

# Clinical Fasting

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Modern humans evolved while surviving prolonged periods without food and have voluntarily fasted for spiritual and therapeutic reasons since ancient times. Water-only fasting (complete abstinence from all foods and beverages except for pure water) is now used therapeutically to initiate physiological responses that may promote self-healing. Animals, including humans, are capable of varying degrees of cellular regeneration,<sup>1,2</sup> which may be supported by fasting as well as a natural diet and adequate rest.<sup>3,4</sup> Several other claims have been made about physiological responses to fasting, including ketogenesis, hormone modulation, reduced oxidative stress and inflammation, and increased stress resistance, lipolysis, and autophagy.<sup>5-8</sup>

Water-only fasting results in the cessation of digestion and a gradual transition into a ketogenic state. During the 4–8 hours after caloric ingestion, available glucose, amino acids, and fatty acids in the blood stream are depleted. After approximately 24–48 hours, glycogen reserves in the liver are depleted, and there is a switch from glycogenolysis to gluconeogenesis and ketogenesis (a metabolic process that converts fatty acids released from adipose tissue into ketone bodies). A ketogenic state is reached after approxi-

mately 48 to 72 hours, depending on an individual's glycogen reserves.<sup>5</sup> Ketosis may spare glucose utilization and reduce protein catabolism during prolonged periods without food.<sup>5,6</sup> Importantly, the human brain may be able to use ketone bodies as an alternate energy source.

In a fasted state, increased autophagy (breakdown and recycling of damaged and non-essential tissue) provides a source of amino acids, fatty acids, and minerals,<sup>9</sup> and the energy previously used for digestion may be directed towards cellular regeneration.<sup>6,7</sup> The aforementioned physiological adaptations such as a decrease in inflammatory cytokine levels, may also be induced. The fasted state continues until nutrient reserves are depleted, at which point the body enters starvation (a state of chronic nutritional deficiency). Although most well-nourished humans can safely fast for up to 30 days or longer, fasts should always be terminated before nutrient reserves are depleted. Refeeding after a fast is a deliberate, gradual process in which caloric beverages and foods are introduced in increasing complexity to restart the digestive process.<sup>5</sup>

The physiological adaptations that occur in the fasted state may produce various health improvements. Clinical evidence in humans suggests that fasting may improve hypertension, rheumatoid arthritis, cardiovascular disease, metabolic syndrome, osteoarthritis, fibromyalgia, chronic pain, chemotherapy side effects, and quality of life.<sup>10-21</sup> Water-only fasting may normalize hypertension and borderline hypertension in a relatively

short time (10–14 days), without serious adverse events.<sup>10,11</sup> Study results suggest that water-only fasting may have helped reduce systolic/diastolic blood pressure by an average of 37/13 mm Hg in patients with grade 1-3 hypertension and by an average of 20/7 mm Hg in patients with borderline hypertension.<sup>10,11</sup> Natriuresis, vasodilation, and weight loss are plausible explanations for this effect. However, the exact mechanism(s) by which fasting may reduce blood pressure and lead to other observable health changes is unknown.

Over the past 30 years, clinicians at TrueNorth Health Center (TNHC) in Santa Rosa have supervised more than 15,000 water-only fasting patients with a protocol that ensures patient safety and treatment efficacy. The clinicians routinely observe apparent improvements in obesity, hypertension, psoriasis, eczema, type 2 diabetes, taste sensitivity, systemic lupus erythematosus, metabolic disorder, rheumatoid arthritis, depression, anxiety, and various other diseases, including most autoimmune disorders. Patients with multiple morbidities (e.g., obesity, hypertension, type 2 diabetes, and hyperlipidemia) often appear to improve in all areas.

A particularly remarkable case of a 42-year-old female patient at TNHC with stage IIIa, low-grade follicular lymphoma was recently reported in *BMJ Case Reports*.<sup>22</sup> After a 21-day water-only fast, her enlarged lymph nodes were no longer palpable, and CT scans confirmed

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the size reduction. She did not undergo standard cancer treatment, has maintained a healthy lifestyle, and remains symptom-free two years later.

Despite the possible good outcomes, water-only fasting is also not a cure or treatment in the traditional sense; it is simply intended to promote the body's self-healing mechanisms. In order to maintain the results obtained by water-only fasting, it is necessary to adhere to a health-promoting lifestyle that includes a diet of minimally processed plant foods, adequate sleep, and robust physical exercise.

Although evidence may support the use of water-only fasting in disease management, resistance to fasting in the allopathic and alternative medical communities remains strong. One reason is that excessive and uncontrolled water consumption can lead to water intoxication and other potentially fatal outcomes. While complications from fasting can and do occur, we are not aware of any clinical studies indicating that controlled water-only fasting under medical supervision is inherently dangerous or more harmful than other medical practices.

To establish evidence-based knowledge about fasting, the True North Health Foundation (TNHF) has conducted a retrospective study currently under review to assess adverse events during 768 medically supervised, water-only fasting visits lasting from 2–41 days.<sup>23</sup> Like all retrospective studies, ours may be subject to confounding and bias. Nonetheless, our results show that most adverse events experienced during prolonged water-only fasting are mild to moderate in nature and already known to occur during fasting

(e.g., nausea, headache, insomnia, presyncope, dyspepsia, fatigue, and back pain). There are limitations to the study because it is specific to the TNHC protocol implemented at TNHC, but the data suggests that water-only fasting conducted under medical supervision appears to be relatively safe.

Scientific and public interest is mounting in the possible anti-aging and health effects of various types of fasting, such as caloric restriction and intermittent fasting.<sup>9</sup> Research in these areas continues to shape our understanding of the potential uses of fasting and the mechanisms by which fasting may promote self-healing. Nonetheless, clinical research on water-only fasting is lacking. To rectify this situation, TNHC has established the TrueNorth Health Foundation to conduct and support unbiased, rigorous water-only fasting research with the goal of improving scientific and clinical knowledge. TNHF is particularly interested in collaborative research investigating the efficacy and cost-effectiveness of water-only fasting in comparison to standard treatment protocols for various disease conditions.

An area of general research interest is the effect of water-only fasting on gut microbiota, the metabolome, and intestinal permeability. Anecdotal evidence suggests that fasting may improve these components of gut health, which could be one reason why autoimmune conditions seem to respond to fasting; but there is currently no objective data on this topic. Another long-term objective is to determine how periodic water-only fasting affects "health span" — the length of time that a person is healthy. This is an important question given the advantages of maintaining optimal health rather than managing

declining health over a lifetime.

Chronic and largely preventable diseases, as well as associated health care costs, have increased substantially in recent years. The ancient practice of fasting may be a potential antidote to the modern practice of overconsumption. ●

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