women with the largest heart-rate rise lose nearly 7 sleep-score points, a clear dose-response.

+0.27kg

Weight rises during the period

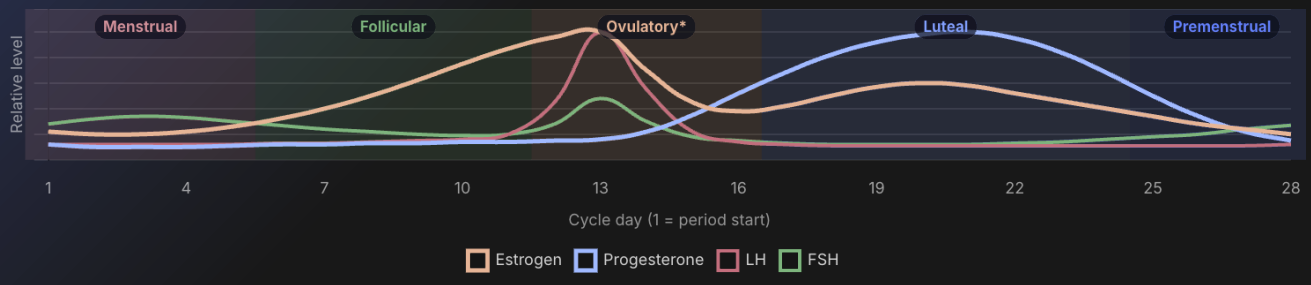
A small, temporary gain during menstruation, largely driven by water (+160 g), not fat. Fat percentage stays flat.

Flat

Activity holds steady

Steps and workouts barely change across the cycle. The body's rhythm lives in rest, not capability.

THE HORMONAL RHYTHM BEHIND THE FIVE PHASES (ILLUSTRATIVE)

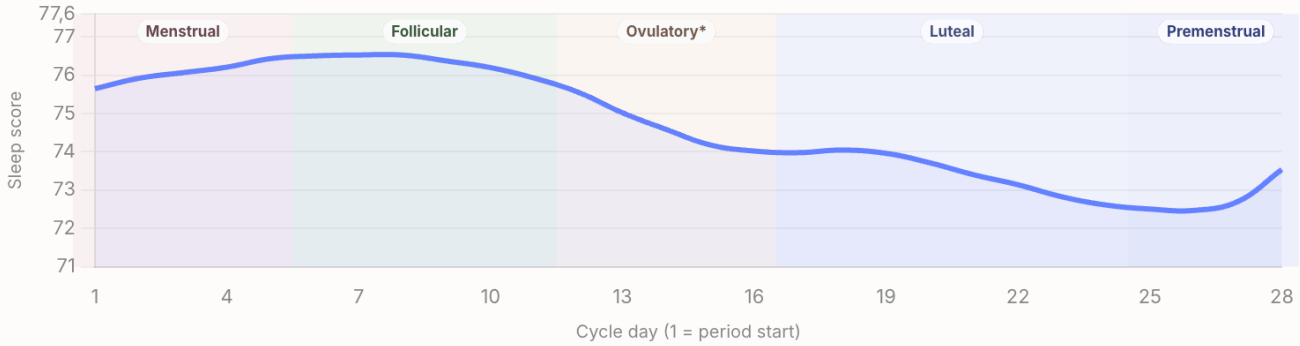


*Typical estrogen, progesterone, LH and FSH pattern across one cycle, shown for orientation, not Withings measured data. *Ovulation is estimated from cycle timing, not hormone-confirmed.*

The Quiet Slide Before the Period

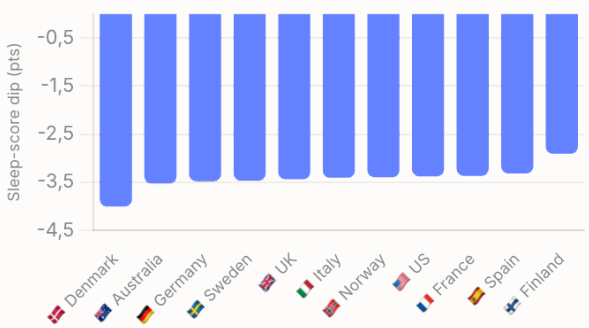
Sleep score is the report's primary outcome, and it tells the clearest story. Across the cycle it drifts gently downward, reaching its low in the final premenstrual days: **−3.4 points** below each woman's follicular baseline, in **76% of women**.

SLEEP SCORE ACROSS THE CYCLE, DAY BY DAY, ALIGNED TO THE FIVE PHASES



Shaded bands mark the five cycle phases. Women not using hormonal contraception.

PREMENSTRUAL SLEEP DIP BY COUNTRY (POINTS VS BASELINE)



The same downward pattern in every country, from Denmark (−4.0) to Finland (−2.9).

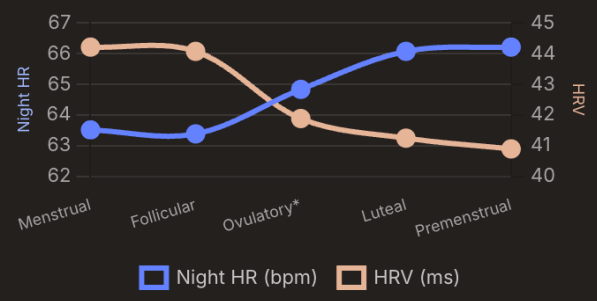
The decline is a slide, not a cliff: a few tenths of a point per night through the luteal phase, accelerating into the last premenstrual days. It is not about sleeping less (nights shorten by only about five minutes) but about sleeping **differently**, as deep sleep eases back and light sleep takes its place.

> A 3 to 4 point dip sits inside normal night-to-night variation on any single night. What makes it meaningful is its **timing**: it lands in the same phase, cycle after cycle.

A Heartbeat That Keeps the Calendar

If sleep is the clearest story, the heart is the **most consistent** one. Night-time heart rate rises +2.8 bpm before the period in **90% of women**, the single most reliable signal in the entire dataset.

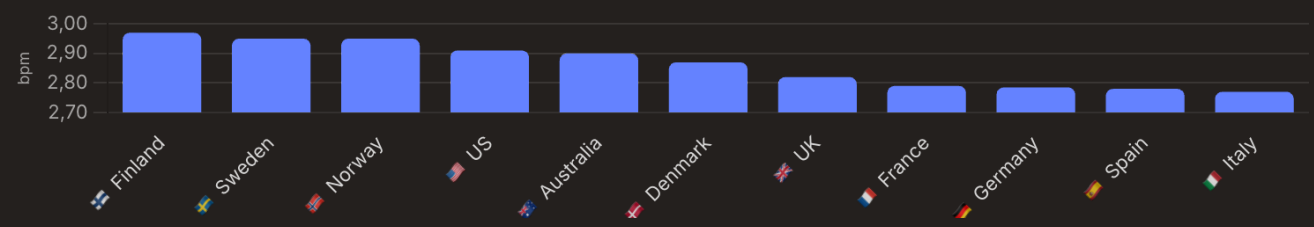
NIGHT HEART RATE UP AND HRV DOWN ACROSS PHASES



As progesterone climbs through the luteal phase, night-time heart rate climbs to a premenstrual peak near **66 bpm** from a follicular floor around **63 bpm**, while overnight **HRV** falls −3.0 ms in 72% of women.

The heart and sleep are one. Sort women by their night-HR rise and the sleep dip lines up in dose-response: the quarter with the largest rise (about +6 bpm) loses close to **7 sleep-score points**.

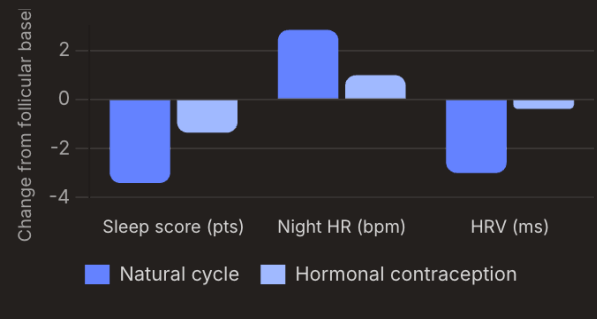
NIGHT-HR RISE BEFORE THE PERIOD, EVERY COUNTRY (BPM)



From Finland (+2.97) to Italy (+2.77), the night-HR rise is nearly identical everywhere, 88 to 92% of women in all eleven countries. **This is the universal constant.**

HORMONAL CONTRACEPTION · A FLATTER CYCLE

NATURAL VS HORMONAL CYCLE, PREMENSTRUAL SHIFT FROM BASELINE

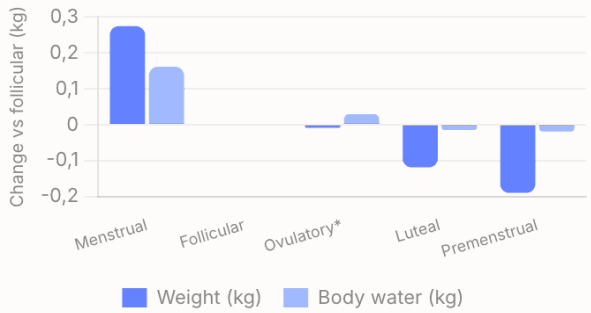


Hormonal contraception works by steadying the hormonal tide, and the biomarkers follow. The pre-period night-HR rise is cut roughly in half, the sleep-score dip falls from −3.4 to around −1.4 points, and the HRV drop nearly vanishes. This is not a better or worse cycle, it is a *quieter* one, and it explains why two women can experience the same calendar so differently.

What the Scale and the Step Count See

Two reassuring stories. The weight women expect *before* the period actually arrives **during** it, a +160 g water bump gone within days. And movement barely shifts at all, steps and workouts hold steady across the cycle.

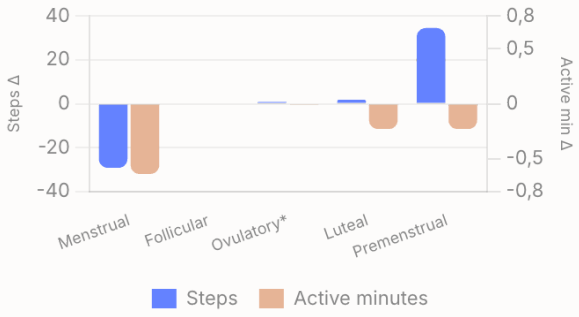
WEIGHT AND BODY-WATER CHANGE BY PHASE (VS FOLLICULAR)



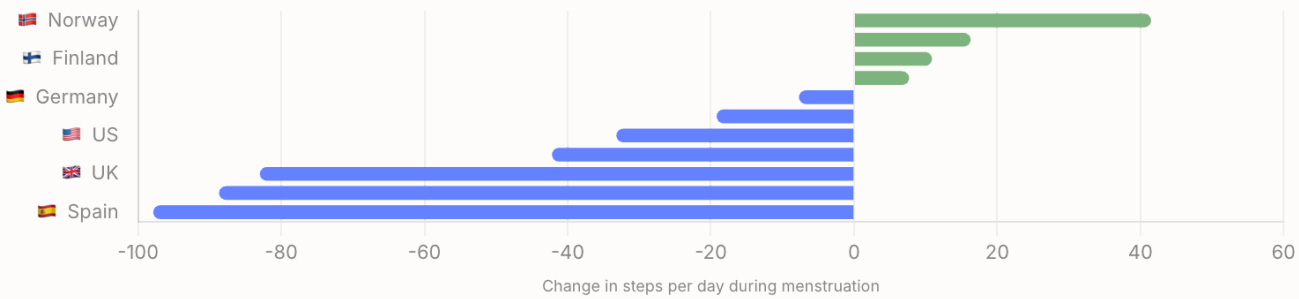
During menstruation, body weight rises about **+0.27 kg** in 74% of women, and body water climbs in parallel (+0.16 kg in 66%). The two move together, confirming the gain is **fluid, not fat**. Fat percentage stays flat across the entire cycle, and the gain is uniform across countries (around +0.25 kg everywhere).

Averaged across all 69,000 women, the activity line is almost perfectly flat: step counts vary by a few dozen across the whole cycle, and workout frequency essentially not at all. The body's biological signature lives in **rest and recovery**, not in capability.

STEPS AND ACTIVE MINUTES BY PHASE (VS FOLLICULAR)



THE ACTIVITY DIVIDE, CHANGE IN DAILY STEP COUNT DURING MENSTRUATION (VS FOLLICULAR)



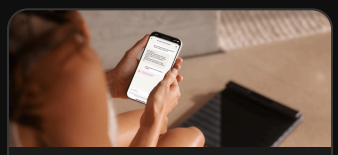
The global average hides a cultural split. Southern and English-speaking countries ease off (Spain −98, Australia −89, UK −83 steps per day); the Nordics do not slow down (Norway +42, Sweden +16 steps per day).

Methodology

Within-woman observational analysis of anonymized data from approximately 69,000 women with natural menstrual cycles (not using hormonal contraception) across 11 countries (US, France, Germany, UK, Spain, Italy, Sweden, Denmark, Norway, Finland, Australia), September 2025 to September 2026, spanning roughly 469,000 cycles. Signals measured: sleep score and sleep stages, night-time and resting heart rate, overnight heart-rate variability, body weight and body water, and daily activity (steps, active minutes, workouts).

Each cycle is divided into five phases (menstrual, follicular as baseline, ovulatory, luteal, premenstrual), and every phase is compared to the same woman's follicular phase, removing between-person differences in body type, fitness and habit. A difference is called meaningful only when it clears a pre-set margin (for example 2.5 pts sleep score, 1.0 bpm night HR, 0.1 kg weight), larger than ordinary night-to-night and weekday/weekend variation. The analysis is observational and describes associations, not causes. Ovulation is estimated from cycle timing, not confirmed by hormone test; hormonal-contraception status is self-reported. Per-country sleep figures for Denmark and Finland rest on small samples (a few hundred women each). All values are population averages; individual cycles vary. Withings users are self-selected and may not represent the general population.

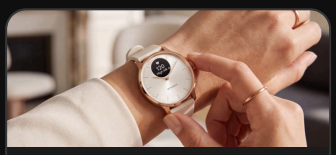
The devices behind the data



Withings App

Cycle tracking

Phase timing



ScanWatch 2

Night HR

HRV

Sleep stages

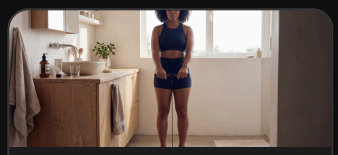


Sleep Analyzer

Deep

Light

REM



Body Comp & Scan

Weight

Body water

References

[1] Baker FC, Driver HS. Circadian rhythms, sleep, and the menstrual cycle. *Sleep Med.* 2007;8(6):613-622.

[2] Shilaih M, Clerck V, Falco L, et al. Pulse rate measurement during sleep using wearable sensors, and its correlation with the menstrual cycle phases. *Sci Rep.* 2017;7:1294.

[3] de Zambotti M, Nicholas CL, Colrain IM, et al. Autonomic regulation across phases of the menstrual cycle. *Psychoneuroendocrinology.* 2013;38(11):2618-2627.

[4] Stachenfeld NS. Sex hormone effects on body fluid regulation. *Exerc Sport Sci Rev.* 2008;36(3):152-159.

[5] Withings Research, 2026. Within-woman menstrual-cycle analysis, internal dataset, September 2025 to September 2026.

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WITHINGS

"Your cycle has a signature.
Now you can finally see it."

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