

Yo-Yo Dieting Alters Gut Health, Driving Weight Regain and Inflammation

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Yo-yo dieting alters gut health, leading to weight regain and increased inflammation. It affects gut hormones, microbiome composition and intestinal permeability, making long-term weight loss more challenging

The cycle of weight loss and regain promotes a proinflammatory state in your gut, damaging your intestinal lining and contributing to systemic inflammation and metabolic problems

Yo-yo dieting negatively impacts body composition, increasing fat deposition and decreasing muscle mass. It also affects pancreatic function and cardiovascular health, increasing disease risks

Improving gut health, particularly by increasing beneficial bacteria like Akkermansia, may help prevent weight regain and reduce inflammation associated with obesity and yo-yo dieting

When choosing Akkermansia probiotics, opt for products with high bacterial counts in delayed-release capsules to ensure live bacteria reach your colon. Take on an empty stomach for best results

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If you've ever experienced the frustration of losing weight only to regain it, you're not alone. This pattern, known as yo-yo dieting, is incredibly common. While the cycle itself is disheartening, research suggests it may have more serious consequences for your health than previously thought.¹ Yo-yo dieting doesn't just affect your waistline — it significantly alters your gut health, driving weight regain and increasing inflammation throughout your body.²

The weight loss journey is unique for each person, but a typical pattern emerges for many: rapid initial weight loss that gradually slows before weight starts creeping back up. This occurs even when you stick diligently to weight management strategies. As you cycle through losing and regaining weight multiple times, it becomes increasingly difficult to shed pounds and keep them off long-term.

Many people ultimately give up, believing sustained weight loss is impossible. However, understanding how yo-yo dieting impacts your gut may provide new insights for breaking this frustrating cycle.³

How Your Gut Influences Weight Regain

Your gut plays an often-overlooked role in regulating body weight and energy balance. It produces several important hormones that signal hunger and fullness to your brain. These gut peptide hormones, including PYY, GLP-1 and CCK, help suppress appetite and promote feelings of satiety after eating. Another gut hormone, ghrelin, stimulates hunger and food intake when your stomach is empty.

When you lose weight through calorie restriction, levels of these gut-derived satiety hormones decrease while ghrelin increases. This hormonal shift persists even after you stop actively dieting, creating a physiological drive to eat more and regain lost weight. Your body interprets the reduced energy intake and fat mass as a sign of starvation. It responds by conserving energy and ramping up hunger signals to restore your previous weight.⁴

These gut hormone changes represent a key challenge in maintaining weight loss long-term. They help explain why many people struggle with increased appetite and food cravings after dieting, even if they intellectually want to keep the weight off.

The Link Between Yo-Yo Dieting and Gut Inflammation

Chronic low-grade inflammation is a hallmark of obesity, and research suggests yo-yo dieting may exacerbate this inflammatory state.⁵ As explained in a review in the journal *Nutrients*, animal studies have found that weight regain after dieting triggers increased activation of proinflammatory immune cells and cytokines.⁶ This creates a more inflammatory environment in your gut and throughout your body.

While human studies on yo-yo dieting and gut inflammation are limited, research on post-obesity weight loss provides some insights. Losing weight after a period of obesity has been shown to reduce levels of inflammatory markers in the colon and improve intestinal barrier function. However, these benefits may be lost when weight is regained.

The cycle of repeatedly losing and regaining weight appears to promote a proinflammatory state in your gut. This chronic inflammation damages your intestinal lining over time, increasing gut permeability. A more permeable gut allows inflammatory substances to more easily enter your bloodstream, contributing to systemic inflammation and metabolic problems.

Even after successfully losing weight, the gut microbiome of yo-yo dieters remains in an altered state distinct from that of lean individuals. It takes many months for the microbiome to return to a “normal” composition after weight loss. This persistent change in gut microbes may increase susceptibility to future weight gain.⁷

Specific microbial changes seen with yo-yo dieting include decreases in beneficial bacteria like *Christensenella* and *Lactobacillus* species.⁸ These microbes are associated with leanness, reduced inflammation and better metabolic health. Meanwhile, harmful bacteria that have been linked to obesity and inflammatory conditions tend to increase. While more human studies are needed, these microbiome alterations may be an important factor driving the cycle of weight regain.

Can Targeting Your Gut Microbiome Prevent Weight Regain?

Given the close relationship between gut health and body weight, researchers are exploring whether modifying your gut microbiome could help prevent weight regain after dieting. Some promising animal studies have investigated using dietary interventions to favorably alter gut microbes during weight loss maintenance.

For example, supplementing with certain beneficial plant compounds — flavonoids — during dieting was found to reduce weight regain and increase fat burning in mice. The flavonoids also appeared to beneficially shift the gut microbial composition.⁹

While human studies on microbiome interventions for yo-yo dieters are lacking, research on post-obesity weight loss provides some encouraging signs. Successful weight loss in humans has been associated with increases in beneficial gut bacteria and decreases in inflammatory microbes.¹⁰

The Yo-Yo Effect: More Than Just Weight Fluctuation

In addition to gut health, yo-yo dieting also affects your overall metabolism. A study using mice explored the impacts of yo-yo dieting and the benefits of resistant starch supplementation.¹¹ Resistant starch (RS) is a type of dietary fiber that resists digestion in your small intestine and is fermented by gut bacteria in your large intestine. The findings similarly reveal that yo-yo dieting alters your gut microbiome, driving weight regain and inflammation.

During high-fat feeding periods, yo-yo dieters showed enriched levels of Bacteroidetes bacteria compared to those on a continuous high-fat diet, but reduced levels compared to those on a control diet.¹² Conversely, Firmicutes bacteria were reduced in yo-yo dieters compared to high-fat fed mice, but enriched compared to controls. These shifts in bacterial populations have profound effects on your metabolism and health.

Interestingly, the yo-yo diet resulted in an intermediate state of gut microbial diversity between control and high-fat diets. This suggests that while yo-yo dieting may partially restore some aspects of a healthy gut microbiome, it doesn't fully reverse the changes caused by high-fat feeding. In fact, the study revealed that even after successful weight loss, the microbiota profile of yo-yo mice remained in an intermediate configuration between the obese and control states.¹³

This altered microbiome signature persisted and required a period more than five times longer than the last dieting period to reverse back to the control state. While yo-yo dieting didn't significantly worsen metabolic health compared to continuous high-fat feeding, it also didn't provide substantial benefits.

These mixed results suggest that yo-yo dieting may have some metabolic benefits over continuous high-fat feeding, but it's far from an ideal approach to weight management. The repeated cycles of weight loss and gain are stressful on your body and contribute to long-term difficulties in maintaining a healthy weight.

In fact, the study observed that yo-yo dieting led to a greater rate of weight regain in male

mice compared to continuous high-fat feeding, potentially due to gut microbial differences between sexes.¹⁴

More Dangers of Yo-Yo Dieting

Yo-yo dieting, also known as weight cycling, has far-reaching effects on your body composition, inflammation levels, pancreatic function and cardiovascular health. Research published in *Metabolites* revealed that multiple cycles of weight loss and regain lead to increased fat deposition, particularly in central areas like your abdomen.¹⁵

During weight loss periods, you tend to lose lean mass (muscle), but during weight recovery, you primarily regain fat mass. This shift results in a higher proportion of body fat compared to muscle, which harms your overall health and makes future weight loss attempts more challenging.

Researchers found that the ratio between fat mass loss and lean mass loss decreases with each weight cycle. This means that with each cycle, you're losing more muscle relative to fat. The loss of skeletal muscle mass is particularly concerning, as it can lower your metabolic rate and reduce your physical strength and functionality.

Your adipose tissue (body fat) isn't just a passive energy store — it's metabolically active and plays a crucial role in your body's immune function. The study reveals that weight cycling enhances the inflammatory response in your body fat. This occurs through increased infiltration of macrophages — a type of immune cell — into your fat tissue and elevated production of proinflammatory mediators in your fat cells.¹⁶

Chronic low-grade inflammation, meanwhile, is associated with various health issues, including insulin resistance, Type 2 diabetes and cardiovascular disease.¹⁷ The research suggests that the inflammatory changes induced by weight cycling may persist even after weight loss, increasing your risk for these conditions.

Negative Impacts on Pancreatic Function and Your Cardiovascular System

Your pancreas plays a critical role in regulating blood sugar levels, and the study finds that weight cycling significantly disrupts its function.¹⁸ The repeated fluctuations in blood glucose concentration and insulin levels associated with weight cycling cause your pancreatic beta cells, which produce insulin, to increase or decrease in number.

Over time, this constant flux leads to beta-cell fatigue and eventual failure. The study indicates that weight cycling impairs your pancreas's ability to adapt to these changes, accelerating the development of insulin resistance and Type 2 diabetes. This pancreatic stress is another way that yo-yo dieting may increase your long-term health risks.

Further, weight cycling places additional strain on your cardiovascular system. The repeated fluctuations in weight cause corresponding changes in various cardiovascular risk factors, such as blood pressure, heart rate, blood glucose, lipids and insulin levels.¹⁹

These frequent variations may repeatedly push these cardiovascular variables beyond

normal ranges, especially during periods of weight regain. This added stress on your heart and blood vessels could increase your risk of developing cardiovascular diseases like coronary heart disease and atherosclerosis. The study suggests that the cardiovascular risks associated with weight cycling may even surpass those of persistent obesity.

Boost Your Gut Health for Natural Weight Management

[Sustainable weight loss](#) involves more than just a quick fix. It requires a holistic approach that considers your overall health. While yo-yo dieting decimates gut health, ultimately fueling obesity, taking steps to improve your gut health puts you on a natural path to a healthy weight.

Instead of cycling between restrictive diets and periods of overeating, focus on developing sustainable, healthy eating habits. By taking steps to nurture a healthy gut, you may be able to reduce inflammation, better regulate appetite hormones, improve your cellular energy and create a more favorable environment for maintaining a healthy weight long-term.

Breaking the yo-yo dieting cycle requires addressing the underlying physiological changes driving weight regain — and your gut health is a key piece of that puzzle.

Studies have consistently shown that obese individuals tend to have lower levels of Akkermansia in their gut compared to lean individuals.²⁰ When you have a healthy abundance of Akkermansia, which have been described as [nature's Ozempic](#), in your gut, it helps maintain the integrity of your intestinal lining, reducing the risk of “leaky gut” syndrome.²¹ This bacterium also influences how your body processes fats.

Moreover, Akkermansia has been linked to reduced inflammation in your body, a key factor in obesity.²² One of Akkermansia's primary functions is the production of short-chain fatty acids (SCFAs), including butyrate. These fatty acids serve as fuel for your colonocytes, which in turn produce mucin, a gel-like protective substance that coats your gut lining.

SCFAs also help remove oxygen from your colon, creating an environment where beneficial bacteria flourish. Mucin acts as a barrier, shielding intestinal cells from damage, harmful microorganisms and digestive irritants. However, while Akkermansia plays a vital role in maintaining intestinal health, many individuals have insufficient levels due to compromised mitochondrial function and oxygen leakage in their gut.

Eating a diet high in ultraprocessed foods, which are typically loaded with [linoleic acid](#), can lead to low levels of Akkermansia. Factors such as chronic stress, a sedentary lifestyle and aging also affect your gut microbes, including Akkermansia.

Make Sure Live Akkermansia Probiotics Reach Your Colon

When selecting Akkermansia probiotics, opt for products with bacterial counts in the billions rather than millions. Generally, a higher bacterial count is beneficial, but there's an important caveat: the delivery method is crucial.

Look for probiotics in delayed-release capsules. This feature is essential because it ensures the beneficial bacteria have a higher likelihood of reaching your colon alive. Without this protective mechanism, most of the bacteria may not survive the journey through your

digestive system.

Akkermansia are very sensitive to oxygen. This makes their journey through your digestive system very challenging. These beneficial microbes thrive in an oxygen-free environment, and even a brief exposure to oxygen can be fatal for them. This trait makes the delivery method of Akkermansia supplements crucial to their effectiveness.

In fact, a lower-dose probiotic (in the hundreds of thousands of bacteria) that successfully reaches your colon can be more effective than a high-dose product (with hundreds of billions of bacteria) that doesn't make it to its intended destination. Remember, when it comes to probiotics, successful delivery to the colon is just as important as the initial dosage.

Understanding this helps you choose the most effective supplement. You want to nurture your gut microbiome with live, active Akkermansia, as dead or inactive ones won't do you as much good as they don't reproduce.

If you want to use Akkermansia supplements, look for ones with advanced, dual-timed release capsules or microencapsulation. These technologies keep Akkermansia dormant and protected until it reaches your colon, usually in two to four hours.

To maximize its effectiveness, take it on an empty stomach, ideally first thing in the morning after an overnight fast. Wait at least one to two hours before eating to reduce transit time, allowing the bacteria to reach your colon faster — usually within two hours. This will greatly increase the number of live bacteria that make it to your colon.

Avoid taking probiotics with food, as this can extend your transit time to over eight hours, likely killing the bacteria long before they reach your colon. Being mindful of when and how you take your Akkermansia probiotic will maximize the benefits of this powerful probiotic.

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Notes

^{1, 2, 3, 4, 5, 6, 7, 8, 9, 10} [Nutrients 2024, 16\(18\), 3170; doi: 10.3390/nu16183170](#)

^{11, 12, 13, 14} [Nutrients September 2024, 16, 3138](#)

^{15, 16, 17, 18, 19} [Metabolites. 2024 Jun 19;14\(6\):344](#)

²⁰ [Front Immunol. 2024 Mar 20;15:1370658](#)

^{21, 22} [Front Microbiol. 2020 Feb 21;11:219](#)

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