



# Exercise and Weight Control



The President's Council on Physical Fitness and Sports

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Just about everybody seems to be interested in weight control. Some of us weigh just the right amount, others need to gain a few pounds. Most of us "battle the bulge" at some time in our life. Whatever our goals, we should understand and take advantage of the important role of exercise in keeping our weight under control.

Carrying around too much body fat is a major nuisance. Yet excess body fat is common in modern-day living. Few of today's occupations require vigorous physical activity, and much of our leisure time is spent in sedentary pursuits.

Recent estimates indicate that 34 million adults are considered obese (20 percent above desirable weight). Also, there has been an increase in body fat levels in children and youth over the past 20 years. After infancy and early childhood, the earlier the onset of obesity, the greater the likelihood of remaining obese.

Excess body fat has been linked to such health problems as coronary heart disease, high blood pressure, osteoporosis, diabetes, arthritis and certain forms of cancer. Some evidence now exists showing that obesity has a negative effect on both health and longevity.

Exercise is associated with the loss of body fat in both obese and normal weight persons. A regular program of exercise is an important component of any plan to help individuals lose, gain or maintain their weight.

## Overweight or Overfat?

Overweight and overfat do not always mean the same thing. Some people are quite muscular and weigh more than the average for their age and height. However, their body composition, the amount of fat versus lean body mass (muscle, bone, organs and tissue), is within a desirable range. This is true for many athletes. Others weigh an average amount yet carry around too much fat. In our society, however, overweight often implies overfat because excess weight is commonly distributed as excess fat. The addition of exercise to a weight control program helps control both body weight and body fat levels.

A certain amount of body fat is necessary for everyone. Experts say that percent body fat for women should be about 20 percent, 15 percent for men. Women with more than 30 percent fat and men with more than 25 percent fat are considered obese.

How much of your weight is fat can be assessed by a variety of methods including underwater (hydrostatic) weighing, skinfold thickness measurements and circumference measurements. Each requires a specially trained person to administer the test and perform the correct calculations. From the numbers obtained, a body fat percentage is determined. Assessing body composition has an advantage over the standard height-weight tables because it can help distinguish between "overweight" and "overfat."

An easy self-test you can do is to pinch the thickness of the fat folds at your waist and abdomen. If you can pinch an inch or more of fat (make sure no muscle is included) chances are you have too much body fat.

People who exercise appropriately increase lean body mass while decreasing their overall fat level. Depending on the amount of fat loss, this can result in a loss of inches *without* a loss of weight, since muscle weighs more than fat. However, with the proper combination of diet and exercise, both body fat and overall weight can be reduced.

## Energy Balance: A Weighty Concept

Losing weight, gaining weight or maintaining your weight depends on the amount of calories you take in and use up during the day, otherwise referred to as energy balance. Learning how to balance energy intake (calories in food) with energy output (calories expended through physical activity) will help you achieve your desired weight.

Although the underlying causes and the treatments of obesity are complex, the concept of energy balance is relatively simple. If you eat more calories than your body needs to perform your day's activities, the extra calories are stored as fat. If you do not take in enough calories to meet your

body's energy needs, your body will go to the stored fat to make up the difference (Exercise helps ensure that stored fat, rather than muscle tissue, is used to meet your energy needs.) If you eat just about the same amount of calories to meet your body's energy needs, your weight will stay the same.

On the average, a person consumes between 800,000 and 900,000 calories each year! An active person needs more calories than a sedentary person, as physically active people require energy above and beyond the day's basic needs. All too often, people who want to lose weight concentrate on counting calorie intake while neglecting calorie output. The most powerful formula is the combination of dietary modification with exercise. By increasing your daily physical activity and decreasing your caloric input you can lose excess weight in the most efficient and healthful way.

### **Counting Calories**

Each pound of fat your body stores represents 3,500 calories of unused energy. In order to lose one pound, you would have to create a calorie deficit of 3,500 calories by either taking in 3,500 less calories over a period of time than you need or doing 3,500 calories worth of exercise. It is recommended that no more than two pounds (7,000 calories) be lost per week for lasting weight loss.

Adding 15 minutes of moderate exercise, say walking one mile, to your daily schedule will use up 100 extra calories per day. (Your body uses approximately 100 calories of energy to walk one mile, depending on your body weight.) Maintaining this schedule would result in an extra 700 calories per week used up, or a loss of about 10 pounds in one year, assuming your food intake stays the same. To look at energy balance another way, just one extra slice of bread or one extra soft drink a day – or any other food that contains approximately 100 calories – can add up to ten extra pounds in a year if the amount of physical activity you do does not increase.

If you already have a lean figure and want to keep it you should exercise regularly and eat a balanced diet that provides enough calories to make up for the energy you expend. If you wish to gain weight you should exercise regularly and increase the number of calories you consume until you reach your desired weight. Exercise will help ensure that the weight you gain will be lean muscle mass, not extra fat.

### **The Diet Connection**

A balanced diet should be part of any weight control plan. A diet high in complex carbohydrates and moderate in protein and fat will complement an exercise program. It should include enough calories to satisfy your daily nutrient requirements and include the proper number of servings per day from the "basic four food groups": vegetables and fruits (4 servings), breads and cereals (4 servings), milk and milk products (2 - 4 depending on age) and meats and fish (2).

Experts recommend that your daily intake not fall below 1200 calories unless you are under a doctor's supervision. Also, weekly weight loss should not exceed two pounds.

Remarkable claims have been made for a variety of "crash" diets and diet pills. And some of these very restricted diets do result in noticeable weight loss in a short time. Much of this loss is water and such a loss is quickly regained when normal food and liquid intake is resumed. These diet plans are often expensive and may be dangerous. Moreover, they do not emphasize lifestyle changes that will help you maintain your desired weight. Dieting alone will result in a loss of valuable body tissue such as muscle mass in addition to a loss in fat.

### **How Many Calories**

The estimates for number of calories (energy) used during a physical activity are based on experiments that measure the amount of oxygen consumed during a specific bout of exercise for a certain body weight.

The energy costs of activities that require you to move your own body weight, such as walking or jogging, are greater for heavier people since they have more weight to move. For example, a person weighing 150 pounds would use more calories jogging one mile than a person jogging alongside who weighs 115 pounds. Always check to see what body weight is referred to in caloric expenditure charts you use.

## Energy Expenditure Chart

	<b>Energy Costs</b>
	<b>Cals/Hour*</b>
<b>A. Sedentary Activities</b>	
Lying down or sleeping	90
Sitting quietly	84
Sitting and writing, card playing, etc .	114
<b>B. Moderate Activities (150-350)</b>	
Bicycling (5 mph)	174
Canoeing (2.5 mph)	174
Dancing (Ballroom)	210
Golf (2-some, carrying clubs)	324
Horseback riding (sitting to trot)	246
Light housework, cleaning, etc.	246
Swimming (crawl, 20 yards/min)	288
Tennis (recreational doubles)	312
Volleyball (recreational)	264
Walking (2 mph)	198
<b>C. Vigorous Activities More than 350</b>	
Aerobic Dancing	546
Basketball (recreational)	450
Bicycling (13 mph)	612
Circuit weight training	756
Football (touch, vigorous)	498
Ice Skating (9 mph)	384
Racquetball	588
Roller Skating (9 mph)	384
Jogging (10 minute mile, 6 mph)	654
Scrubbing Floors	440
Swimming (crawl, 45 yards/min)	522
Tennis (recreational singles)	450
X-country Skiing ( 5 mph)	690

\*Hourly estimates based on values calculated for calories burned per minute for a 150 pound (68 kg) person.

\*(Sources: "William D. McArdle, Frank I. Katch, Victor L. Katch, "Exercise Physiology: Energy, Nutrition and Human Performance" (2nd edition), Lea & Febiger, Philadelphia, 1986; Melvin H. Williams, "Nutrition for Fitness and Sport," William C. Brown Company Publishers, Dubuque, 1983.)

## Exercise and Modern Living

One thing is certain. Most people do not get enough exercise in their ordinary routines. All of the advances of modern technology – from electric can openers to power steering – have made life easier, more comfortable and much less physically demanding. Yet our bodies need activity, especially if they are carrying around too much fat. Satisfying this need requires a definite plan, and a commitment. There are two main ways to increase the number of calories you expend:

1. Start a regular exercise program if you do not have one already.
2. Increase the amount of physical activity in your daily routine.

The best way to control your weight is a combination of the above. The sum total of calories used over time will help regulate your weight as well as keep you physically fit.

### Active Lifestyles

Before looking at what kind of regular exercise program is best, let's look at how you can increase the amount of physical activity in your daily routine to supplement your exercise program.

- Recreational pursuits such as gardening on weekends, bowling in the office league, family outings, an evening of social dancing, and many other activities provide added exercise. They are fun and can be considered an extra bonus in your weight control campaign.
- Add more "action" to your day. Walk to the neighborhood grocery store instead of using the car. Park several blocks from the office and walk the rest of the way. Walk up the stairs instead of using the elevator; start with one flight of steps and gradually increase.
- Change your attitude toward movement. Instead of considering an extra little walk or trip to the files an annoyance, look upon it as an added fitness boost. Look for opportunities to use your body. Bend, stretch, reach, move, lift and carry. Time-saving devices and gadgets eliminate drudgery and are a bonus to mankind, but when they substitute too often for physical activity they can demand a high cost in health, vigor and fitness.

These little bits of action are cumulative in their effects. Alone, each does not burn a huge amount of calories. But when added together they can result in a sizable amount of energy used over the course of the day. And they will help improve your muscle tone and flexibility at the same time.

## What Kind of Exercise?

Although any kind of physical movement requires energy (calories), the type of exercise that uses the most energy is aerobic exercise. The term "aerobic" is derived from the Greek word meaning "with oxygen." Jogging, brisk walking, swimming, biking, cross-country skiing and aerobic dancing are some popular forms of aerobic exercise.

Aerobic exercises use the body's large muscle groups in continuous, rhythmic, sustained movement and require oxygen for the production of energy. When oxygen is combined with food (which can come from stored fat) energy is produced to power the body's musculature. The longer you move aerobically, the more energy needed and the more calories used. Regular aerobic exercise will improve your cardiorespiratory endurance, the ability of your heart, lungs, blood vessels and associated tissues to use oxygen to produce energy needed for activity. You'll build a healthier body while getting rid of excess body fat.

In addition to the aerobic exercise, supplement your program with muscle strengthening and stretching exercises. The stronger your muscles, the longer you will be able to keep going during aerobic activity, and the less chance of injury.

### How Much? How Often?

Experts recommend that you do some form of aerobic exercise at least three times a week for a minimum of 20 continuous minutes. Of course, if that is too much, start with a shorter time span and gradually build up to the minimum. Then gradually progress until you are able to work

aerobically for 20-40 minutes. If you need to lose a large amount of weight, you may want to do your aerobic workout five times a week.

It is important to exercise at an intensity vigorous enough to cause your heart rate and breathing to increase. How hard you should exercise depends to a certain degree on your age, and is determined by measuring your heart rate in beats per minute.

The heart rate you should maintain is called your target heart rate, and there are several ways you can arrive at this figure. The simplest is to subtract your age from 220 and then calculate 60 to 80 percent of that figure. Beginners should maintain the 60 percent level, more advanced can work up to the 80 percent level. This is just a guide however, and people with any medical limitations should discuss this formula with their physician.

You can do different types of aerobic activities, say walking one day, riding a bike the next. Make sure you choose an activity that can be done regularly, and is enjoyable for you. The important thing to remember is not to skip too many days between workouts or fitness benefits will be lost. If you must lose a few days, gradually work back into your routine.

## The Benefits of Exercise in a Weight Control Program

The benefits of exercise are many, from producing physically fit bodies to providing an outlet for fun and socialization. When added to a weight control program these benefits take on increased significance.

We already have noted that proper exercise can help control weight by burning excess body fat. It also has two other body-trimming advantages 1) exercise builds muscle tissue and muscle uses calories up at a faster rate than body fat; and 2) exercise helps reduce inches and a firm, lean body looks slimmer even if your weight remains the same.

Remember, fat does not "turn into" muscle, as is often believed. Fat and muscle are two entirely different substances and one cannot become the other. However, muscle does use calories at a faster rate than fat which directly affects your body's metabolic rate or energy requirement. Your basal metabolic rate (BMR) is the amount of energy required to sustain the body's functions at rest and it depends on your age, sex, body size, genes and body composition. People with high levels of muscle tend to have higher BMRs and use more calories in the resting stage.

Some studies have even shown that your metabolic rate stays elevated for some time after vigorous exercise, causing you to use even more calories throughout your day.

Additional benefits may be seen in how exercise affects appetite. A lean person in good shape may eat more following increased activity, but the regular exercise will burn up the extra calories consumed. On the other hand, vigorous exercise has been reported to suppress appetite. And, physical activity can be used as a positive substitute for between meal snacking.

### **Better Mental Health**

The psychological benefits of exercise are equally important to the weight conscious person. Exercise decreases stress and relieves tensions that might otherwise lead to overeating. Exercise builds physical fitness which in turn builds self-confidence, enhanced self-image, and a positive outlook. When you start to feel good about yourself, you are more likely to want to make other positive changes in your lifestyle that will help keep your weight under control.

In addition, exercise can be fun, provide recreation and offer opportunities for companionship. The exhilaration and emotional release of participating in sports or other activities are a boost to mental and physical health. Pent-up anxieties and frustrations seem to disappear when you're concentrating on returning a serve, sinking a putt or going that extra mile.

## Tips to Get You Started

Hopefully, you are now convinced that in order to successfully manage your weight you must include exercise in your daily routine. Here are some tips to get you started:

1. Check with your doctor first. Since you are carrying around some extra "baggage," it is wise to get your doctor's "OK" before embarking on an exercise program.
2. Choose activities that you think you'll enjoy. Most people will stick to their exercise

program if they are having fun, even though they are working hard.

3. Set aside a regular exercise time. Whether this means joining an exercise class or getting up a little earlier every day, make time for this addition to your routine and don't let anything get in your way. Planning ahead will help you get around interruptions in your workout schedule, such as bad weather and vacations.

4. Set short term goals. Don't expect to lose 20 pounds in two weeks. It has taken awhile for you to gain the weight, it will take time to lose it. Keep a record of your progress and tell your friends and family about your achievements.

5. Vary your exercise program. Change exercises or invite friends to join you to make your workout more enjoyable. There is no "best" exercise – just the one that works best for you. It won't be easy, especially at the start. But as you begin to feel better, look better and enjoy a new zest for life, you will be rewarded many times over for your efforts.

### Tips to Keep You Going

1. Adopt a specific plan and write it down.
2. Keep setting realistic goals as you go along, and remind yourself of them often.
3. Keep a log to record your progress and make sure to keep it up-to-date.
4. Include weight and/or percent body fat measures in your log. Extra pounds can easily creep back.
5. Upgrade your fitness program as you progress.
6. Enlist the support and company of your family and friends.
7. Update others on your successes.
8. Avoid injuries by pacing yourself and including a warmup and cool down period as part of every workout.
9. Reward yourself periodically for a job well done!