



Exercise and the Heart

Physical inactivity is a major risk factor for coronary artery disease. Exercise is beneficial to the body in a multitude of ways. It can help you relieve stress, lose weight, maintain a healthy body mass index (BMI), and even lower your risk of many chronic diseases.

It is recommended that everyone get at least 30 minutes of moderate intensity exercise daily. Children should have 60 minutes of physical activity each day.

Everyone can benefit from exercise. Multiple studies have shown that patients who have heart problems, and even those who are at high risk for heart disease or failure,

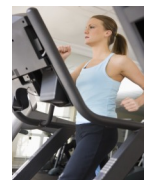
can benefit from exercise.

Exercise can result in reduced body fat, and it also gives the heart muscle a workout, making it stronger. It is noted that exercise helps to improve heart health by making the heart muscle stronger and larger. This enables it to pump more blood throughout the body with each beat, and allows it to perform at its maximum potential with least effort.

It also helps keep the arteries elastic. This makes the blood flow easier, and helps to maintain normal blood pressure. This reduces the risk of atherosclerosis and heart attack.

Exercise also boosts the immune system, but only if it is done at a moderate intensity, such as brisk paced walking or other aerobic activity.

The best way to reach an ideal level of fitness and weight is to avoid high fat foods, choosing plenty of fruits and vegetables and whole grains, and by adopting a lifestyle that includes physical activity.



The Types of Exercise

Aerobic Exercises:

- Jogging
- Cross Training
- Swimming
- Bicycling
- Walking

Anaerobic or Strength Training Exercises:

- Weight-lifting
- Sprinting
- Jumping rope
- Isometric exercise

Flexibility Exercises:

- Stretching

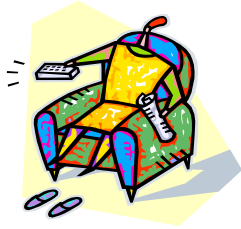
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Special points of interest:

- *How you can benefit from exercise*
- *The effects of being sedentary*
- *Exercise Facts*

How is inactivity risky?



- Inactivity is a major risk factor for coronary heart disease.
- Sedentary people have a 35 percent greater risk of being diagnosed with hypertension when compared to athletes and very active individuals.
- Sedentary people are at a higher risk of having type 2 diabetes, as well as heart disease.
- Being sedentary correlates with overweight and obesity, risk factors for diabetes, heart attack, heart disease, stroke, high blood pressure, and many other health problems.
- It is advised that sedentary individuals engage in an appropriate level of physical activity to increase general conditioning before engaging in any high intensity workouts, to avoid the risk of injury.
- Individuals who maintain an active lifestyle have a 45 percent lower risk of developing heart disease, when compared to sedentary individuals.
- Aging related decrease in muscle mass and strength can be counterbalanced by weight training regardless of age, albeit at a slower rate.
- With weight training, muscles will grow larger. Strength can increase at any age.
- Men can cut their risk for stroke in half if their exercise program is close to an hour of brisk walking each day, five days a week.
- People who exercise often and do so at a high intensity, have the lowest risk for heart disease, but all exercise is beneficial to everyone.
- Exercise improves heart health and may possibly reverse some risk factors associated with heart disease.

Updated Physical Activity Guidelines

The American College of Sports Medicine (ACSM) and the American Heart Association (AHA) released updated physical activity guidelines in 2007.

These guidelines are for healthy adults under age 65.

Basic recommendations from ACSM and AHA:

Do moderately intense cardio 30 minutes a day, 5 days a week

Or

Do vigorously intense cardio 20 minutes a day, 3 days a week

And

Do 8 to 10 strength-training exercises, 8 to 12 repetitions of each exercise twice a week.

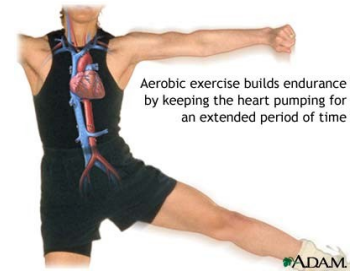
Moderate-intensity physical activity means working hard enough to raise your heart rate and break a sweat, while still being able to carry on a conversation. It should be noted that to lose weight or maintain weight loss, 60 to 90 minutes of physical activity may be necessary. The 30-minute recommendation is for the average healthy adult to maintain health and reduce the risk for chronic disease.

The Facts About Exercise

- It is advisable to wait at least one and a half hours after eating a meal before beginning an exercise program.
- It is recommended that we consume water before, during and after an exercise session to prevent dehydration and reduce muscle fatigue.
- Exercise improves lipid levels, reduces inflammation in the arteries, and assists in weight loss.
- For the maximum protection of the heart, it is not the duration of the exercise session that matters; instead, it depends on the total amount of energy that is expended in exercise.
- The warm-up session of exercise is used to reduce the stress from the workout on your heart and muscles, and to slowly increase oxygen uptake, heart rate, and body temperature.
- **Aerobic exercise** has the most benefits for your heart. It can help decrease heart rate and blood pressure at rest, as well as improve breathing.
- Examples of aerobic exercise include: walking, jogging, jumping rope, bicycling, skating, and low impact aerobics. Other aerobic activities include, skating, mowing the lawn, rollerblading, raking leaves, and playing with the children.
- **Anaerobic, or weight training** exercises build muscle. These exercises last from a few seconds up to two minutes at high intensity. These include

sprints and high intensity strength training such as powerlifting. Other anaerobic activities are shuttle run, push-ups, sit-ups, soccer, tennis, basketball, and sprinting.

- Choose activities you enjoy, such as swimming, biking, or playing basketball with friends to get your daily physical activity. If you need variety of activities to stay motivated, combine a few that appeal to you.
- **Flexibility exercises** or stretching: Stretching exercises should be done every day or as often as possible to prevent stiffness. As we age, flexibility exercises become more important to help us stay limber.
- Flexibility exercises can help protect our joints by reducing the risk of joint injury, they also help us during warm up before strenuous exercise. Flexibility exercise can also help during relaxation sessions to release tension from the body.
- Flexibility exercises can be done on exercise mats on the floor or in the pool.
- Some examples of exercises that involve flexibility are tai chi and yoga.
- It is recommended that we do up to 15 minutes of flexibility exercises a day.



Aerobic exercise builds endurance by keeping the heart pumping for an extended period of time

In 2009, a study performed at Duke University* involving over 2,000 men and women diagnosed with heart failure to see if exercise intervention would improve their long term health. A group of patients received standard care (control group), and the other group received both standard care as well as exercise training. The patients received thirty-six supervised exercise sessions, and they were given either an exercise bike or a treadmill when they were released to go home and they were told to exercise 120 to 200 minutes a week. After three months, the group that received the exercise training felt better than the group that received standard care. Over two and a half years, those that continued to exercise were less likely to be hospitalized for any cause that was related to heart failure. Exercising also decreased the patient's risk factors for dying from heart failure.



Before
 • Include 5 minute warm up
 • Check blood sugar
 After
 • Include 5 minute cool down
 • Check blood sugar

In addition to strengthening the heart, regular physical exercise can reduce the risk of osteoporosis and delay the physiological decrease of bone mineral density with aging. Research shows that regular exercise for women of practically all ages is well advised.

Heart Disease Prevention

Physical activity is effective in decreasing the incidence of heart disease. A large study in Britain assessed the level of physical activity and monitored the incidence of cardiovascular events over a two year period of more than 16,000 subjects. The subjects were all male office workers aged 40 to 64 years of age. Vigorous physical activity was analyzed in those likely to reach peaks of energy output of 225 kcal in 30 minutes (corresponding to heavy industrial work) creating a training effect on the cardiovascular system. These activities included active recreations (e.g.,

swimming), "keep-fit" exercises, and strenuous work (e.g., digging). During the study, 11% of the men who participated in vigorous physical activities developed coronary heart disease, contrastingly, 26% of the men who were in the control group developed coronary heart disease. Vigorous exercise protected against fatal heart attacks and other first clinical attacks of CHD throughout middle age. This study shows a correlation between vigorous exercise and the promotion of cardiovascular health.

About Pennington

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 or call (225) 763-3000.

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