

Evidence-based Ways to Promote Metabolic Health

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ABSTRACT

Prescribing weight loss to reverse or prevent cardiometabolic disease may not be effective for yo-yo dieters. Current research on weight control shows that although initial weight loss improves metabolic health, for many people, the weight returns. Part of the reason for this may be the host of biochemicals at work to prevent or reverse lost energy stores. Disruption of homeostasis can trigger compensatory reactions favoring weight gain. Recent evidence supports alternative ways to improve metabolic health in the chronic dieter, including eating intuitively, improving sleep and gut health, and engaging in moderate- and/or high-intensity exercise.

Keywords: intuitive eating, metabolic health, microbiome, sleep, weight homeostasis

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LOOKING BEYOND WEIGHT LOSS TO PREVENT OR REVERSE CARDIOMETABOLIC DISEASE

Although rates of obesity and cardiovascular disease continue to rise, weight loss has been, and continues to be, recommended to prevent and reverse cardiometabolic diseases. This recommendation has persisted despite lack of success for a number of individuals. It likely persists due to the powerful effect weight loss initially has on metabolic markers like glucose levels, insulin sensitivity, and cholesterol.¹ For many, however, there are unseen and compensatory changes that begin as soon as weight is lost. For the yo-yo dieter, also known as a weight cyler, the weight loss they experience depresses thyroid levels, decreases energy expenditure and increases appetite to the point that weight regain is likely to occur.²

Because weight homeostasis mechanisms are slower than other homeostatic processes, such as temperature, which returns to baseline rapidly, it is helpful to assess the impact of weight loss over years. In long-term studies of 4 years or longer, weight is more likely to be regained compared with studies of 2 years or less.² This article outlines evidence showing that there may be more feasible ways to prevent cardiometabolic disease for our weight cycling clients, where weight is lost and then regained.

Cardiometabolic disease refers to the role excess glucose, insulin, fat, and inflammation play in promoting diabetes and cardiovascular disease.³ Lack of fitness and excess fat can lead to the insulin resistance and hyperglycemia seen in type 2 diabetes.⁴ Metabolic health, on the other hand, involves the metabolism of nutrients into usable energy, maintaining glucose homeostasis, low levels of inflammation, and healthful lipids.⁵

Many overweight individuals are prompted by their providers to lose weight to prevent or reverse cardiometabolic disease, such as diabetes.⁶ However, despite short-term successes, many individuals who lose weight eventually regain it.¹ Weight gain then prompts the individual to lose weight once again, leading to yo-yo dieting (weight cycling). This yo-yo dieting can lead to negative health effects: the larger the weight gain and loss, the greater the risk for negative metabolic changes. Much of the weight returns as visceral as opposed to subcutaneous fat, increasing the risk of inflammation and cardiovascular disease.¹

UNDERSTANDING OVERCOMPENSATION TO PREVENT STARVATION

The function of the hormones involved in energy homeostasis helps explain the difficulty chronic dieters have achieving and maintaining a healthy

weight. Losing excess weight, although it may be desired by an individual, is perceived as a threat by the body.⁷ When energy stores are lost, a series of biochemical responses work to slow or reverse the weight loss. Far from being able to simply add and subtract calories to achieve a desired weight, the human body has a complex system in place to counter lost energy stores.⁸ This is because starvation poses a more immediate risk to survival than does excess weight.

THE POWER OF HUNGER HORMONES

Part of the process in compassionately understanding our clients rebound weight gain is to understand the power of homeostatic cues like hunger. The role that hunger hormones and fullness hormones play in the powerful biological system that maintains energy homeostasis has been investigated extensively over the past 20 years. One of the most powerful biochemical players in hunger physiology is the hormone ghrelin. Ghrelin is produced primarily by gastric cells when the stomach is empty, causing ghrelin levels to rise.⁹ Levels continue to rise causing a sensation of “hunger” which then triggers the individual to eat a meal. Because ghrelin is a growth hormone, it has many healthy effects. The spike in ghrelin before a meal is enough to help promote sleep and cardiac health.⁹ If this spike in ghrelin is not met with a meal, continued high levels will trigger an “overcompensation cascade” of biochemicals to prevent, from the body’s point of view, a dangerous loss of calories.⁹

Ghrelin has positive effects on various organs and systems, including the cardiovascular, due to the health effects found in growth hormones.⁹ However, if a surge in ghrelin is not met with food and levels stay high, involuntary physiological responses compensate to prevent energy loss. When ghrelin signals reach the receptors in the hypothalamus, other parts of the body are signaled to hold on to energy.^{1,8} Surges of ghrelin are healthy, whereas long-term increases of ghrelin have a negative effect on health. A possible explanation is that there are metabolic benefits to short-term fasting, whereas prolonged fasting can trigger a mayday response of biochemicals, increasing glucose, insulin, adiposity, and hyperphagia.^{1,9,10}

Attempts our clients make to lose weight, like meal skipping, crash dieting, and very low-calorie diets can trigger these pro-obesity outcomes and should be met with compassion.

THE IMPORTANCE OF FULLNESS HORMONES

Overriding fullness hormones on a regular basis leads to excess calories and can therefore lead to excess weight. There is general agreement that satiety, or fullness hormones, can be short or long term. The short-term fullness hormones, polypeptide YY (PYY) and glucagon-like peptides (GLP1 and GLP2), are primarily produced by the gut in response to a meal and act to suppress appetite.¹¹ Leptin is a long-term satiety hormone that is produced by adipocytes (fat cells). One of the primary roles of leptin is to let the hypothalamus know how much stored energy is available. With a healthy supply of adipose, the hypothalamus is signaled that all is well; appetite is suppressed, and energy is freely expended.¹¹

Recent studies have investigated the phenomenon of leptin resistance. For leptin to send satiety signals, peripheral leptin in the bloodstream must be taken across the blood–brain barrier.^{12,13} With consistently high levels of circulating leptin, the hypothalamus loses sensitivity to this peripheral leptin, thus reducing its appetite-suppressing function.^{13,14} The implication this has for patients and providers is that with increased appetite from leptin resistance, weight gain is more difficult to reverse.

PROMOTING HOMEOSTASIS IS HEALTHIER THAN DISRUPTING IT

Scientists have found a number of health behaviors that can reduce cardiometabolic risks regardless of weight. For example, eating based on hunger and fullness cues keeps ghrelin at healthy levels, whereas eating to lose weight risks increasing ghrelin and leptin to the point that negative metabolic changes can occur.^{1,10} Honoring internal cues is important whenever a behavior is needed to maintain the internal milieu, such as going to sleep or resting. Any threat to overall homeostasis can trigger hormonal responses that end up preserving energy stores. Nurturing homeostasis may assist in preventing the overcompensation that results in weight gain and cardiometabolic disease.

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