

It's time to bust the 'calories in, calories out' weight-loss myth

June 6 2023, by Nick Fuller



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

If you've ever tried to lose weight, there's a good chance you've been told it all comes down to a simple "calories in, calories out" formula: burn more calories than you consume, and the kilos will disappear.

And it's easy to see the appeal of breaking weight loss down into simple

math—just follow the formula, and you'll achieve success. It's also believable because many people do lose weight when they first adopt this approach.

Indeed, the diet industry's reliance on the "[calories](#) in, calories out" concept is why society blames people for being overweight. Anyone who can't follow this simple energy formula is only overweight because they lack the willpower to eat less and exercise more.

But the only simple truth here is that it's time to bust the "calories in, calories out" myth as the only way to lose weight. Here's why.

It's nearly impossible to calculate accurately

The many calorie-counting apps and online calculators available make it seem effortless. Simply enter your sex, age, height, weight, body composition and activity levels and they'll tell you exactly how many calories you should eat daily to lose weight.

Unfortunately, no matter how accurate these calculators claim to be, they rely on averages and can't determine the [calorie intake](#) appropriate for you with 100% accuracy. They can only estimate.

Similarly, our [metabolic rate](#)—how much energy we burn at rest—also varies from person to person based on many factors, including [body composition](#) or how much muscle and fat we have. Complicating things further, our metabolic rate also alters when we change our diet and lose weight.

Calculating the calories in food—the other part of managing "calories in"—is also far from accurate.

While Australian food standards require foodstuffs to display Nutrition

Information Panels showing energy in kilojoules, there are no requirements for information accuracy other than it must not be misleading. A worrying [+/-20% discrepancy is generally accepted](#) for the values shown on labels.

In practice, the variation can be much more than this. One Australian study found food contained anywhere [between 13% less and 61% more](#) energy or nutrient components than its packaging stated.

Not all calories are created, or consumed, equally

Another reason the simple "calories in, calories out" formula is not so simple is our bodies don't consume every calorie the same way. What's shown in your calorie counter is not what's actually absorbed in your body.

Different calorie sources also have different effects on our hormones, brain response and [energy expenditure](#), changing how we respond to and manage our food intake.

For example, while eating 180 calories worth of nuts is the same as eating 180 calories of pizza in terms of energy intake, the way these foods are absorbed and how they affect the body is very different.

While we absorb most of the calories in a slice of pizza, we don't absorb about [20% of the calories](#) in nuts because their fat is stored in the nut's fibrous cell walls, which don't break down during digestion. Nuts are also packed with fiber filling us up for longer, while a slice of pizza has us immediately reaching for another due to its low fiber content.

Our bodies disrupt the formula

The biggest failing of the "calories in, calories out" formula is it ignores that the body adjusts its [control systems](#) when calorie intake is reduced. So while the formula can support people achieving weight loss initially, the reduction in energy intake is [counteracted by mechanisms](#) that ensure lost weight is regained.

Namely, when your body registers a sustained decrease in the calories you consume, it believes its survival is threatened. So it automatically [triggers a series of physiological responses](#) to protect against the threat, reducing our metabolic rate and burning less energy.

This stems from our hunter-gatherer ancestors, whose bodies developed this response to adapt to periods of deprivation when food was scarce to protect against starvation.

Research also suggests our bodies have a "set point weight": a [genetically predetermined weight](#) our bodies try to maintain regardless of what we eat or how much we exercise.

Our bodies protect our set point as we lose weight, managing biological signals from the brain and hormones to hold onto fat stores in preparation for future reductions in our calorie intake.

The body achieves this in several ways, all of which directly influence the "calories in, calories out" equation, including:

- **slowing our metabolism.** When we reduce our calorie intake to lose weight, we lose muscle and fat. This decrease in body mass results in an expected decrease in metabolic rate, but there is a [further 15% decrease in metabolism](#) beyond what can be accounted for, further disrupting the "calories in, calories out" equation. Even after we regain lost weight our metabolism [doesn't recover](#). Our [thyroid gland](#) also misfires when we restrict

our food intake, and [fewer hormones are secreted](#), also changing the equation by reducing the energy we burn at rest

- **adapting how our energy sources are used.** When we reduce our energy intake and start losing weight, our body [switches from using fat as its energy source](#) to carbohydrates and holds onto its fat, [resulting in less energy being burned](#) at rest
- **managing how our adrenal gland functions.** Our [adrenal gland](#) manages the hormone cortisol, which it releases when something that stresses the body—like calorie restriction—is imposed. Excess cortisol production and its presence in our blood [changes how our bodies process, store and burn fat](#).

Our bodies also cleverly trigger responses aimed at increasing our calorie intake to regain lost weight, including:

- **adjusting our appetite hormones.** When we reduce our calorie intake and deprive our bodies of food, our hormones work differently, [suppressing feelings of fullness](#) and telling us to eat more
- **changing how our brain functions.** When our calorie intake reduces, activity in our hypothalamus—the part of the brain that regulates emotions and [food intake](#)—also reduces, [decreasing our control](#) and judgement over our food choices.

Bottom line

The "calories in, calories out" formula for weight loss success is a myth

because it oversimplifies the complex process of calculating energy intake and expenditure. More importantly, it fails to consider the mechanisms our bodies trigger to counteract a reduction in [energy](#) intake.

So while you may achieve short-term weight loss following the formula, you'll likely regain it.

What's more, calorie counting can do more harm than good, taking the pleasure out of eating and contributing to developing an unhealthy relationship with [food](#). That can make it even harder to achieve and maintain a healthy [weight](#).

For long term [weight loss](#), it's important to follow evidence-based programs from health-care professionals and make gradual changes to your lifestyle to ensure you form habits that last a lifetime.

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Provided by The Conversation

Citation: It's time to bust the 'calories in, calories out' weight-loss myth (2023, June 6) retrieved 4 May 2024 from <https://medicalxpress.com/news/2023-06-calories-weight-loss-myth.html>

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