

# Exercise and Weight Loss

How do you identify overweight and obesity?



**Body Mass Index** (BMI) is a way to define overweight and obesity. The index is a mathematical formula in which a person's body weight in kilograms is divided by the square of his or her height in meters [kg/m<sup>2</sup>]. The BMI is more highly correlated with body fat than any other mathematical ratio of height and weight; however, athletes and individuals with high percentage of muscle may have a BMI in the overweight range because of the higher density of muscle compared to fat.

BMI	Defined as:
18-25	Normal weight
25-29.9	Overweight
>30	Obese

Overweight is defined as increased weight in relation to height. Obesity is defined as an excessively high amount of body fat or adipose tissue in relation to lean body mass.



**Waist circumference:**

The distribution of body fat is important from a chronic disease perspective. Those that have more body fat in the abdominal area have an increased risk for elevated triglycerides, high blood pressure, and glucose intolerance. Body fat distribution is most easily assessed by measuring waist circumference.

A waist circumference of:	Effects:
40 inches (102 cm) or greater in men  Or 35 inches (88 cm) or greater in women	Puts one at a higher risk of insulin resistance & diabetes.

When someone is a few pounds overweight and is motivated to lose weight, there are safe and effective methods to lose a few pounds and to maintain a weight loss. Exercise is a safe way to reduce excess body fat.

## Present guidelines on physical activity

American College of Sports Medicine recommends 30 to 45 minutes of exercise three to five days each week, maintaining the intensity for the duration of exercise. Each session should include a 5-10 minute warm-up and cool-down period. If weight loss is a major goal, aerobic activity should last at least 30 minutes a day for 5 days each week.



The American Cancer Society (ACS) recommends at least 30 minutes of moderate activity for adults on five or more days a week. Children and adolescents should have at least 60 minutes a day of moderate-to-vigorous physical activity for at least 5 days a week. Moderate physical activity, such as walking, done on several bouts lasting 10 or 20 minutes at a time will result in the same level of energy expenditure as one longer session. Choose an activity that is enjoyable so you will be able to stick to the activity.

## Energy Balance

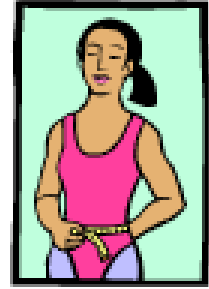
Maintaining, gaining and losing weight are tied to energy balance. Positive energy balance leads to weight gain, negative energy balance leads to weight loss, and maintaining weight means an energy balance has been reached. Physical activity and caloric intake balance each other out at weight maintenance.

Exercise is excellent in helping to maintain a zero energy balance. Exercise can build lean body mass, which burns more calories than fat. Walking, running and doing physical activity can burn two to three times more calories than a similar amount of time sitting. Moderate activity is needed to metabolize stored body fat and to modify physiologic functions that affect hormonal and immune function.



Weight loss similar to diet can be achieved by exercise alone. An exercise program with a minimum of 150 to 200 minutes of moderate physical activity each week combined with a diet for weight loss can result in reduced body weight and fat. An exercise program with less than 150 minutes a week and lower intensity can result in improvements in cardio-respiratory fitness. There is an improvement in overall physical fitness and in reduction in blood pressure. Exercise improves maintenance of weight after weight loss and is essential for weight maintenance.

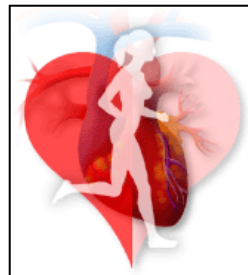
High amount of abdominal fat is a risk factor for high blood lipids, diabetes and heart disease. Men and women who have smaller waists and reduced abdominal fat have a lower risk of chronic diseases, compared to those with a larger waist.



### Aerobic activity

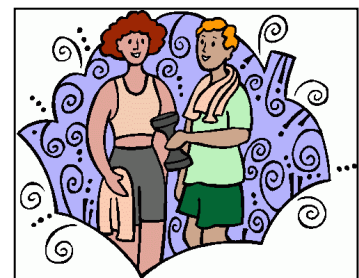
Aerobic activity is any extended activity that makes the lungs and heart work harder while using the large muscle groups in the arms and legs at a regular, even pace. Aerobic activities help the heart grow stronger and more efficient. They also use more calories than other activities. Some examples of aerobic activities include:

- Brisk walking
- Jogging
- Bicycling
- Swimming
- Aerobic dancing
- Racket sports
- Lawn mowing
- Ice or roller skating
- Using aerobic equipment (treadmill, stationary bike)



### Anaerobic activity

Anaerobic activity is short bursts of a very strenuous activity using large muscle groups. Anaerobic exercise helps build and tone muscles, but it does not benefit the heart or the lungs. Examples of anaerobic activities are weight lifting, curls and power lifting. During the anaerobic activity, glycogen (carbohydrate stored in muscle and liver) is used for energy and, at the end of anaerobic activity, lactic acid is produced. This gives the burning sensation often felt in the muscles.



Before beginning an exercise program, it is essential to have a physical examination by a physician.

Beginning a Walking Plan	Warm up	Walking Briskly	Cool Down
Week 1	5 minutes	5 minutes	5 minutes
Week 2	5 minutes	7 minutes	5 minutes
Week 3	5 minutes	9 minutes	5 minutes
Week 4	5 minutes	11 minutes	5 minutes
Week 5	5 minutes	13 minutes	5 minutes
Week 6	5 minutes	15 minutes	5 minutes
Week 7	5 minutes	18 minutes	5 minutes
Week 8	5 minutes	20 minutes	5 minutes
Week 9	5 minutes	23 minutes	5 minutes
Week 10	5 minutes	26 minutes	5 minutes
Week 11	5 minutes	28 minutes	5 minutes
Week 12	5 minutes	30 minutes	5 minutes

~Follow 3 to 4 days a week to build a safe walking program.~

Pennington Nutrition Series, Number 22, 2005

**Authors:**

Heli Roy PhD, RD  
Shanna Lundy, BS

**Beth Kalicki**

**Division of Education**

Phillip Brantley PhD, Director

**Pennington Biomedical Research Center**

Claude Bouchard PhD, Executive Director

Edited: October 2009

References

- <http://www.cdc.gov>
- Ross R, et al. Exercise induced reduction in obesity and insulin resistance in women: a randomized controlled trial. Obesity Research
- Jakicic JM, et al. Effects of exercise duration and intensity on weight loss in overweight, sedentary women. JAMA
- Ross R, Katzmarzyk PT. Cardio respiratory fitness is associated with diminished total and abdominal obesity independent of body mass index. Int J Obes.
- McArdle WD, Katch FL, Katch VL. Exercise Physiology: Energy, Nutrition, and Human Performance, 5th Ed. Lippincott Williams & Wilkins, 2004.

The Pennington Biomedical Research Center is a world-renowned nutrition research center.

**Mission:**

To promote healthier lives through research and education in nutrition and preventive medicine.

The Pennington Center has several research areas, including:

- Clinical Obesity Research
- Experimental Obesity
- Functional Foods
- Health and Performance Enhancement
- Nutrition and Chronic Diseases
- Nutrition and the Brain
- Dementia, Alzheimer's and healthy aging
- Diet, exercise, weight loss and weight loss maintenance

The research fostered in these areas can have a profound impact on healthy living and on the prevention of common chronic diseases, such as heart disease, cancer, diabetes, hypertension and osteoporosis.

The Division of Education provides education and information to the scientific community and the public about research findings, training programs and research areas, and coordinates educational events for the public on various health issues.

We invite people of all ages and backgrounds to participate in the exciting research studies being conducted at the Pennington Center in Baton Rouge, Louisiana. If you would like to take part, visit the clinical trials web page at [www.pbrc.edu](http://www.pbrc.edu) or call (225) 763-3000.