



## Intermittent Fasting — A Review in Progress

By Zachary A. Knecht, PhD

Atkins, South Beach, Paleo, Keto, Macro—fad diets come and go. One day we are stocking up on bacon and throwing out eggs, and the next we are avoiding any food that might contain a trace of preservatives. As our understanding of metabolism and nutrition improves, however, losing weight and eating a healthy diet evolves into a highly complex and individualized science.

Enter the recent trend of intermittent fasting, which promotes an eating pattern that is different from the traditional three meals a day that most of us consume. With intermittent fasting, individuals spend extended periods of time eating little-to-no food

and short periods eating normally on a recurring basis. The specifics of such an eating plan diet vary substantially. For example, a person could eat every other day, have many fewer calories than used on a daily basis, consume only a certain number of calories 2 days a week, or even just restrict eating to a specific time of day. Simply changing the timing and frequency of meals can help maintain better health, and intermittent fasting may both help weight control and promote positive changes in metabolism and behavior.

During human evolution, food sources were fundamentally scarce. Early hunters could have successfully brought home a kill, but chances are that they did not. Our ancestors could never count on a meal, and they often went for extended time periods without eating. Just as most animals do, humans became adapted to conserving energy. The liver and adipose tissues (fat) evolved to bank excess calories when food was plentiful so that energy could be available when food was scarce. Today, however, food is so plentiful that it's difficult not to eat more than needed. Indeed, the body's instincts work against humans by assuming that extra energy will be needed at some point and encouraging that as much food as possible be consumed.

Since the 1980s, research teams have recognized that restrictive feeding patterns could confer health benefits including longer life, disease resistance, and higher cognitive function in animals from rats to worms. More recently, intermittent fasting became popular among people living in the Silicon Valley of California. And even though eating patterns vary with the type of intermittent-fasting plan followed, studies in animals and humans have shown metabolic changes that could point to improved health. These include better maintenance of blood glucose levels, depletion of glycogen stores, and increases in byproducts of fat breakdown (eg, fatty acids, ketones). In addition, changes in levels of circulating leptin and adiponectin, the molecules produced by fat cells to help control blood sugar and satiety, have been noted.

These encouraging metabolic benefits may even translate into cancer prevention and better outcomes for patients with type-II diabetes and age-related disorders. Variations among different intermittent-fasting regimens, however, have made comparisons between plans difficult, and the superiority of one plan over another has not been proven. Anyone who follows an intermittent-fasting plan must be careful not to overindulge when food is allowed, since episodes of binge eating could easily occur. Further, recent research has suggested that even though intermittent fasting leads to

short-term weight loss, it also could damage the pancreas, affect insulin function, and ultimately lead to type-II diabetes among healthy adults.

In total, although intermittent fasting is a very exciting weight control plan that is backed by strong scientific foundations, it should be implemented with caution and skepticism until more information on its long-term impact on the human body is revealed.

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