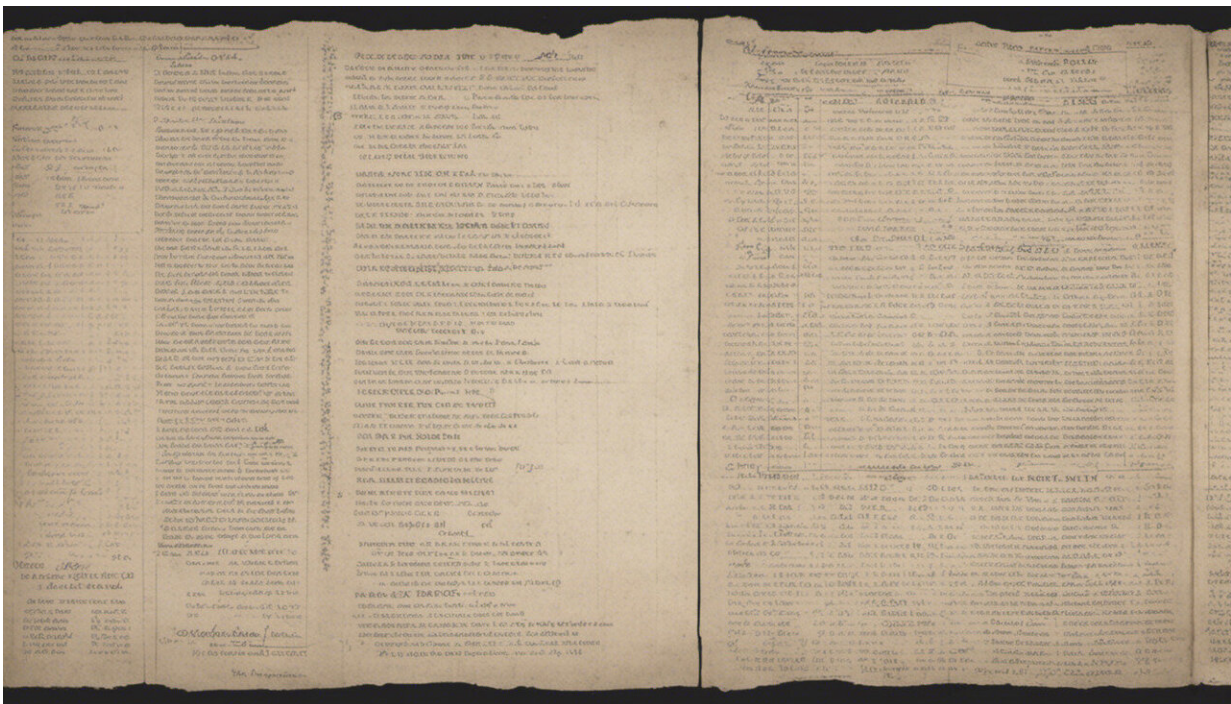


Weight loss: here's why those last few pounds can be hardest to lose—according to science

June 9 2020, by Peter Rogers



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

So you've done everything you're supposed to. You're eating in a calorie deficit, are exercising a few times a week, and are getting close to your weight loss goal. And then you hit a plateau with only a few pounds to lose—and they just won't seem to budge.

It's long been a complaint that those last five pounds can often be the hardest to lose. And the answer to why this is the case reveals a lot about the dynamic relationship between [body weight](#) and appetite (what we feel when we say we're "hungry"), and about how, as humans, we're almost always "ready to eat".

When dieting to lose [weight](#), there are two basic reasons why weight loss typically slows down over time. The first reason is that calorie (energy) expenditure decreases with weight loss. This "[slowed metabolism](#)" happens because fewer calories are required to maintain and move a lighter body.

We can even estimate with reasonable accuracy how [calorie expenditure changes](#) according to weight. For example, a 175-centimetre-tall, moderately active 45-year-old man who weighs 90 kilograms would need to [reduce his calorie intake](#) from 3,200 to 2,270 kcal a day to lose 15 kilograms in six months. It's worth noting that what we normally call "calories" are actually kilocalories or kcal, which is equal to 1,000 calories.

If he stuck to this diet of 2,270 kcal a day throughout, he would lose on average 2.6 kilograms a month during the first five months and 1.8 kilograms in the final month. He'd then need to eat around 2,780 kcal daily to maintain his goal weight of 75 kilograms.

The second reason why losing weight becomes progressively difficult is that [weight loss](#) is accompanied by an [increase in appetite](#). The [hormone leptin](#) tells our brain how much fat is stored in our body. When we have more fat stored, leptin increases and reduces appetite. But when we lose body fat, the leptin "[brake](#)" on our appetite is partly released, [making us a little more hungry](#).

Changes in calorie expenditure and the effect of body fat stores on

appetite both stabilise body weight over the long term. But their effects are barely noticeable in the short term. Instead, at any point in the day the dominant influence on our appetite is how long ago we last ate and how full we still feel from our last meal. In other words, we get hungry when our [stomach tells our brain](#) that it's empty, or nearly empty.



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

Ready to eat

Left unchecked, signals from our stomach leave us vulnerable to overeating. This is because our stomach has the capacity to accommodate more calories than we expend. For example, a recent study found that when participants were served pizza for lunch and invited to eat until they felt "comfortably full", they ate 1,580 kcal.

When they were asked to eat as much as they could, they ate [twice that amount](#) – their daily calorie requirement in a single meal. This shows that we are almost always ready to eat—and capable of eating beyond a level of comfortable fullness.

Fullness is determined partly by the fat, carbohydrate and protein content of the meal, and partly by its overall bulk. For example, if the meal [contains more fibre](#), it's more filling—which is why it's hard to overeat bulky foods such as fruits and vegetables.

If the study's participants had been offered apples instead, they wouldn't have been able to eat 1,580 kcal, let alone twice that amount. Because the concentration of calories in apples (their [energy density](#)) is only 50 kcal per 100 grams, they would need to eat over three kilograms of apples to eat 1,580 kcal. Pizza has around 280 kcal per 100 grams—over five times higher than the energy density of apples. Fullness per calorie is higher for foods that have a lower energy density. So, we'd feel more full if we ate the same number of calories from apples than pizza.

But we generally find foods that have a [high energy density](#), like pizza (and chocolate and crisps—each over 500 kcal per 100 grams) [more delicious](#). Biologically, this is probably because these foods are a valuable resource—their low fullness per calorie means we can eat more. So we're prone to overeat high-calorie foods for two reasons: they're less filling per calorie, and they're more delicious (and pleasurable) to eat. But recent research shows that high-calorie foods often don't [give us that much more pleasure](#) when we eat them. This should make it possible to reduce [calorie intake](#) without significantly affecting pleasure.

For example, choosing to eat 100 grams of strawberry yoghurt (95 kcal) instead 100 grams of strawberry cheesecake (at least 250 kcal) may be less pleasurable—but only slightly. With repetition, you may find yourself choosing the lower calorie option out of habit—and keeping

your weight in check.

But over time, eating less can be difficult. It's hard to maintain vigilance and restraint to resist our desire to eat delicious, higher energy-dense foods. Dieting lapses are therefore inevitable, and over time our [motivation to maintain eating restraint](#) and increase physical activity may weaken. This can add further to the perception that the last five pounds is harder to lose.

Overall, our weight settles around a point that is a balance between the lure of the foods that we include in our diet, our eating restraint, and the energy we expend in physical activity. We can change all three, although choosing foods with lower energy density may be an especially effective strategy to reduce weight. And for maintaining that healthier weight, it is worth keeping in mind that lighter bodies require fewer calories.

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