

Fasting & Ketosis

What actually happens when you fast — and why it isn't identical for everyone

Fasting is one of the oldest tools in metabolic health, but it isn't one-size-fits-all. Here's what's actually happening in your body during a fast, and what the research says about how that can differ — especially for women.

01

THE METABOLIC SWITCH

For most people eating a standard diet, liver glycogen (stored glucose) starts running low somewhere between 12 and 24 hours into a fast. As it depletes, insulin drops, glucagon rises, and the body shifts toward burning fat for fuel — a gradual dimmer switch, not an instant flip.

TYPICAL TIMELINE

Trace ketones: ~12–16 hrs · Glycogen mostly depleted: ~18–24 hrs · Ketones as a major fuel source: 24+ hrs, deeper with continued fasting

Getting started: activity level, carb intake before the fast, and metabolic health all shift this timeline earlier or later.

02

DIGESTIVE REST: THE MIGRATING MOTOR COMPLEX

Once the stomach is empty, the small intestine runs a repeating “housekeeping” wave called the migrating motor complex (MMC) — a series of contractions roughly every 90 to 120 minutes that sweep leftover food particles, bacteria, and debris onward through the gut. Eating anything, even a small snack, stops the cycle before it finishes and resets the clock, which is why constant grazing may leave more residue behind than a longer gap between meals allows.

GETTING STARTED

The MMC needs roughly 90 minutes with nothing in the stomach just to begin a cycle. A longer overnight fast gives it uninterrupted time to complete several full sweeps, which researchers link to reduced bloating and healthier gut motility.

03

WHAT KETOSIS ACTUALLY IS

Once glucose is scarce, the liver converts fatty acids into ketone bodies — beta-hydroxybutyrate, acetoacetate, and acetone — which the brain, heart, and muscles can use as fuel. This is a normal, well-tolerated metabolic state, distinct from the medical emergency of ketoacidosis, which involves far higher ketone levels and blood pH disruption.

GETTING STARTED

Nutritional ketosis is generally considered blood ketone levels of roughly 0.5–3.0 mmol/L — far below the levels seen in ketoacidosis.

04

KETONES AND BRAIN HEALTH: THE NEUROGENESIS CONNECTION

The ketone body beta-hydroxybutyrate (BHB) does more than supply fuel. In animal and cell studies, BHB directly increases expression of brain-derived neurotrophic factor (BDNF), a protein that supports the growth, survival, and connection of neurons, including in the hippocampus — the brain's memory center, and one of the few regions where new neurons continue to form throughout life. Human studies have found that rising BHB levels are associated with higher circulating BDNF as well, though most of the direct evidence for new neuron growth itself still comes from animal research.

GETTING STARTED

This BDNF-signaling effect is part of why ketogenic approaches are being studied for epilepsy, cognitive aging, and mood — the mechanism is about brain-supporting signaling, not simply an alternate fuel source.

05

WHY WOMEN'S EXPERIENCES CAN DIFFER

The idea that fasting is universally harder on women's hormones traces back partly to a widely cited rat study — but those rats were young enough to correspond to roughly a 9-year-old human, not an adult. Human research is more mixed: several clinical trials found time-restricted eating improved menstrual regularity and lowered androgens in women with PCOS, with no measured change to estrogen. At the same time, some clinicians note that premenopausal women's reproductive hormones (estrogen, progesterone, LH) can be more sensitive to fasting stress than men's, particularly with longer or more frequent fasts layered on top of low energy intake.

GETTING STARTED

There's no single validated "safe" number of hours for everyone. A shorter fasting window (roughly 12–14 hours) is a common, gentler starting point for premenopausal women, with room to extend gradually based on how your cycle, energy, and sleep respond.

06

SIGNS WORTH PAYING ATTENTION TO

Because individual response varies so much, tracking how you feel matters more than hitting a specific number. Menstrual cycle changes, persistent fatigue, sleep disruption, or mood changes are all signals to shorten the fasting window or take a break, regardless of what any general guideline suggests.

GETTING STARTED

Consider cycling shorter fasts around the luteal phase (the week or so before your period), when many women report fasting feels harder.

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This is general educational information, not medical advice. Fasting isn't appropriate for everyone — including anyone pregnant, breastfeeding, managing a history of disordered eating, or with a diagnosed health condition. Talk with a doctor or registered dietitian before starting an extended fasting practice.