



Michael Mosley presents Horizon: Eat, Fast and Live Longer on BBC Two at 21:00 BST on Monday 6 August

The power of intermittent fasting



Michael Mosley fasted for two days every week

Scientists are uncovering evidence that short periods of fasting, if properly controlled, could achieve a number of health benefits, as well as potentially helping the overweight, as Michael Mosley discovered.

I'd always thought of fasting as something unpleasant, with no obvious long term benefits. So when I was asked to make a documentary that would involve me going without food, I was not keen as I was sure I would not enjoy it. But the Horizon editor assured me there was great new science and that I might see some dramatic improvements to my body. So, of course, I said, "yes". I am not strong-willed enough to diet over the long term, but I am extremely interested in the reasons why eating less might lead to increased life span, particularly as scientists think it may be possible to get the benefits without the pain.

Find out more



How you age is powerfully shaped by your genes. But there's not much you can do about that.

Calorie restriction, eating well but not much, is one of the few things that has been shown to extend life expectancy, at least in animals. We've known since the 1930s that mice put on a low-calorie, nutrient-rich diet live far longer. There is mounting evidence that the same is true in monkeys.

Growth hormone The world record for extending life expectancy in a mammal is held by a new type of mouse which can expect to live an extra 40%, equivalent to a human living to 120 or even longer. It has been genetically engineered so its body produces very low levels of a growth hormone called IGF-1, high levels of which seem to lead to accelerated ageing and age-related diseases, while low levels are protective.



Professor Longo has investigated growth hormone deficiency in humans

A similar, but natural, genetic mutation has been found in humans with Laron syndrome, a rare condition that affects fewer than 350 people worldwide. The very low levels of IGF-1 their bodies produce means they are short, but this also seems to protect them against cancer and diabetes, two common age-related diseases. The IGF-1 hormone (insulin-like growth factor) is one of the drivers which keep our bodies in go-go mode, with cells driven to reproduce. This is fine when you are growing, but not so good later in life. But it turns out IGF-1 levels can be lowered by fasting. The reason seems to be that when our bodies no longer have access to food they switch from "growth mode" to "repair mode". As levels of the IGF-1 hormone drop, a number of repair genes appear to get switched on according to ongoing research by Professor Valter Longo of the University of Southern California. Intermittent fasting One area of current research into diet is Alternate Day fasting (ADF), involving eating what you want one day, then a very restricted diet (fewer than 600 calories) the next, and most surprisingly, it does not seem to matter that much what you eat on non-fast days. Dr Krista Varady of the University of Illinois at Chicago carried out an eight-week trial comparing two groups of overweight patients on ADF. "If you were sticking to your fast days, then in terms of cardiovascular disease risk, it didn't seem to matter if you were eating a high-fat or low-fat diet on your feed (non-fast) days," she said. I decided I couldn't manage ADF, it was just too impractical. Instead I did an easier version, the so-called 5:2 diet. As the name implies you eat normally 5 days a week, then two days a week you eat 500 calories if you are a woman, or 600 calories, if you are a man. There are no firm rules because so far there have been few proper human trials. I found that I could get through my fast days best if I had a light breakfast (scrambled eggs, thin slice of ham, lots of black tea, adding up to about 300 calories), lots of water and herbal tea during the day, then a light dinner (grilled fish with lots of vegetables) at night.

Healthy living

- What is a healthy weight?
- Being active may depend on finding a form of exercise which suits you
- A diet and fitness plan can help physical and mental health

Source: BBC health

On my feed days I ate what I normally do and felt no need to gorge.

I stuck to this diet for 5 weeks, during which time I lost nearly a stone and my blood markers, like IGF-1, glucose and cholesterol, improved. If I can sustain that, it will greatly reduce my risk of contracting age-related diseases like cancer and diabetes.

Current medical opinion is that the benefits of fasting are unproven and until there are more human studies it's better to eat at least 2000 calories a day. If you really want to fast then you should do it in a proper clinic or under medical supervision, because there are many people, such as pregnant women or diabetics on medication, for whom it could be dangerous.

I was closely monitored throughout and found the 5:2 surprisingly easy. I will almost certainly continue doing it, albeit less often. Fasting, like eating, is best done in moderation.