The Science Behind Fasting

Does fasting work, or is it just low calories that are beneficial?

:: Hari Pulakkat

Human beings have always had an intuitive idea of the benefits of fasting. This is possibly why fasting is a well-rooted practice in most cultures around the world. In India, it has been common for several centuries or, probably, millennia. Fasting slowly grew out of favour in contemporary society, but modern science is now giving it a comeback.

Scientists have taken desultory looks at fasting for half a century, but there have not been enough deep studies till recently. Scientific interest picked up at the same time fasting started becoming a fad. When preliminary studies showed benefits, fasting began to be promoted as a cure-all for many serious diseases. As in all health-related studies, the truth is complicated.

Some research has shown fasting to reduce weight, lower insulin levels, lower blood sugar levels and control blood pressure. A few have shown improvements in health even without weight loss. Many of these studies are on animals, but a few are on humans. There is at least one caveat: research shows similar benefits from calorie-restricted diets as well. So what is at work? Calorie restriction or fasting?

There are many different kinds of fasting, and scientific attention has focused on at least three types. The first is the time-restricted diet – restricting eating to a window of eight hours every day. The second type is called the 5:2 diet, where calories are restricted for two days a week while eating freely – but not bingeing –on other days. The third is the fast-mimicking diet, where the body is tricked into believing that it is in the middle of a fast. All the three have shown benefits.

The time-restricted diet is promoted by Satchidananda Panda, a professor at the Salk Institute in southern California, who researches on the links between body clocks and health. In a 12-week trial reported in a paper published in June last year, Panda restricted 23 individuals to eating in an eight-hour window. They were all overweight, with body mass index between 30 and 45 kg/m^2, not very active, and between 25 and 65 years old. There was no restriction on what they ate.

In the trial, calories consumed declined automatically by 300 calories per day. They lost 3% of their body weight. All the participants had healthy metabolic indicators –blood sugar, lipid profile, insulin resistance – and they reduced marginally. So the study hinted at the benefits of fasting without quite being able to conclude anything.

However, another trial last year at the Pennington Biomedical Research Center in Los Angeles went a bit further. They restricted eating to a six-hour window, with breakfast at 9 am and dinner at 3 pm. The participants were prediabetic. After the trial, the participants had improved insulin sensitivity and lower blood pressure and oxidative stress (the adverse balance between free radicals and anti-oxidants in the blood. The latter are beneficial while the former have the potential to cause harm).

The 5:2 diet was developed by Michelle Harvie and Tony Howell at the Manchester Breast Cancer Centre. It restricts calories to 800-1,000 per day on two days, and lets the participants eat normally on other days. During three-month trials, this diet reduced the weight and improved the insulin sensitivity of 115 women. During this period, it appeared to be better than daily calorie restriction for reducing weight and improving insulin sensitivity.

The third type of fasting is fast-mimicking diet, developed by Valter Longo, director of the Longevity Institute at the University of Southern California. It means eating a special, low-calorie but nutrient-rich diet that the body does not recognise as food for five consecutive days. He tried it on rats for four consecutive days twice a month, and they lived 11% longer.

In a three-month human trial, 19 healthy participants had decreased their risk – in terms of blood markers – for diabetes, cardiovascular disease and cancer. These results were repeated in a larger study of 100 participants, of which 71 completed three months.

So what do these trials mean? The first takeaway is that calorie restriction works, provided there is no malnutrition, in whatever manner it is achieved. A trial by scientists at Heidelberg University, published two months ago, showed that there was no difference between calorie restriction and different kinds of fasting. Their conclusion: these are different methods of achieving the same result.

However, there are several scientists who believe that fasting goes beyond calorie restriction. Panda, for instance, believes that the time of eating is very important for health. And that calorie restriction works best when there is a minimum of 12-14 hour fasting window. He is now attempting larger trials.

Why does fasting work? The practice of eating frequently is a modern phenomenon, one that humans never evolved to do. Those who could live longer without food always had an advantage as a hunter-gatherer, and we have all inherited their genes. So for us, fasting is a natural body state that we are yet to evolve out of. ■

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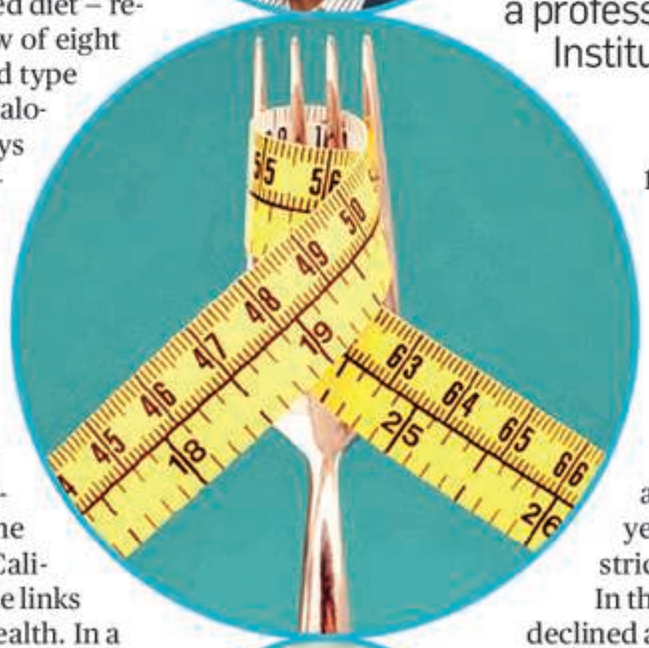

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