



Can fasting for two days each week stop dementia? It sounds far-fetched, but scientists think slashing calories may combat a host of illnesses

Fasting was a common medical treatment in the past, but now there may be good reason for it to make a comeback.

One day in the not-so-distant future, you may find yourself receiving some unusual health advice from your GP: fast two days a week to prevent your brain shrinking with age.

You might be given the same advice to lower your risk of heart disease and diabetes — and even tackle cancer.

Fasting was a common medical treatment in the past, but now new research suggests there may be good reason for it to make a comeback. This is because it seems to trigger all sorts of healthy hormonal and metabolic changes. Researchers have long known that cutting back animals' calories over an extended period can make them live up to 50 per cent longer — it's been harder to prove benefits in humans because few people can stick to this restrictive regimen.

But there's now emerging evidence to show occasional fasting — which is much more manageable — also carries benefits. Fasting days involve eating between 500 and 800 calories (the usual daily intake for a woman is 2,000 calories, for a man, 2,500).

This intake appears to cause a drop in levels of growth-factor, a hormone linked with cancer and diabetes, as well as a reduction in 'bad' LDL cholesterol and triglycerides (fats) in the blood.

Meanwhile, free radicals — the damaging molecules linked to disease — are dampened down. Studies also suggest that levels of inflammation can fall. And now there is the suggestion that fasting protects the brain, too.

'Suddenly dropping your food intake dramatically — cutting it by at least half for a day or so — triggers protective processes in the brain,' explains Professor Mark Mattson, head of neuroscience at the U.S. National Institute on Ageing.

'It is similar to the beneficial effect you get from exercise.' This could help protect the brain against degenerative diseases such as Alzheimer's and Parkinson's.

Professor Mattson is one of the pioneers of research into fasting — a few years ago he made a breakthrough when he found rats could get nearly all the benefits of calorie restriction if the scientists only cut back their calories every other day. On the next day the rats could eat as much as they liked and yet they showed the same benefits as rats on a low-calorie regimen all the time.

According to experts protective processes in the brain are triggered when food intake is dramatically cut.

Suddenly it looked as if humans could benefit from a form of calorie restriction regimen that, unlike daily restriction, is feasible to follow. Now results of other trials are revealing the benefits.

In one study, reported last year in the International Journal of Obesity, a group of obese and overweight women was put on a diet of 1,500 calories a day while another group was put on a very low 500-calorie diet for two days, then 2,000 calories a day for the rest of the week.

Both groups were eating a healthy Mediterranean-style diet. 'We found that both lost about the same amount of weight and both saw a similar drop in biomarkers that increase your risk of cancer,' says Dr Michelle Harvie, a dietitian at Manchester University who led the research.

'The aim was to find which was the most effective and we found that the women in the fasting group actually had a bigger improvement in sensitivity to insulin.' Improved insulin sensitivity means better control of blood sugar levels.

Last year researchers at Newcastle University reported that they had reversed diabetes in a small number of overweight people by putting them on an 800-calorie diet for eight weeks.

It's possible that eating small amounts of calories every other day, as Dr Harvie's study allowed, is not only more bearable, but may be particularly effective at getting diabetics' blood sugar under control. Now Professor Mattson has been investigating the benefits of various fasting regimens on the health of our brain cells.

According to an article that will be appearing in the leading science journal Nature Neuroscience next month, calorie restriction can protect the cells from damage and make them more resistant to stress.

WHO KNEW?

The average number of days before we give up on a diet is 18

'Part of this effect is due to what cutting calories does to appetite hormones such as ghrelin and leptin,' he explains. 'When you are not overweight, these hormones encourage growth of new brain cells, especially in the hippocampus.'

This is the area of the brain which is involved in laying down memories. If you start putting on weight, levels of ghrelin drop and brain cell replacement slows. 'The effect is particularly damaging in your 40s and 50s, for reasons that aren't clear yet,' he says. 'Obesity at that age is a marker for cognitive problems later.'

The good news is that this brain-cell damage can be reversed by the two-day fasting regime, although so far Professor Mattson has shown this only in rats. A human trial is starting soon. There is reason to think it should work. Fasting every other day had a striking effect on people with asthma in a small study he ran a few years ago.

'After eight weeks they had lost eight per cent of their body weight, but they also benefited from the ability of calorie restriction to reduce inflammation. Tests showed that levels of inflammation markers had dropped by 90 per cent. As levels came down, their breathing became much easier,' says Professor Mattson.

But he cautions that patients have to stick to the diet, as symptoms began to return two weeks after giving it up. Not everyone will find fasting intermittently is something they can manage. In Dr Harvie's recent study of overweight women, more patients in the continuous dieting group (who had to stick to 1,500 calories a day) wanted to continue with it than those on the two-day fasting regimen.

'It's going to suit some people more than others,' she says. 'For some, being able to cut out 3,000-4,000 calories in two days and then eat normally for the rest of the time is much more attractive than cutting back a little every day; for others it's too drastic. It gives us another option. My experience is men seem to adapt better to it than women.'

But Professor Mattson believes these new fasting regimes could help tackle our failure to live more healthily. 'This

research shows that successful brain ageing is possible for most individuals if they maintain healthy diets and lifestyles throughout their adult life,' he says.

The trouble is, we don't —our diets are too high in calories and we don't do enough exercise, which is why, he says, brain diseases such as Alzheimer's are on the rise. Dr Susan Jebb, head of diet and population health at the Medical Research Council agrees that losing weight is about the healthiest thing many of us can do. 'If this approach can help people do that I'm all for it,' she says.

But whether fasting could be used as a way of treating people at raised risk of heart disease or dementia, it is really too early to say, adds Dr Jebb.

'There needs to be more trials with more people for longer to work out all the possible effects.'

So is there any harm in trying a little intermittent fasting ourselves? As a result of his research, Professor Mattson now keeps his own calorie intake down.

'I aim for about 1,800 calories a day, nothing drastic,' he says. 'During the week I don't have any breakfast or lunch but I have a good evening meal. I know it's not what most dietitians would recommend but it works very well for me.'

However, Dr Jebb advises against fasting. 'We don't know what it does to the metabolism over time and it could also have a damaging effect on people's eating patterns. If people have been heavily restricted for a couple of days they might feel that gave them a licence to over-eat.'

Meanwhile the British Dietetic Association has warned that frequent fasting could raise the risk of osteoporosis and infertility. There is still much scientists don't understand about the effect of fasting. If the benefits are as big as the research suggests, there may be many willing to try it.

But experts advise always speaking to your doctor before embarking on such a regimen.



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