



FASTING DECODED

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

Brought to you by Kion

BLENDING ANCIENT WISDOM WITH
MODERN SCIENCE

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JOIN THE FASTING CHALLENGE!



Join Team Kion for a 5-day Fasting Challenge during the week of **January 7th, 2019** and experience the benefits of fasting first-hand. We'll be there to answer your questions, comments, and concerns, and help you start the year off right.

To get started, join the Kion Facebook group and let us know which type of fast you're doing, how you're preparing, and how your fasting experience is going. Be sure to tag us (@kion) and use the hashtags **#kionfast** and **#getyourkion** in your social media posts!

Ben Greenfield, nutrition and fitness expert, will also be hosting a Live Facebook Q&A on Tuesday, January 8th at 8pm MST, where you can get all your questions about fasting answered.

[Join the challenge in the Kion Facebook Community.](#) Happy Fasting!



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 greatest 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 revolutionize 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 hard-coded 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.

Let's take a dive into the benefits of fasting, explore the myriad of fasting options out there, and empower you to incorporate the practice into your life to suit your goals.



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 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 is the best way to reap the benefits of calorie restriction while minimizing the drawbacks. Your fasting window allows you to experience a myriad of positive health effects without the need to restrict calories and nutrition during your feeding windows. Some of the primary benefits of fasting include the following:

- **Autophagy:** Autophagy is a repair process wherein 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.
- **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 goals and your 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.



OPTION 1: INTERMITTENT FAST (IF)

Best For: Body Composition

Intermittent fasting (IF) involves fasting for 12 to 20 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 support body composition even further.

Tips: The point of this type of fasting is not to restrict calories which can be difficult to stick with and may negatively affect hormones. To keep hormones balanced, it's best not to skip calories during these daily fasts; simply 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. If you are an experienced intermittent faster, try extending your fasting period to 16-20 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 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, the ability to effortlessly switch from relying on food to metabolizing body fat for energy.

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



OPTION 3: CALORIC LIQUID "FAST" (CLF)

Best For: Gut Health

Consume 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 be done for anywhere between 24 hours and several days.

A CLF doesn't necessarily constitute "fasting" as calories technically break a fast, but it is similar to a Fasting Mimicking Diet, which is a low-calorie approach that mimics many of the benefits of strict 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

Only consume non-caloric beverages like water, black coffee, and tea. 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 only slowed by the intake of calories. Longer fasts simply give your cells the benefit of more time to regenerate and optimize their function.

Tips: A non-caloric liquid fast 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 trace minerals.

Note that this type of fast 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 non-caloric liquid fast.

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.

Before the Fasting Challenge begins, try the following during the week before your fast to enhance your body's ability to burn fat and go for longer stretches without food. The principles of the prep week are as follows:

Ease into mild ketosis. During the week before your fast, you'll want to improve the body's fat-burning capability and shift away from relying on glucose for fuel. Focus 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, during your preparation week try to restrict 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 get it accustomed to time without food.



WHAT TO EXPECT DURING YOUR FAST

Here are some common milestones you might experience during your fast. Remember that these processes and the rate at which they occur are highly individual - they will be influenced by your genetics and level of fasting experience.

12-18 hours

You begin to experience the benefits of fasting, including autophagy, mild ketosis, and hormone balance after abstaining from food for just 12 hours. You're unlikely to experience irregular hunger at this point, even if you're brand new to fasting. Your cognitive and physical energy are unlikely to diminish during this time, and you might even feel a slight increase in performance, which makes this portion of the fasting window a great time to exercise and perform 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 for energy. Weekly fasts averaging 24 hours are popular for this reason.



WHAT TO EXPECT DURING YOUR 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 nothing so severe that it can't be overcome with a cup of coffee or tea. 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 and you have an increased rate of cellular regeneration. Many people report not feeling hungry at this point in the fast, and some report feeling a state of bliss and heightened cognitive function which is likely due to how efficiently the brain operates on fat and ketones.



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 to consume. 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 easing back into eating 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 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.



SUPPLEMENTS DURING FASTING

Will Supplements Break My Fast?

Most supplements, so long as they don't contain a significant amount of calories and/or sugar, have not been shown to "break a fast. The exception to this rule is Protein and Amino Acids, which can suppress autophagy. Avoid using protein supplements if cellular cleansing is your goal. If your primary goal is increased energy levels, fat loss, athletic performance, or circadian timing, Essential Amino Acids can actually be **beneficial** by promoting the maintenance of muscle and cognitive function, supporting athletic performance, and even suppressing hunger, allowing you to extend the duration of your fast and spend more time using body fat for energy.

Do I Need to Take Supplements During Fasting?

The simple answer is **no** - supplements are not necessary for successful fasting. The only exception is electrolytes and minerals for fasts lasting longer than 16 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. Supplement with Celtic or Aztec sea salt in order to stay fully hydrated and energized; as little as 1-2 tsp per day should do the trick.

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

How Do I Deal With Hunger?

Drink plenty of water to stay hydrated, which will help stave off hunger. Drink coffee and tea, both of which can serve as appetite suppressants. Supplementation of Kion Aminos can also help suppress hunger - just remember that they *may* inhibit cellular autophagy.

Can I Exercise While Fasted?

Yes. If you're new to fasting, you might see a slight dip in performance, but you'll adapt over time as your body gets used to tapping into stored body fat for energy. If improved athletic performance is a priority for you, consider supplementing with Kion Aminos pre-workout. As mentioned earlier, this will inhibit autophagy, but you'll likely see better performance.

Will Fasting Cause Muscle Loss?

Fasting in itself will not cause muscle loss. The human body has evolved specific adaptations to retain muscle mass at all costs, and it will metabolize fat for energy before it starts catabolizing lean mass. Additionally, as you learned above, the production of hGH is up-regulated in a fasted state, which also helps to preserve lean mass. Many athletes have actually found fasting to be a great tool for *gaining* muscle due to the hormonal benefits and increased energy levels, which allow them to train with more intensity.



CONSIDERATIONS FOR SPECIAL POPULATIONS

Who Should Proceed With Caution

There are several populations who should proceed with 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 overproduces 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 should not intentionally be fasting, including:

- People with a history of eating disorders
- People who are malnourished and/or underweight (BMI of under 18.5)
- Pregnant or breastfeeding women - you need extra nutrients for your child
- Children under the age of 18 - you need extra nutrients to grow
- 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

Caution: Fasting For Women

Women respond differently to fasting than men. The female body is extremely sensitive to caloric restriction, which can result in irregular menstrual cycles, sex hormone imbalances, and blood sugar dysregulation. That doesn't mean that women shouldn't fast at all - they simply need to take extra precautions to avoid these downsides. Women should consider shorter fasting periods (12-14 hours rather than 16 or higher) or fewer fasting days (once every week or two) and should take extra care to ensure they meet their macro and micronutrient needs during their feeding windows. For more information, check out Stefani Ruper's excellent deep dive into the latest research on fasting for women linked in the Resources section at the end of this guide.



POSSIBLE SIDE EFFECTS

Fasting can come with a host of side effects, especially if it's a new practice for you. Side effects can include:

- 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.

MOVING FORWARD: FASTING AS A LIFESTYLE

The best part about fasting is that it can be incorporated into any dietary plan and nearly any lifestyle, and there are enough variations out there to suit your needs based on your goals. If you want to continue fasting after the challenge, consider the following options:

- **Daily fasts of 12-20 hours**, such as The Leangains Method and The Warrior Diet
- **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** which includes 5 days of time-restricted feeding, 1 day of fasting, and 1 day of feasting each week. Learn more about this plan from Dr. Dan Pompa
- **A Fasting Mimicking Diet** as outlined by Dr. Valter Longo, wherein you consume very low amounts of calories in order 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