

Metabolism

How you burn calories

People often associate metabolism with a person's weight. Common belief holds that a slim person's metabolism is high and an overweight person's metabolism is low.

Actually, metabolism refers to the complex chemical and physical processes in your body that make use of energy.

Accounting for energy use

Your body's metabolism is like an engine. Fuel is needed on a daily basis in order for the engine to expend energy. Fuel deposits are made in the form of calories from food. Most of your nutrient energy comes from carbohydrates, fats and proteins, which are available as your body needs or demands them.

Your total energy expenditure includes three main components:

- *Basic needs expenditures* — Even when your body is at rest, it requires energy for the basics, such as fuel for organs, breathing, circulating blood, adjusting hormones, and growing and repairing cells. Calories expended to cover the basics are your basal metabolic rate. Typically, a person's basal metabolic rate is the most significant portion of total energy expenditure, representing one-half to two-thirds of the calories used each day.

- *Food processing expenditures* — Digesting, absorbing, transporting and storing the food you consume also takes calories. This aspect of your total energy expenditure is known as the thermic effect of food. This accounts for about 10 percent of the calories used each day.

- *Physical activity expenditures* — Play a set of tennis, walk to the store or chase after the dog. Physical

activity (the energy expenditure term is thermic effective activity) accounts for the remainder of calories burned.

For the most part, basal metabolism and food processing expenditures remain fairly steady and aren't easily changed.

Lean on me

It may seem logical to think that significant weight gain or being overweight is related to a very low rate of metabolism or possibly even a condition such as an underactive thyroid gland (hypothyroidism). In reality, it's very uncommon for low metabolism to be the cause of excess weight. And most overweight people don't have an underlying condition such as hypothyroidism. However, a medical evaluation is reasonable to determine whether that may be a factor in weight gain.

Lean body mass is a major factor in determining a person's basal metabolic rate. More calories are burned by the body to support muscle tissue than are burned to support fat. Lean body mass is affected by several factors, including:

- *Age* — As you age, hormone levels and body composition change. Lean body mass diminishes and is replaced with fat. Once you reach adulthood, basal metabolic rate and energy needs typically decline at a rate of about 2 percent a decade.

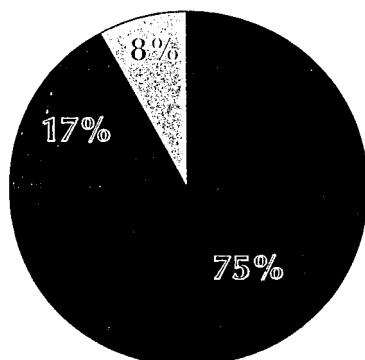
- *Sex* — Men generally have a higher basal metabolic rate and greater calorie needs than women.

- *Body size* — Generally, people who are overweight carry 20 percent to 35 percent of that excess weight as lean tissue. In other words, as people gain weight, they not only gain fat but they also gain lean tissue to support the fat. So, contrary to popular belief, an increase in body size actually increases your basal metabolic rate, mostly due to lean tissue gained to support the fat.

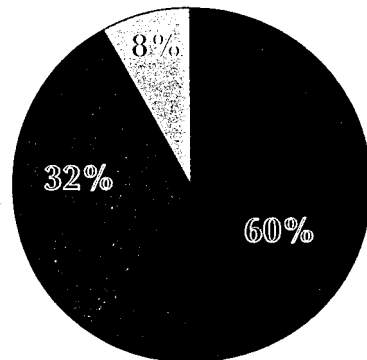
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Daily energy expenditures by activity level

■ Basic needs expenditures
 ■ Physical activity expenditures
 □ Food processing expenditures



Sedentary person



Physically active person

For more information

For more specific information on measuring metabolism, consider using:

- www.MayoClinic.com — Visit Mayo Clinic's online site to calculate your total energy expenditure. Search "daily calorie calculator" and then find out what your numbers are by making a few simple entries. If you don't have Internet access, your local library can help.

- *Mayo Clinic Fitness for EveryBody* — This softcover book details how to develop and maintain an active and fit lifestyle and offers a formula for calculating your metabolism. To purchase a copy, call (800) 291-1128.

Measuring calorie needs

There are different ways to determine a person's resting calorie needs. Some calculation methods are more accurate than are others. The most reliable method is to have your basal metabolic rate calculated at a hospital or clinic that uses a

measurement technique based on your oxygen consumption.

Basal metabolism can also be calculated using a complex formula (see "For more information"). A less accurate estimate can be obtained by figuring you'll need 10 to 12 calories for each pound of body weight to maintain that weight.

Remember the axiom "If something is too good to be true, then it probably isn't true"? Keep that in mind when you see advertisements that promote dietary supplements as a way to speed metabolism.

Dietary supplement manufacturers aren't required by the Food and Drug Administration to prove their products are safe or effective before bringing them to market. Any changes resulting from dietary supplements are likely to be minimal, plus there may be undesirable and even dangerous side effects associated with the use of some products that claim to increase metabolism.

Your ability to change your basal metabolism is limited. However, you can increase daily activity, which not only helps you burn more calories, but also promotes lean body tissue, which burns more calories than does fat. □