



Breaking Down Your Metabolism

The human body is an efficient machine. It breaks down food, absorbs the nutrients and delivers them to provide energy to all of the body's cells. The amount of energy we need is determined by our metabolic rate, measured in calories per day. But how is this rate determined?

1. Basal Metabolic Rate

The biggest contributor to metabolic rate is resting energy expenditure, also known as Basal Metabolic Rate (BMR). Your BMR is the amount of calories you would need if you laid in bed all day and didn't move. In other words, it's the amount of energy your body needs just to keep you alive and perform basic functions like breathing, keeping your heart beating and maintaining your body's tissues.

Due to genetics, some people have higher metabolic rates than others, but muscle mass is an important factor to consider in determining your BMR. Muscle is more active and energy-demanding than fat, so if you have a higher percentage of muscle compared to fat, you will have a higher BMR. That is, more energy is needed to maintain these tissues. Because men typically have lower body fat percentages and more muscle, they have higher BMRs than women. We also lose muscle mass as we age, which is why it is harder to keep the weight off when we get older. Our bodies' energy needs slowly decrease as we lose muscle mass, so we cannot eat the same amount as we used to without gaining weight. Diet can also affect our metabolic rate. When we don't get enough calories, our metabolism can slow up to 30%!

2. Physical Activity

We also need to take in energy to support the various physical activities we do, which is not limited to exercising. This includes all activities performed throughout the day: showering, walking to class, talking to friends, taking notes, and so on. These activities by themselves do not burn many calories, but they add up in a big way!

3. Thermic Effect of Food

Finally, it takes energy to digest the food we eat. For every 100 calories you eat, it will take 10 calories to break down the food to a form that the body can use. This is a minimal component of your metabolic rate, but it is still important to consider.

How does this all translate to weight management and change?

It all comes down to energy balance. The most common unit of food energy is the calorie. If you eat more calories than your body needs over time, you will have a calorie excess. The human body is designed to save excess energy for times when food may not be available, so the extra energy is stored as fat. If you take in fewer calories than your body needs to perform all of its functions, it will be forced to break down stored fat for energy and you will lose fat.

However, your body also breaks down muscle. Remember, muscle is the biggest contributor to your metabolic rate, so losing muscle means your calorie needs decrease. You can offset this decrease in metabolic rate by doing strength training as part of your exercise routine, to help you maintain your muscle mass.

People trying to lose weight are usually advised to create a calorie deficit of 500-1000 calories per day. This means eating 500-1000 calories less than what you need to maintain your weight. This can be achieved either through eating 500-1000 fewer calories, by exercising enough to burn that many calories, or by a combination of the two.

For example, stop eating your afternoon snack of a 250 calorie candy bar and burn off 250 calories running.

- A 500 calorie deficit (or excess) per day, over 7 days, will add up to 3500 calories. This is equivalent to one pound of fat lost (or gained) in a week.
- A 1000 calorie deficit (or excess) per day will add up to 2 pounds lost (or gained) in a week. However, creating such a large deficit every day may be difficult and counterproductive. Remember that cutting calories too quickly and/or too much will slow your metabolic rate. **The American College of Sports Medicine warns that calorie levels should never drop below 1200 calories/day for women or 1800/day for men; even these levels are very low.**

So now you may be wondering just how many calories you should eat in a day to maintain your weight. There are many calculators online that can help, such as MyPyramid.gov. These calculators use your age, weight, height, gender, activity level, and other factors to determine your personal energy needs.

References

“Basal Metabolic Rate – BMR” ShapeFit, LLC. March 2010. <http://www.shapefit.com/basal-metabolic-rate.html>

“Research Findings.” National Weight Control Registry. March 2010. http://www.nwcr.ws/Research/published_research.htm

“My Pyramid.gov” United States Department of Agriculture. March 2010. <http://www.mypyramid.gov/>

If you are a registered University of Illinois student and you have questions or concerns, or need to make an appointment, please call: **Dial-A-Nurse at 333-2700**

If you are concerned about any difference in your treatment plan and the information in this handout, you are advised to contact your health care provider.

Visit the McKinley Health Center Web site at: <http://www.mckinley.illinois.edu>