



FASTING DECODED

Everything you need to know about fasting
in one ultimate guide.

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MODERN SCIENCE

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WHAT IS FASTING?

Fasting involves restricting or abstaining from food intake for a period of time to achieve a physical, mental, or spiritual outcome.

There have been countless books written about the "best" diets to achieve optimal health. All of them cover food choices, many cover exercise, and some of the better ones delve into lifestyle factors like sleep and sunshine. However, most of them are missing one key method that has been shown to improve health regardless of what you eat: **fasting**.

Whether voluntary or not, fasting has been a practice throughout all of human evolution. Our ancestors didn't have modern conveniences like grocery stores and refrigerators; sometimes they had to go days or even weeks without food. As a result, we evolved specific adaptations to deal with those periods of famine. We're hardwired to be able to survive *and even thrive* with some regular fasting incorporated into our lives. In fact, fasting is still a common practice among the world's longest-living populations.

This guide will take a dive into the benefits of fasting, explore the myriad of fasting options available, and empower you to incorporate the practice into your life to suit your personal goals and unique health journey.



THE BENEFITS OF FASTING

The benefits of fasting are similar to the benefits of calorie restriction, with a few distinct differences. Multiple studies have associated calorie restriction with better aging, improved body composition, and a reduced risk of metabolic disease. The issue is that long-term excessive calorie restriction can negatively affect thyroid and sex hormone levels, may lead to a decrease in metabolism, reduce lean muscle mass, and even worse: leave you perpetually hungry and cold.

Fasting can be a simpler way to experience similar - and potentially more pronounced - benefits of calorie restriction without actually having to overly restrict food intake during feeding windows. Some of the primary benefits of fasting include the following:

- **Autophagy:** Autophagy is a repair process in which cells cleanse themselves by removing old and damaged proteins, replacing them with new ones and optimizing their function. This process has been associated with anti-aging, longevity, and improved metabolic health, and it only occurs during periods of fasting. Autophagy also has major implications for longevity and anti-aging because it keeps cells young, healthy, and functioning optimally [1].
- **Improved Body Composition:** Fasting for periods of 12 hours or more has been shown to improve fat oxidation and induce mild ketosis [1]. Fasting has also been shown to increase the body's secretion of human growth hormone (HGH) [2], which aids in preserving muscle and burning body fat.
- **Improved Energy Levels:** It's been observed that all mammals tend to be active when hungry and sedentary when fed [1]. As counter-intuitive as it might sound, energy levels tend to increase during times of fasting, potentially as a way to give the body a boost to go hunt down some grub.



THE BENEFITS OF FASTING (CONTINUED)

- **Blood Sugar Regulation:** Controlling blood sugar is crucial for your metabolic health. Fasting can improve insulin sensitivity and lower overall levels of blood sugar [3].
- **Gut Health:** Fasting can protect the gut against the negative impacts of stress and can lead to increased microbial diversity and elevated rates of fermentation [4], making your gut and immune system stronger.
- **Brain Health:** Fasting can protect nerve cells from degeneration, and can induce autophagy in your neurons [5]. It can also improve learning and memory, another protective measure against neurodegenerative diseases. In addition to protecting existing cells, fasting can increase the secretion of the brain hormone BDNF which aids the growth of new nerve cells [6].
- **Appetite Regulation:** Ghrelin, known commonly as the “hunger hormone,” is one of the hormones responsible for making us feel hungry. Ghrelin agonizes leptin [7], the hormone responsible for telling us that we’re satiated, so balancing these hormones is one of the driving factors behind appetite regulation. Fasting has been shown to help us regulate ghrelin [8] which allows leptin to normalize and appetite to balance out. (Note: Females may not experience this benefit as much as males do)
- **Improved Blood Lipid Profiles:** Fasting has been shown to improve a number of blood lipid markers [9] including blood pressure, cholesterol, blood sugar, and triglycerides.



DIFFERENT TYPES OF FASTING

Now that you know the benefits of fasting, how do you actually incorporate the practice into your life? There are many different types of fasting, ranging from short, daily fasts to multi-day efforts, and the right choice depends on your personal goals and level of experience.

Each fasting protocol outlined will provide a degree of all of the benefits detailed above. However, certain types of fasts are more conducive to specific outcomes, illustrated by what that fast is "best for". Additionally, the following protocols are ranked from beginner to advanced, so be sure to consider which type of fasting is appropriate for your level of experience. For example, a beginner may want to start out with daily Intermittent Fasts (IF) of 12 hours.



OPTION 1: INTERMITTENT FAST (IF)

Best For: Body Composition

Intermittent Fasting (IF) involves fasting for 12 to 22 hours between one day's final meal and the following day's first. IF is great for entry level fasters who want the “minimum effective dose” for reaping the benefits of fasting.

Mechanism: The combination of elevated fat metabolism and increased secretion of HGH, both of which begin between 12 and 16 hours into a fast, contribute to improved body composition via fat loss and muscle preservation. Many people also find that it's easy to exercise during this short fasting window, which may further support body composition.

Tips: The point of this type of fasting is not to restrict calories, which may negatively affect hormones. To keep hormones balanced, try to consume a normal day's worth of calories in a condensed 2-12 hour period.

If you are new to fasting, it is recommended to start with a 12-hour daily fast. For example, finish dinner by 7pm and do not consume any more food until breakfast at 7am. If you are an experienced faster, try extending your fasting period to 16-22 hours. In other words, condense your daily calories into one or two meals a day.



OPTION 2: ALTERNATE DAY FAST (ADF)

Best For: Metabolic Health & Insulin Sensitivity

Alternate Day Fasting (ADF) involves alternating full days of fasting (24-36 hours) with full days of normal eating.

Mechanism: ADF has been shown to improve metabolic health by promoting improved blood glucose management, blood lipid profiles, and metabolic flexibility, which is the ability to effortlessly switch from relying on glucose from food to metabolizing body fat for energy.

Tips: To maximize the benefits, try to keep your eating days to 12-hour feeding windows.



OPTION 3: CALORIC LIQUID "FAST" (CLF)

Best For: Gut Health

A Caloric Liquid Fast (CLF) involves consuming only low-calorie liquids (bone broth, fatty coffee, low sugar green juice or smoothies, etc.) in addition to non-caloric beverages like water, coffee, and tea. This type of fasting can typically be done safely for anywhere between 24 hours and several days, although 3-5 days are most common.

A CLF doesn't necessarily constitute "fasting" as calories technically break a fast, but the experience is similar to a Fasting Mimicking Diet, which is a low-calorie multi-day diet that mimics many of the benefits of strict no-calorie fasting.

Mechanism: Many of the liquids listed here, including bone broth and coffee, benefit the microbiome and soothe and heal the gut lining. When coupled with the intrinsic benefit that fasting has on microbiome diversity, this type of fast has a potent effect on the strength of your gut flora.

Tips: If you decide to do a CLF with juice or smoothies, make sure they are extremely low in sugar to keep your blood glucose stable during the fast. Juice and smoothies should be primarily composed of vegetables, water, healthy fats like coconut and avocado, and low-sugar fruits like berries.



OPTION 4: NON-CALORIC LIQUID FAST (NCLF)

Best For: Autophagy & Cellular Health

During a Non-Caloric Liquid Fast (NCLF), only non-caloric beverages like water, black coffee, and tea are consumed. This type of fasting can be done for anywhere between 24 hours and several days.

Mechanism: Autophagy kicks in between 12 and 16 hours into a fast, and is slowed by the intake of calories. Longer fasts simply give your cells the benefit of enhanced autophagy and more time to regenerate and optimize their function.

Tips: NCLF can lead to electrolyte imbalances. Ensure you're getting adequate minerals by adding in 1/2-1 tsp per day of Celtic or Aztec salt, or supplement with electrolytes or trace minerals.

Note: Strict fasts should only be conducted by healthy individuals under the supervision of a health care professional. Be sure to consult with your physician before trying a multi-day NCLF.

SUMMARY OF FASTING METHODS

TYPE OF FAST	HOW TO DO IT	PRO TIPS	BEST FOR
INTERMITTENT FAST (IF)	Fast for at least 12 and up to 22 hours between meals.	To keep hormones balanced, consume a normal day's worth of calories – just in a condensed 2-12 hour period.	Body composition
ALTERNATE DAY FAST (ADF)	Fast for an entire day, eat normally the next day, and repeat.	To maximize the benefits, try to restrict your eating days to 12-hour feeding windows.	Metabolic health & insulin sensitivity
CALORIC LIQUID “FAST” (CLF)	Consume calories only from low-sugar liquids like bone broth, green juices/smoothies, or fatty coffee.	Keep blood sugar stable with beverages primarily composed of vegetables, herbs, water, broth, healthy fats, and low-sugar fruits.	Gut health
NON-CALORIC LIQUID FAST (NCLF)	Consume only zero calorie beverages like water, black coffee, and plain tea.	Combat potential mineral depletion during NCLF by supplementing with 1/2-1 tsp per day of Celtic or Aztec salt or a trace minerals supplement.	Autophagy & cellular health



PREPARING FOR YOUR FAST

If you're brand new to fasting, then you'll want to properly prepare the body before jumping into a multi-day fast.

One of the best ways to prepare the body for a fast (and make it easier for you) is to enhance your body's ability to burn fat, allowing it to become used to going for longer periods of time without food. Here are some guiding principles to follow ideally one week prior to your fast:

Ease into mild ketosis. One of the best ways to make a fast easier is to improve the body's fat-burning capability and shift away from relying on glucose for fuel. Start focusing on limiting your carbohydrate intake and increasing your intake of healthy fats. Your meals should be primarily composed of vegetables and protein, supplemented with healthy fats like avocado and coconut. Your only carbohydrates should be incidental carbs from non-starchy vegetables and plant fats, ideally eaten at dinner or post-workout.

Restrict your feeding window. If you are preparing for a moderate to advanced fast, start restricting your feeding window to 12 hours per day. For example, if you have dinner at 7 PM, eat breakfast at 7 AM the next day (or later). This will help ease the body into mild ketosis and help you become mentally and physically accustomed to time without food.



WHAT TO EXPECT DURING A FAST

Depending on the duration of your fast, here are some common milestones you might experience. Remember that these processes and the rate at which they occur are highly individual, and are based on a number of factors including genetics, activity levels, gender, and more.

12-18 hours

Many benefits of fasting including autophagy, mild ketosis, and hormone balance start to occur after abstaining from food for just 12 hours. If you're not used to skipping a meal, you may get hungry around the 16-hour mark. However, the hunger will likely dissipate after an hour or so, and instead you might even feel a slight increase in cognitive or physical performance, which makes this portion of the fasting window a great time to exercise and engage in cognitively demanding tasks. That's why daily fasts of 12-18 hours are popular for athletes looking to optimize their body composition without sacrificing their athletic performance.

18-36 hours

The 18-36 hour mark is a sweet spot for experiencing all of the benefits of fasting without too much in the way of hunger or diminished energy levels, since your body is primarily operating on stored glycogen from your last meal for energy. Weekly fasts averaging 24 hours are popular for this reason.



WHAT TO EXPECT DURING A FAST (CONTINUED)

36-72 hours

This is where fasting can start to feel slightly difficult. People tend to feel an increase in hunger during this time frame, which is typically more psychological than physiological. Some report feeling slightly lethargic during this period, but consuming a cup of coffee or tea can assist with energy slumps. At this point in your fast, pay extra attention to hydration and make sure you're consuming plenty of electrolytes to stay energized and ward off hunger pangs.

3-5 days

At the three day point, you're likely to feel a radical uptick in energy levels as the body shifts into deeper levels of ketosis. According to Dr. Valter Longo, this is also the timeframe when autophagy up-regulates cellular regeneration peaks (if doing a non-caloric liquid or water fast). Many people report not feeling hungry at this point in the fast. Some even start to feel a state of bliss and heightened cognitive function, which is likely due to the brain shifting to operate on ketones, a potentially more efficient source of fuel. Use this especially productive time to get things done!



HOW TO BREAK A FAST

While fasting can be a great tool, you'll eventually need to break your fast and start eating again.

Many people's inclination is to eat a huge meal when their fast is over, not because of physical hunger, but because of a psychological compulsion. This can lead to gastrointestinal distress, and while it doesn't ruin or counteract the benefits of fasting, it won't exactly leave you feeling great. Here are some tips for easing back into eating after your fasting window has ended.

Don't Gorge. To avoid potential GI distress, resist the compulsion to hit the buffet post-fast. Opt instead to break your fast gently with a normal-sized, healthy meal.

Start Small. For fasts lasting longer than 24 hours, try starting with a small snack followed by a meal 30 to 60 minutes later.

Eat Slowly. No matter how much you eat to break your fast, avoid wolfing your food down. Eat slowly to optimize digestion and allow your body to adjust to eating again.

Drink Your Food. Liquid foods are much easier to digest than solids. Try breaking the fast with easy to digest foods like bone broth, smoothies and soups.

Use Digestifs. Prime your system for digestion by supplementing with digestive aids like lemon, apple cider vinegar, bitters, or digestive enzymes prior to your meal.



FREQUENTLY ASKED QUESTIONS

Will Supplements Break My Fast?

Fasting For Body Composition, Metabolic Health, or Gut Health: If a supplement does not contain a significant amount of calories or sugar, it will not "break a fast" in context of the desired benefits. Additionally, essential amino acids, such as Kion Aminos, can actually be beneficial for these purposes by promoting the maintenance of muscle, boosting cognitive function, supporting training, improving sleep, and even suppressing hunger, without hindering the benefits of a fast.

Fasting for Autophagy: Less is more. Avoid most supplements, especially amino acids, as they have been shown to inhibit cellular cleansing. Electrolytes may be necessary.

Do I Need to Take Supplements During Fasting?

Most supplements are not necessary for successful fasting. The only exception is electrolytes and minerals for fasts lasting longer than 24 hours. The decrease in insulin during these extended fasts signals the body to flush electrolytes which are crucial for staving off fatigue, cramps, and low energy as the body taps into stored fat for energy.

When Should I Take Supplements During Fasting?

Certain supplements, like fat-soluble vitamins, should only be taken with food for maximum absorption, so best practice is to simply follow the directions on the product label. If your supplements are meant to be taken with food, then simply take them with your first meal upon breaking your fast.



FREQUENTLY ASKED QUESTIONS

Does Coffee Break a Fast?

Most evidence suggests that black coffee does not "break a fast", meaning it doesn't suppress the benefits of fasting when it comes to body composition, metabolic health (unless there is an abnormal blood glucose response to caffeine, which may be present in some individuals), gut health, or autophagy. In fact, black coffee has been shown to enhance many of these beneficial effects.

Coffee can enhance fatty acid metabolism during a fast, which promotes fat loss. When used before and after fasted exercise, it can also boost testosterone levels, increasing muscle growth and recovery. Coffee has also been shown to have beneficial effects on the microbiome, allowing beneficial bacteria to proliferate and potentially reducing inflammation of the gut lining. Additionally, the polyphenols in black coffee may up-regulate the process of autophagy, making it an acceptable beverage during an NCLF.

However, when you start to add calories to your coffee in the form of sugar, cream, butter, or MCT oil, the aforementioned benefits may be decreased. Fatty coffee is acceptable during a CLF when gut healing is the goal, but should be avoided in fasting windows when seeking other benefits such as autophagy.

If you choose to drink coffee during a fast, you will likely see more benefits by opting for organic, black coffee.



FREQUENTLY ASKED QUESTIONS

Why Does Fasting Affect My Sleep?

Fasting may negatively impact sleep for a number of reasons, including increased hunger, decreased serotonin levels, and increased cortisol and noradrenaline, which are excitatory hormones that can keep you awake at night. If you are having trouble sleeping during or after a fast, consider supplementing with 5-HTP, Dr. Kirk Parsley's Sleep Remedy, Valerian, Passionflower, Kava, Chinese Skullcap, Phosphatidylserine, or 5 grams of EAAs.

If you are practicing Intermittent Fasting, try increasing the amount of carbohydrates you consume at dinner, as they can support serotonin production. You can also try a hot bath or shower before dinner or diffusing lavender essential oil.

Additionally, while sleep is important to health, during extended fasting you may find that you require less sleep. This is normal and should pass once the fast is over. Take advantage of the few extra hours in your day to do other things that support your mental and spiritual health, such as meditation, prayer, reading, journaling, or breathwork.



CONSIDERATIONS FOR SPECIAL POPULATIONS

Who Should Proceed With Caution

There are several populations who should take caution and only fast under the direct supervision of their physician:

- **People with gout:** Gout is the result of a chronic build-up of uric acid. During fasting periods, the elimination of uric acid through urine decreases, which leads to increased levels in the body. Fasting has not been shown to cause gout, but those with a preexisting condition should take extra precautions when beginning fasting.
- **People taking prescription medications:** Certain medications are only to be taken with food, so people taking these medications need to plan their fasting schedules accordingly. It is possible to work medications into your fasting pattern, depending on what kind of fasting regimen you choose and how often you need to take medications. This is especially true for those with diabetes and other blood sugar regulation issues who are at an increased risk for hypoglycemia.
- **Extremely lean individuals:** Very lean individuals (men under 10% body fat and women under 18% body fat) are at an increased risk for hormonal imbalances as a result of calorie restriction. These individuals also don't have as much energy to burn, which puts more strain on their bodies during fasting.
- **Diabetics (Type 1 or 2):** People with diabetes run the risk of diabetic ketoacidosis, a complication that occurs when the body can't produce enough insulin. When the body doesn't have enough insulin during the fasting periods, diabetics run the risk of overproducing ketones, which could potentially damage the kidneys and cause swelling in the brain.



CONSIDERATIONS FOR SPECIAL POPULATIONS (CONTINUED)

Who Should NOT Fast

Though fasting is a great practice, it's ultimately a tool, and no tool is right for every situation. There are several populations who may not benefit from fasting, including:

- People with a history of eating disorders
- People who are malnourished and/or underweight (BMI < 18.5)
- Pregnant or breastfeeding women
- Those with sub-clinical hypothyroidism
- Children under the age of 18
- Those dealing with HPA Axis Dysregulation
- People who have recently undergone surgery
- People with mental health conditions
- People with conditions for which Warfarin is prescribed



CONSIDERATIONS FOR SPECIAL POPULATIONS (CONTINUED)

Caution: Fasting For Women

While there is not a lot of solid scientific evidence to support exactly how women respond to fasting, we do know the female body is more sensitive to caloric restriction than male physiology. When done improperly or excessively, fasting may result in irregular menstrual cycles, hormone imbalances, and blood sugar dysregulation.

That doesn't mean that women shouldn't fast at all - they just may need to fast differently or take extra precautions. Women should consider shorter fasting periods of 12-14 hours, or fast less frequently such as 2-3x/week. Females should also take extra care to ensure they meet their macro- and micro-nutrient needs during their feeding windows.

For more information, check out the Resources at the end of this guide.

POSSIBLE SIDE EFFECTS

Individuals new to fasting may experience temporary side effects, including:

- Constipation
- Headaches
- Dizziness
- Heartburn
- Muscle cramps
- Dehydration
- Right-sided shoulder pain
- Abdominal pain
- Bloating, burping, and belching
- Nausea
- Changes in mood
- Extreme hunger
- Low energy
- Obsessive thoughts about food
- Binge eating behavior
- An increase in blood glucose readings since the body will be producing and releasing more glucose for energy.

Fortunately, these symptoms should subside over time, and most can be alleviated with the tips discussed in this guide.

One final, more serious side effect is the refeeding syndrome.

Refeeding syndrome is the potentially fatal shifts in fluids, electrolytes, and hormones that might occur when malnourished people refeed. Fortunately, it's a rare condition - it only occurs in 0.43% of the world population, and generally only happens after fasts lasting 5-10 days or more. See the Resources section for more information.

FASTING AS A LIFESTYLE

The best part about fasting is that it can be incorporated into any dietary plan and nearly any lifestyle, and can be adapted to suit personal goals. If your experience with fasting has been positive and you want to incorporate it into your daily life, here are some of the more popular methods:

- **Daily fasts of 12-20 hours**, such as The Leangains Method and The Warrior Diet.
- **Weekly or bi-weekly fasts of 20-24 hours**, as detailed in Brad Pilon's Eat-STOP-Eat.
- **Alternate Day Fasting**, outlined in Dr. Jason Fung's Complete Guide to Fasting.
- **The 5-1-1 plan**, pioneered by Dr. Dan Pompa, which includes 5 days of time-restricted feeding, 1 day of fasting, and 1 day of feasting each week.
- **Fastina Mimickina Diet** as outlined by Dr. Valter Longo, wherein you consume very low amounts of calories for 5 days as a way to experience the benefits of fasting without abstaining from food altogether.



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ADDITIONAL RESOURCES

1. Shattering the Myth of Fasting for Women by Stefani Ruper
2. Refeeding syndrome: what it is, and how to prevent and treat it
3. The LeanGains Method by Martin Berkhan
4. The Warrior Diet by Ori Hofmekler
5. Eat STOP Eat by Brad Pilon
6. The Complete Guide to Fasting by Dr. Jason Fung
7. The Official Site of Dr. Dan Pompa
8. The Longevity Diet by Valter Longo, PhD