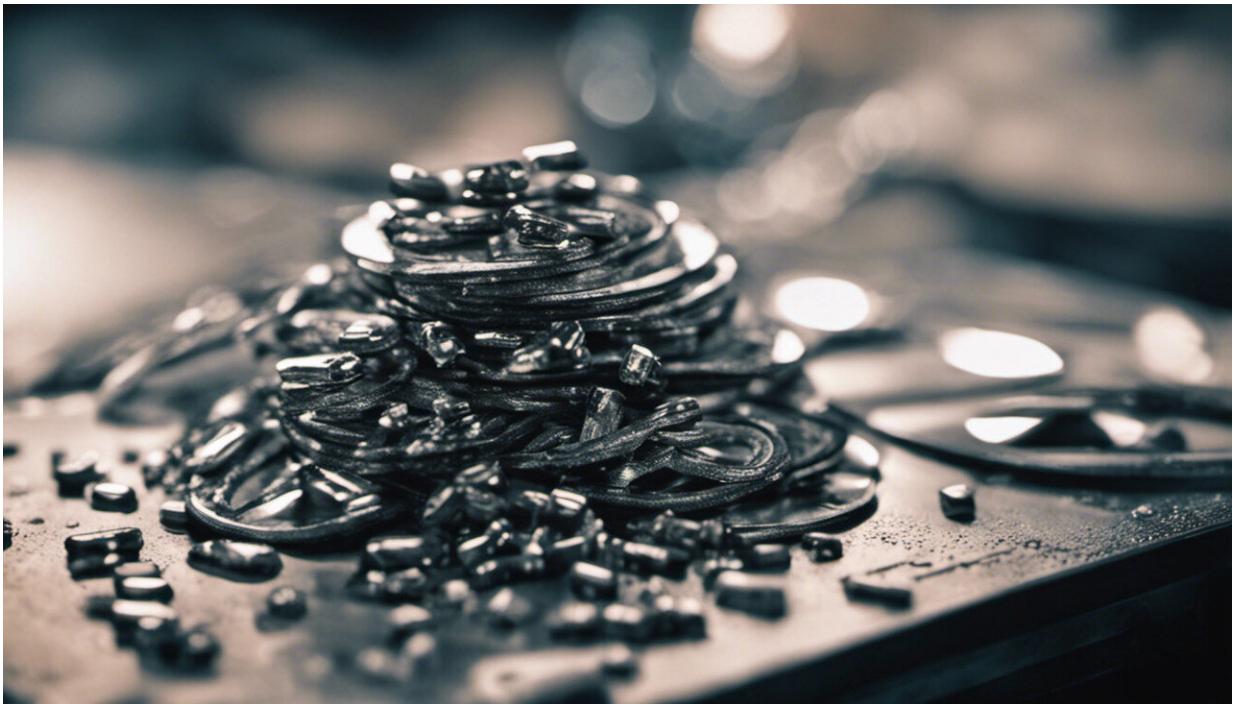


# What's the 'weight set point,' and why does it make it so hard to keep weight off?

February 22 2023, by Nick Fuller

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Credit: AI-generated image ([disclaimer](#))

If you've ever tried to lose weight but found the kilos return almost as quickly as they left, you're not alone.

In fact, the challenge of maintaining [weight loss](#) is confirmed by research, including an analysis of 29 [long-term weight loss studies](#) that

found more than half of the [weight](#) lost by participants was regained within two years, and more than 80% of lost weight was regained within five years.

When we regain weight, we tend to blame it on a lack of willpower.

But there's a scientific reason many people return to their previous weight after dieting, and understanding the science—known as the [weight set point theory](#)—is key to achieving long-term weight loss.

## What is the weight set point?

We each have a predetermined weight—a set point—which our body protects. It's the weight you'll remember being at for a long period of time in your adult years (over 20 years of age) and it's the weight you'll remember bouncing back to after any bout of dieting.

It's programmed in the early years of life—particularly during the first 2,000 days of life—from conception to five years of age. Our [genes](#) play a role in programming our weight set point. Just as DNA prescribes whether we're shorter or taller than others, we're [born](#) with a tendency to be slim or overweight. But our genetic make-up is just a predisposition, not an inevitable fate.

Weight set point is also influenced by the environmental factors genes may be exposed to during pregnancy and the first years of life. It explains why some children who are fed a [poor diet](#) are more susceptible to unhealthy weight gain (due to their genetic make-up) while others are not. Research shows unhealthy weight gain during the early years of life is likely to persist throughout [adolescence and adulthood](#).

Lastly, our [body weight](#) is influenced by the environment itself. For example, an [unhealthy diet](#), [sedentary lifestyle](#) and poor sleep will result

in an increase in your weight set point over time and at a rate of [0.5 kilograms per year](#).

Our bodies work hard to keep our weight around our set point by adjusting our biological systems, regulating how much we eat, how we store fat and expend energy. This stems from our hunter-gatherer ancestors, whose bodies developed this survival response to adapt to periods of deprivation when food was scarce to protect against starvation. Unfortunately, this means our body is very good at protecting against weight loss but not weight gain.

## **How our bodies work to protect our set point when we diet**

When we change our diet to lose weight, we take our body out of its comfort zone and trigger its survival response. It then counteracts weight loss, triggering [several physiological responses](#) to defend our body weight and "survive" starvation.

Our body's survival mechanisms want us to regain lost weight to ensure we survive the next period of famine (dieting), which is why many people who regain weight after dieting end up weighing more than when they started.

Our bodies achieve this result in several ways.

### **1. Our metabolism slows and our thyroid gland misfires**

Our metabolic rate—how much energy we burn at rest—is determined by how much muscle and fat we have. Muscle is more metabolically active than fat, meaning it burns more calories. Typically, when we diet

to lose weight, we lose both fat and muscle, and the decrease in our calorie-burning muscle mass slows our metabolism, slowing the rate at which we lose weight.

[Research](#) also shows that for every diet attempt, the rate at which we burn off food [slows by 15%](#) and that even after we regain lost weight, our metabolism [doesn't recover](#). But exercise can help restore and speed up our [metabolism](#) as it improves our muscle to fat ratio.

Dieting also affects our [thyroid gland](#)—the gatekeeper to our metabolism. When our thyroid functions correctly, it produces vital hormones that control our [energy levels](#) and metabolism, but when we restrict our [food intake](#), [fewer hormones are secreted](#), reducing the energy we burn at rest

## **2. our energy sources are used differently**

Our bodies predominantly burn fat stores at rest, but when we diet and start losing weight, our body adapts for protection. It [switches](#) from using fat as its energy source to carbohydrates and holds onto its fat, resulting in less energy being burned at rest

## **3. our appetite hormones adjust**

Appetite hormones play a large part in weight management. When we're hungry, the stomach releases a hormone called ghrelin to let our brain know it's time to eat. Our gut and fat tissue also release hormones to signal fullness and tell us it's time to stop eating.

However, when we diet and deprive our bodies of food, these hormones work differently to defend our set point weight, suppressing feelings of fullness and [telling us to eat more](#). Like our metabolism, appetite

hormones don't return to the same levels before dieting, meaning feelings of hunger can prevail, even after weight is regained

#### **4. our adrenal gland functions differently**

Our adrenal gland manages the hormone cortisol, which it releases when a stressor—[like dieting](#)—is imposed. Excess cortisol production and its presence in our blood leads to weight gain because it plays a vital role in how our bodies process, store and burn fat

#### **5. our brain works differently**

Typically, diets tell us to restrict certain foods or food groups to reduce our calorie intake. However, this heightens activity in our mesocorticolimbic circuit (the reward system in our brain) resulting in us [overeating](#) the foods we've been told to avoid. This is because foods that give us pleasure release feel-good chemicals called endorphins and a learning chemical called dopamine, which enable us to remember—and give in to—that feel-good response when we see that food.

When we diet, activity in our hypothalamus—the clever part of the brain that regulates emotions and food intake—also reduces, [decreasing our control and judgment](#). It often triggers a psychological response dubbed the "what-the-hell effect"—the vicious cycle we enter when we indulge in something we feel we shouldn't, feel guilty about it, and then go back for even more.

We are biologically wired to protect our weight set point. Conventional diets, including the latest hype surrounding "intermittent fasting" and "keto", fail to promote healthy eating and fail to address the weight set point. You'll eventually regain the weight you lost.

Just as the problem is evolutionary, the solution is evolutionary too.

Successfully losing weight long-term comes down to:

1. following evidence-based care from health-care professionals that have studied the science of obesity, not celebrities
2. losing weight in small manageable chunks you can sustain, specifically periods of weight loss, followed by periods of weight maintenance, and so on, until your goal weight is achieved
3. making gradual changes to your lifestyle to ensure you form habits that last a lifetime.

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Provided by The Conversation

Citation: What's the 'weight set point,' and why does it make it so hard to keep weight off? (2023, February 22) retrieved 20 April 2024 from <https://medicalxpress.com/news/2023-02-weight-hard.html>

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