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Haines, Matthew

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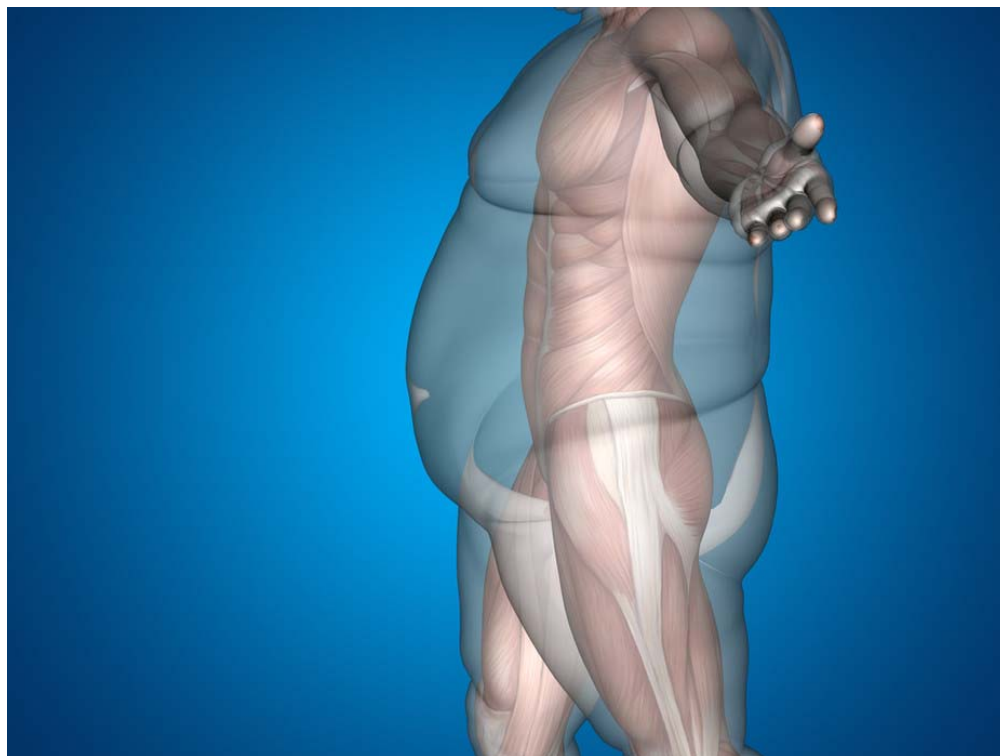
# THE CONVERSATION

## Explainer: why is it so hard to lose weight?

December 1, 2015 12.42pm GMT

**Matthew Haines**

Senior Lecturer in Health and Wellbeing, University of Huddersfield



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We are designed to seek food – our drive to do so is essential to our survival and we have a complex system to control this. Recent research shows that following weight loss, levels of circulating hormones which affect our appetite tend to promote over-eating and weight regain.

Indeed, the Minnesota experiment published in 1950 showed that we tend to overeat after a period of energy restriction until fat mass has returned to or exceeded initial levels. And although we might consider fat a simple energy reserve, during periods of food shortage fuel partitioning is not straightforward – muscle protein is just as readily converted to energy which protects fat stores.

### Blame the hunter-gatherers

It can be surprising to hear that excess fat is rigorously defended by our own bodies. However, a moment's thought explains why this should be. Our physiology has been shaped over millennia by evolutionary processes which make us suited to a hunter-gatherer lifestyle – which necessitates high levels of physical activity and likely periods of famine and feast.

Those with thrifty metabolic adaptations, which favoured storage of excess energy as fat would have been more likely to survive and pass on their genes. During periods of famine, the ability to hold on to stored fat would also have been advantageous. These adaptations which

were once useful, are now causing unprecedented levels of obesity across all populations that lead a lifestyle characterised by low levels of physical activity and an abundance of food. In short, we are designed to store fat, and to keep it once we have it.

## Designed for fat

To understand our physiology, we must understand homeostasis whereby biological systems are regulated mostly via negative feedback systems. Changes to a monitored condition (such as body fat) produce responses that oppose the change until the monitored condition returns to a “set point”. This seems to be the case for weight loss. A reduction of fat tissue results in changes in levels of hormones that typically lead to a return to the original level of fat.

Crucially however, this does not seem to be the case when dealing with weight *gain*. Our biological systems seem insufficiently powerful to return us to our set-point. Perhaps the environment is too overwhelmingly obesogenic? Or perhaps our physiology has always relied on an external event, such as famine or high levels of physical activity, to regulate body weight?

As long as the environment remains obesogenic, the problem of obesity will remain. We can no longer rely on our instinct to regulate body fat – we must now rely on our intellect.



Obesity

Weight loss

Weight gain

Fat



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