

Can changing your mealtimes make you healthier?

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Many people want to eat more healthily but find it difficult to change their diet. So what happened when Michael Mosley altered not what he ate, but when he ate?

We've known for some time that altering the time at which you eat can affect your weight and metabolism. At least if you are a mouse.

Based on mice studies, it seems the secret to improving your health is to restrict the time window within which you eat, and by doing so extend the amount of time you go without food.

A few years ago Prof Satchidananda Panda, from the world-famous Salk Institute in California, showed that mice fed on a high-fat diet, but only allowed to eat within an eight-hour window, [were healthier and slimmer](#) than mice that were given exactly the same food but allowed to eat it whenever they wanted.

In a more recent study the same researchers again subjected hundreds of mice to different lengths of daily fasts, ranging from 12 to 15 hours.

Again they found that the mice that went for at least 12 hours without eating [remained healthier and slimmer](#) than those who ate the same number of calories, but spread out.

But how well would this work in humans? To find out, Trust Me I'm a Doctor recruited 16 volunteers for a 10-week study run by Dr Jonathan Johnston at the University of Surrey.

His team measured the volunteers' body fat, blood sugar levels, blood fat (triglycerides) and cholesterol levels at the start of the study. They were



Mice put on more weight depending on when they were fed

then randomly assigned to one of two groups, the blues or the reds.



Some of the volunteers (with Trust Me presenter Chris Van Tulleken) in the diet experiment

Find out more

Trust Me I'm A Doctor is broadcast on BBC Two at 20:00 GMT on Wednesday 13 January 2016, or you can [catch up afterwards on iPlayer](#)

[Take the test: When should I eat my main meal?](#)

The blues, who were the control group, were asked to carry on as normal. The reds were asked to stick to their normal diet but move their breakfast 90 minutes later, and their dinner time 90 minutes earlier.

This meant that for three extra hours each day they went without food (fasting). Everyone kept a food and sleep diary to ensure that they were eating the same amount as normal.

So why would crunching the time within which you eat change anything? Well, there are two possible mechanisms.

Firstly, there are now [plenty of studies](#) which have shown that going for longer periods of time without eating - fasting - is beneficial.

It also seems that your body deals with calories better at certain times of day. According to Johnston, one of the worst times to load up with sugar and fat is late at night, when blood levels of these substances are already high.

To test this out I decided to carry out a rather unpleasant self-experiment.



Best tackled in the morning?

After an overnight fast I had some bloods taken, then at 10:00 I had a classic British fry-up - lots of bacon, eggs and sausage. I had more bloods taken directly after the meal and every half hour for the next few hours. And yes, it did hurt.

Twelve hours later, at 22:00, I had my second meal of the day. It was exactly the same meal as I had had for breakfast. Again my bloods were taken regularly over the next few hours before I was eventually allowed to crawl into bed.

The blood tests showed that after my morning meal my blood sugar level returned to normal pretty quickly, while the levels of fat in my blood began to drop after about three hours. In the evening, however, after exactly the same meal, my blood sugar levels stayed high for much longer and the fat levels in my blood were still rising four hours after I finished eating.

So Johnston is right - our bodies really don't like having to have to deal with lots of food late at night. A midnight snack will have a worse impact on your body than the same food eaten earlier in the day.

There's an old adage: "Breakfast like a king, lunch like a prince and dine like a pauper," and it appears to be true. If you must have that fry-up, have it for breakfast.

But what about the main experiment, reducing the time period within which our volunteers were allowed to eat? Well, at the end of 10 weeks, we gathered all the volunteers together and repeated the tests.



What we found is that the group who had eaten breakfast later and dinner earlier had, on average, lost more body fat and seen bigger falls in blood sugar levels and cholesterol than the control group.

So it was very positive result and the first randomised trial of this sort carried out in humans.

Sticking rigidly to a reduced eating window may, for many people, not be entirely practical. But there does seem to be benefit from doing it when you can - and it is certainly a good idea to avoid the midnight cheeseburger.