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How the 'Biggest Loser' permanently ruins participants' metabolism

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The Biggest Loser has received a healthy dose of backlash from the medical community over recent years; all of it well deserved.

If you haven't seen the show (I admit I've only seen an episode or two), essentially a number of individuals with morbid obesity sign up to go through a grueling program of starvation combined with insane volumes of exercise in the hopes of winning some cash for losing a bunch of weight. They get pushed abused by their 'trainers' all week, only to endure the humiliation of being weighed in front of millions of viewers. At the end of the 30 week period, contestants often lose astounding amounts of body weight; WAY beyond what any respectable health authority would ever recommend.

This all makes for a very popular reality TV show.

But what happens to these contestants after they are done with the show and the drill-sergeant trainers aren't there to scream at them to exercise for hours while subsisting on grapefruit?

A recent study published in the journal Obesity (read the whole article for free) sought to evaluate exactly this question by checking in with 14 Biggest Loser participants some 6 years after they appeared on the show.

First thing to note is that on average these participants lost an astounding 58.3 ± 24.9 kg during the 30 week competition.

As the human body is really good at maintaining equilibrium (and keeping you alive), it does something interesting but unfortunate when significant weight loss occurs: it reduces the number of calories it burns. In effect, it becomes more efficient with energy in order to prevent what physiologically is happening: starvation. This process is called metabolic adaptation.

So how much can such a tremendous weight loss impact one's daily metabolic rate?

At the end of the competition, the participants' resting metabolic rate (energy you burn while doing nothing) decreased by 610 ± 483 kcal/day.

Such a change would most definitely make subsequent weight loss more challenging despite the same commitment to starvation and exercise.

Not surprisingly, 6 years after appearing on television, 13 of 14 participants regained some, all, or in excess of the weight they had lost during the show; 5 participants were at their original weight or higher.

But had their metabolism also gone back to normal along with their body weight?

Unfortunately, no. In fact, 6 years later they were still burning approximately 700kcals less per day that when then started on the show. This means that just to maintain their weight, they have to expend an extra 700 kcals or reduce their consumption by 700 kcals over what they were doing before. Their energy expenditure was approximately 500 kcal lower than you'd normally expect for a person with these demographics and measurements

This suggests that while the weight loss achieved with the Biggest Loser is most certainly not permanent, the damage done to the underlying

physiology of energy homeostasis is.

This doesn't even address the fact that such drastic lifestyle changes are completely unsustainable.

More information: Erin Fothergill et al. Persistent metabolic adaptation 6 years after "The Biggest Loser" competition, *Obesity* (2016). DOI: 10.1002/oby.21538