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Why do women store fat differently from men?

Evidence points to estrogen as the regulator of body fat

It's a paradox that has flummoxed women for generations – their apparent ability to store fat more efficiently than men, despite eating proportionally fewer calories.

While it has long been suspected that female sex hormones are responsible, a University of New South Wales (UNSW) research review has for the first time drawn a link between one hormone – oestrogen – and its impact on fat storage for childbearing.

On average, women have 6 to 11 percent more body fat than men. Studies show oestrogen reduces a woman's ability to burn energy after eating, resulting in more fat being stored around the body. The likely reason is to prime women for childbearing, the review suggests.

"Female puberty and early pregnancy – times of increased oestrogen – could be seen as states of efficient fat storage in preparation for fertility, foetal development and lactation," the study's author Associate Professor Anthony O'Sullivan, from UNSW's St George Clinical School, said.

The findings, which appear in *Obesity Reviews*, the journal of the prestigious International Association for the Study of Obesity, may have implications for dietary advice given to women during pregnancy and the design of exercise regimes.

"From an energy balance point of view there is no explanation why women should be fatter than men, particularly since men consume more calories proportionately," Associate Professor O'Sullivan said. "In fact, women burn off more fat than men during exercise, but they don't lose body fat with exercise as much suggesting women are more efficient fat storers at other times. The question is why does this paradox exist?"

An obvious answer is that fat storage by women gives an evolutionary benefit, he said. However, additional research was needed to provide more insights into the role of oestrogen in the regulation of body fat.

Associate Professor O'Sullivan stressed that while oestrogen's effects on postprandial fatty acid oxidation provide a mechanism for fat accumulation, the findings do not explain why some women are obese. Factors contributing to obesity are complex and include both genetic and environmental factors, he said.

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