

## **The Actual Role of Exercise in Weight Loss and Maintenance** **By Mark Love**

Exercise has long been recommended as an effective tool for weight loss and maintenance. Cardiovascular, or “aerobic” exercise is most often endorsed, although many lately are suggesting that strength training is important, as well. As a result, many adopt the reasoning that a little “extra” exercise can make up for excessive eating. Is exercise *really* an effective way to maintain weight? If so, how much exercise is necessary to achieve and maintain a healthy bodyweight? Are some types of exercise more likely to promote weight loss than are others? Do specific foods and/or caloric intake play a role?

### **Metabolism**

Metabolism is defined as “the ongoing interrelated series of chemical interactions taking place in living organisms that provide the energy and nutrients needed to sustain life”. More commonly, metabolism is thought of in terms of the rate at which an individual burns calories. Often, a person is described as having a “fast” or “slow” metabolism. What makes some people burn more calories than others? Can metabolism change, and if so, how?

Two processes characterize metabolism: anabolism and catabolism. Anabolism involves the construction of new cells and maintenance of all body tissues, while catabolism refers to energy production for the processes carried out by the body. Catabolism also regulates body temperature and the breakdown of more complex chemical substances into simpler ones that the body eliminates as waste. Anabolism is manifest in the growth of new muscle tissue, for example, as well as the creation of new cells to replace dead cells. Catabolism, by contrast, occurs in situations such as muscle atrophy and the breakdown of the foods you eat into the fuel you need for brain and muscle function.

When anabolism exceeds catabolism, weight gain or growth occurs; the reverse is true when catabolic rate is greater than anabolic rate. The energy required for either of these processes comes from the foods we eat (and, sometimes, from body tissue and/or stored fat). This energy is measured in calories – the more calories one ingests, the more energy is potentially available, and vice-versa. Catabolism breaks down ingested food into useable energy for the body, and anabolism directs the use of this energy by the body. This energy may fuel muscular contractions, it may be stored in the liver for use by the brain, or it may be stored in the muscles for future muscular contractions. If available calories exceed the needs of the body, however, at least some of this energy may be stored for future needs – in the form of bodyfat.

At this point, it is important to differentiate between basal metabolism and total metabolism. Basal metabolism refers to the amount of energy required to maintain the vital involuntary activities of the body, such as respiration, heartbeat and blood circulation, maintenance of body temperature, and the functions of the nervous system and vital organs. By contrast, total metabolism refers to the total energy required to carry out all activity over a given period (usually measured daily). Increased activity requires more fuel. Thus, it is clear that greater activity yields a greater calorie burn. It seems logical, then, that all that is required to burn more body fat is an increase in activity. This is only part of the story, however.

## How Many Calories Does Exercise Really Burn?

While exercise (like all other activity) does burn calories, it is important to know how many calories exercise can actually burn. More importantly, it is important to know how much (if any) of this caloric expenditure comes from fat, since fat, specifically, is what most people are concerned with burning. Traditional, low-intensity cardiovascular exercise (activity at or about 50% of maximal exercise capacity) burns approximately 200 calories for each 30 minutes of activity, with about 60% of this calorie burn coming from fat stores. High-intensity exercise (at or about 75% of maximal exercise capacity) burns approximately 400 calories in 30 minutes, 35% of which comes from fat stores. Even though high-intensity exercise burns a smaller percentage of calories from fat, *the total fat calories burned during high intensity activity are greater* (140 fat calories burned during 30 minutes of high-intensity exercise, vs. 120 fat calories burned during 30 minutes of low-intensity activity).

At this point, it seems that the answer is to perform a lot of high-intensity exercise, since it burns more calories. However, each pound of fat contains 3500 calories. Using the estimated rates of caloric burn in the previous paragraph, it would take approximately *nine hours* of low-intensity exercise to burn *one pound* of fat – per week. High-intensity activity burns considerably more calories (and fat calories), but more than four hours of exercise per week is still required to metabolize only one pound of fat. Furthermore, it is difficult, at best, for the body to recover from so much intense activity. Therefore, exercise is not an especially efficient means by which to lose and/or maintain body weight.

## Calories In, Calories Out

Does this mean that there is no hope for an individual who wants to achieve and maintain a healthy body weight? Not at all. The key factor, which is overlooked by many, is to get control of calories ingested. For example: if a pound of fat contains 3500 calories, which is more likely (or easier): performing 4-9 hours of exercise per week to burn off that pound, or reducing the amount of food consumed by 500 calories each day? If an individual reduces caloric intake by 500 calories each day, over the course of a week that individual will consume 3500 calories fewer than before – the same number of calories contained in one pound of fat. If activity levels remain constant, the body will fuel that activity, at least in part, with calories from stored fat.

There are many ways to reduce caloric intake, and each individual should experiment to determine which work best for he/she. One simple technique is to reduce portion size (this is much more effective than cutting out meals, which tends cause metabolism to slow, making continued weight loss difficult). A registered dietician can help an individual make the best decisions regarding calorie intake and food choice.

## Putting it all Together

A long-term strategy for weight loss and maintenance, then, should focus on healthy eating, much more than it should on exercise. The individual can use exercise as a tool to promote fitness and health, rather than a time-consuming obsession in a quest to lose weight. When sound eating is combined with a safe, effective exercise program, it is much more likely that the individual will not only lose weight, but will keep it off. It is also much more likely that the individual will be healthy – mentally and physically – over the long term.