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AFQ & A

BY MATT BRZYCKI

When a person gains fat, do the fat cells increase in size or number?

Conventional wisdom holds that fat cells increase in number up to the age of around 20. Thereafter, fat cells are thought to increase in size. But new research suggests that this theory may not be true.

Researchers at the Mayo Clinic had 28 healthy, normal-weight subjects (average age 29) overeat with the intent of increasing their fat mass. After about eight weeks, the subjects gained an average of 10.12 pounds of which 8.36 pounds were fat mass and 1.76 pounds were fat-free mass.

In response to the gain in fat, the size of fat cells in the abdominals increased. But in the thighs, the number of fat cells increased. In fact, gaining roughly one pound of fat per week increased the body's inventory by an average of 2.6 billion fat cells. Yikes.

So fat cells increased in size in the upper body (the abdominals) and number in the lower body (the thighs). This is highly interesting in light of the relationship between the distribution of body fat and health risks. In general, having fat in the upper body (being "apple shaped") is associated with a greater risk of type 2 diabetes, hypertension and cardiovascular disease than having fat in the lower body (being "pear shaped").

What effect does sleep have on gaining weight?

There seems to be a correlation between the amount of sleep and weight loss. But it's not in a way that might be thought.

In a study conducted at the University of Chicago Sleep Research Laboratory, 10 overweight subjects (average age 41) were randomly assigned to sleep either 8.5 or 5.5 hours a night while consuming a reduced number of calories. Both treatment periods lasted 14 days.

The two treatments yielded just about the same amount of weight loss but from different sources. When the subjects had 8.5 hours of sleep, they lost about 6.38 pounds of weight of which 3.30 pounds was fat-free mass and 3.08 pounds was fat; when the subjects had 5.5 hours of sleep, they lost about 6.60 pounds of weight of which 5.28 pounds was fat-free mass and 1.32 pounds was fat.

So, more sleep generated a lower loss of fat-free mass and a higher loss of fat. In addition, less sleep produced a greater perception of hunger.

The study had two shortcomings, however: a small number of subjects and a short duration.

Does a lower volume of more intense activity confer the same benefits as a higher volume of less intense activity?

Researchers randomly assigned 36 subjects to one of four groups: one group did interval training, one group did prolonged running, one group did strength training and one group acted as a control. Interval training was a five-minute warm-up of light jogging then five intervals of two minutes of near-maximal running. (Including warm-up, the total exercise time was 20 minutes.) Prolonged running was one hour of continuous running. Strength training was three to four sets of six exercises for the lower body.

After 12 weeks, the group that did interval training increased maximum oxygen uptake much more than the other two training groups. All three groups had similar decreases in systolic blood pressure. The groups that did interval training and prolonged running had similar reductions in heart rate while walking and sub-maximal running.

Remember, too, that the improvements from interval training were achieved in a very short amount of the time. But the workouts

were very intense and efforts of such extreme intensity aren't suitable for everyone. Plus, workouts that brief—even if intense—won't expend an appreciable amount of calories, which is a drawback when weight loss is a goal. All things considered, though, interval training is still an effective means of improving several measures of fitness.

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