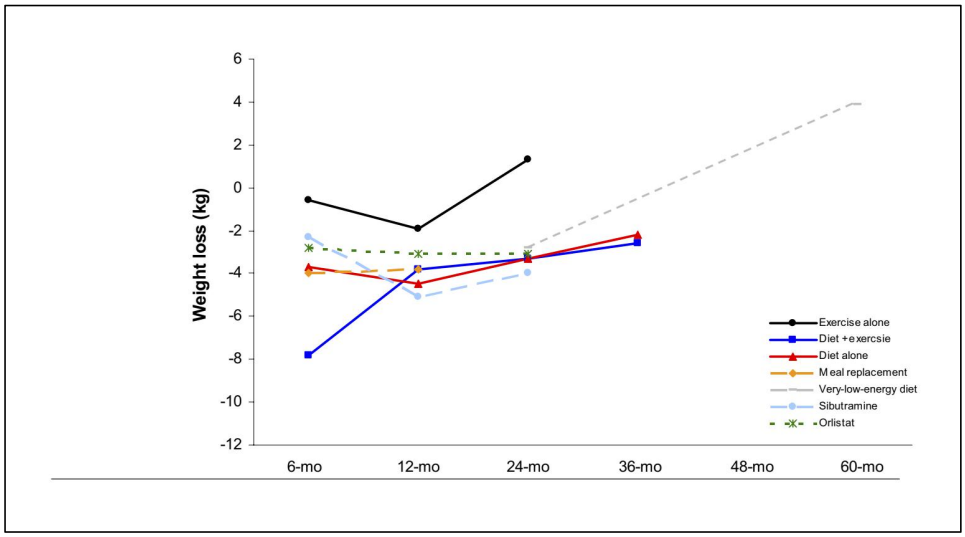
IS LOSING WEIGHT AS SIMPLE AS CALORIES IN CALORIES OUT?

In many cases NO! Theoretically if you expend 3500 less calories than you consume you should lose 1 pound. But the body is a complex machine and what works in theory does not always work in the real world. One of the most astounding (and well done) studies I ever read on this subject lasted 16 months and consisted of a total of 74 obese young men and women (ages 17 to 35). Food intake and exercise energy expenditure were carefully measured using state of the protocol. The main purpose of the study was to find out if exercise changed how much people ate (it didn't). But what the study also revealed was that a calorie deficit doesn't necessarily lead to weight loss. Or anywhere close to what some people may expect to lose by creating a calorie deficit through exercise. When I calculated the calories burned for the 16 months through exercise for the men in the study, the expected weight loss was **57 pounds**. The actual weight loss was only 11 pounds. Nearly all of the 11 pounds came from fat. Since the men's control group also lost some fat, none of the weight they didn't lose can be attributed to weight they might have put on otherwise. In other words the men lost at least 46 pounds fewer than what would be expected through a calories deficit. In fact the calorie intake from food was actually somewhat LESS than it was before they started the program.
As surprising as those numbers are the women were, in some ways, even more shocking. The women should have lost **38 pounds** according to their exercise energy expenditure. Instead they lost a total of **0.44 pounds** of fat and gained a some muscle for a small net weight gain. However the control group of women gained about 5 pounds of fat so, in theory at least, exercise had the net effect of 5.44 pounds of lost fat. But even allowing for that, the women fell an astonishingly **33 pounds** short of what would be expected. Like the men their calories from food were actually somewhat less than they were consuming before they started the program.
Since the women did not lose weight and actually gained a small amount of muscle, their metabolic rate shouldn't have changed. In fact if anything it should have gone up slightly. While the men's 11 pound loss isn't nearly enough to lower their metabolic rate enough to explain the 46 pounds they would have expected to lose. Roughly about 5 to 7 pounds, depending on when the weight loss occurred during the study. Leaving about 40 pounds of expected weight loss that didn't occur.

Astoundingly the researchers did not even address the large discrepancy between expected weight loss and actual weight loss. Granted, the main purpose of the study was to see how exercise influenced changes in diet, but the authors could have at least addressed such an obvious and unexpected result in regards to weight loss. Especially in women , who lost no weight despite exercising 5 days a week for 16 months and burning over 130,000 calories. It would have also been interesting to see the progress of the weight loss through all of those months. Did the men lose all 11 pounds in the first 3 or 6months and than stop, as is often the case with weight loss? Did the women lose more weight early on and then gained it back? This meta-analyis shows after 6 months weight loss stops for most people as illustrated in their graph below:



The good news for both men and women in this study is that their Vo2max went up 2 full categories, from fair to excellent (for their age). This means that their life expectancy is the same as normal weight people with the same Vo2max. See my article entitled “Is it better to be fit and fat or thin and unfit” for more on this subject.

This study is far from the only one where the expected weight loss through a calorie deficit was nowhere near what actually occurred.

So if a drop in metabolic rate can’t explain this discrepancy what can?

For the women, since they lost NO weight, I can only speculate that perhaps, for women that are genetically prone toward obesity, exercise is not as effective for losing weight as it is for the general population. Since in this study the subjects were young yet were already obese, they are probably in this group of the genetically prone obese. As opposed to the general population that gain weight over time (ie middle age

creep) where lifestyle changes (ie diet and exercise) can make more of a substantial difference. But even in this group there are plenty of studies that show a gap between the expected weight loss and actual. See my article on "Which is better at reducing fat, weight resistance or aerobics?" for more on this. As for the men this study aimed to find out. May offer some answers. With the long title "**Body fat loss and compensatory mechanisms in response to different doses of aerobic exercise—a randomized controlled trial in overweight sedentary males".** One of the things the researchers looked at was the effect exercise had on "nonexercise activity thermogenesis" or NEAT for short. This is not to be confused with resting energy expenditure which is basically the opposite of NEAT. NEAT is the energy you expend when you are NOT resting AND not engaging in exercise. NEAT is something that most people have never heard of and is not very well understood even by research scientists. NEAT increases with overfeeding and decreases with underfeeding. This study wanted to find out how NEAT changed with exercise. They had 2 groups of moderately overweight men (ages 20-40) burn either about 300 calories or 600 calories a day What they found was surprising. The men that burned half the amount of calories through exercise lost about the same amount of fat as the men (actually a little more!) that did double the amount! Even more surprising was the fact that the 600 calorie guy's resting energy expenditure actually INCREASED because they gained more fat free mass yet still they did not lose more weight. Yet the 300 CAL guys lost 57% for fat mass than the 600 CAL guys (8.8 lbs vs 5.1 lbs). But here is the most important finding of this study. The 300 calorie group lost significantly MORE weight than could be explained by the negative energy balance. While the 800 CAL guys lost significantly LESS weight than would have been predicted by their negative balance. So what explains this? NEAT. It seems exercise up to a point increases NEAT so you lose more weight than you should have. But past that point and NEAT *increases a*nd keeps your body from losing any additional weight. At least in 20 to 40 year old men. Since these 300 CAL group averaged 2077 a week in calories burned and doing even double that amount resulted in no additional weight loss, the evidence suggests that any more than 2077 calories burned through exercise will not result in additional weight loss. It's possible this number could be even less. For instance it could be that burning 1500 calories a week might result in the same weight loss because NEAT increased even more than burning 2077 calories.

I've had this happen to me in my recent personal experience. I wanted to decrease my weight from 170 to the mid to low 150's. I was able to get down to 160 without much of a problem, steadily losing a pound every week or 2. But once I hit 160 my weight loss stopped, despite eating and exercising the same way. Once or twice I went down to 158 or 159, but I'd go right back to 160 in a day or 2. Now I believe I know why, that's NEAT.