

### **3. Fitness and medical problems, cardiovascular endurance, muscular strength, muscular endurance, flexibility, body composition, benefits of exercise, illness and exercise**

#### **What is "cardiorespiratory endurance?"**

is the ability of the body's circulatory and respiratory systems to supply fuel during sustained physical activity. To improve it, try activities that keep your heart rate elevated at a safe level for a sustained length of time such as walking, swimming, or bicycling. Start slowly with an activity you enjoy, and gradually work up to a more intense pace.

#### **What is "muscular strength?"**

is the ability of the muscle to exert force during an activity. The key to making your muscles stronger is working them against resistance. If you want to gain muscle strength, try exercises such as lifting weights or rapidly taking the stairs.

#### **What is "muscular endurance?"**

is the ability of the muscle to continue to perform without fatigue. To improve it, try cardiorespiratory activities such as walking, jogging, bicycling, or dancing.

#### **What is "body composition?"**

refers to the relative amount of muscle, fat, bone, and other vital parts of the body. A person's total body weight (what you see on the bathroom scale) may not change over time. But the bathroom scale does not assess how much of that body weight is fat and how much is lean mass (muscle, bone, tendons, and ligaments).

#### **What is "flexibility?"**

is the range of motion around a joint. In the joints it can help prevent injuries through all stages of life. If you want to improve this skill, try activities that lengthen the muscles such as swimming or a basic stretching program.

Adapted from <http://www.seekwellness.com/fitness/>

## **BENEFITS OF EXERCISE**

The **benefits** of exercise are far-reaching. Clinical and epidemiological studies have demonstrated that regular aerobic exercise reduces the risk of death due to heart disease and stroke, aids in reducing weight, helps prevent diabetes mellitus, strengthens bones, and enhances immune function. The psychological benefits are also broad, and most studies suggest a positive relationship between physical fitness and mental achievement.

**How much exercise** is enough to improve general health, reduce the risk of heart disease, and increase longevity? It is clear that regular exercise, along with a generally healthy lifestyle, is beneficial. People who have sedentary lifestyles make up half the population of industrialized societies.

Adapted from "Exercise," Microsoft® Encarta® Online Encyclopedia 2009

### **Heading 1 What is exercise?**

1. Exercise is an activity that results in contraction of skeletal muscle. The term is usually used in reference to any activity that improves physical fitness. Although<sup>1</sup> muscle contraction is the

common element of all forms of exercise, many other organs and systems are affected, for example, the heart and lungs.

## Heading 2 **Basic Physiology of Exercise**

2. Contraction of skeletal muscles, the muscles under conscious<sup>ii</sup> control, is the primary physiological event during exercise. Because skeletal muscles can actively contract, but are not designed to actively lengthen, they are arranged<sup>iii</sup> as opposing pairs. As one muscle shortens, another is stretch<sup>iv</sup>ed. An example of such a pair of muscles can be observed<sup>v</sup> in the upper arm, where the biceps and triceps have opposite actions.

## Heading 3 **Anaerobic Exercise**

3. This type of exercise involves heavy work by a limited number of muscles, for example during weight lifting<sup>vi</sup>. These types of activities are maintained only for short intervals, and the supply of oxygen is insufficient for aerobic metabolism, resulting in a substantial oxygen debt. This exercise increases strength and muscle mass, but is of limited benefit to cardiovascular health.

## Heading 4 **Aerobic Exercise**

4. This type of exercise uses oxygen to keep large muscle groups moving continuously at an intensity that can be maintained for at least 20 minutes. This form of exercise uses several major muscle groups throughout the body, resulting in greater demands<sup>vii</sup> on the cardiovascular and respiratory systems to supply<sup>viii</sup> oxygen to the working muscles.

## Heading 5 **Benefits of Exercise**

5. Regular exercise reduces the risk of death due to heart disease and stroke<sup>ix</sup>, aids in reducing weight, strengthens bones, and enhances immune function. The psychological benefits are also broad. One area of controversy has been how much exercise is enough to improve general health, reduce the risk of heart disease, and increase longevity<sup>x</sup>. Meaningful studies on this topic are very difficult to perform because they require large populations of subjects and many years of data collection, and because poor health sometimes negatively influences physical activity. Despite these difficulties, it is clear that regular exercise, along with a generally healthy lifestyle, is beneficial<sup>xi</sup>.

(adapted from: Seal, B. *Academic Encounters*. Cambridge University Press, 1997.)

## **Preventing Heart and Blood Vessel Problems**

Cardiovascular disease is the term used to describe problems involving the heart (cardio) or blood vessels (vascular). The most devastating complications of cardiovascular disease are stroke and heart attack; these can often be fatal. In fact, cardiovascular disease is the number one cause of death overall in the United States; the statistics that one in five Americans has cardiovascular disease includes women.

Active, exercising women already have lowered their risk of cardiovascular disease, as exercise affords the best heart protection. The recommendation by the American Heart Association is 30 minutes of moderate to intense physical activity 5 days a week. Aerobic exercise, which raises heart rate and uses up oxygen, improves cholesterol levels and maintains the peak functioning efficiency of heart and blood vessels. It also trains the cells to carry oxygen more efficiently and improves the rate of oxygen uptake in breathing.

High blood pressure is a precursor to heart and blood vessel disease. Blood pressure is necessary to promote exchange of nutrients from the blood into the capillaries and into the body. If there are problems such as hardened arteries, slow or inefficient heart functioning, or increased body demands due to poorly trained muscles, blood pressure rises. Because regular exercisers do not

usually have these problems, blood pressure remains low. This reduces the occurrence of bad side effects of blood pressure such as heart attack and stroke. Studies have recently shown that regular exercise of moderate intensity for one hour five days a week is as effective as medication in managing high blood pressure.

The unmodifiable factors that can also increase your risk of cardiovascular disease are family history of stroke or heart attack, especially in family members under the age of 50; high cholesterol or triglycerides; and diabetes. Modifiable factors include smoking, obesity, and inactivity. Less clear but risky lifestyle behaviors are high stress and poor diet (high sugar and saturated fat/high cholesterol/low fiber). If you have any of these increased risks, you should see your doctor to discuss prevention methods in addition to exercise. These may include an aspirin a day, a low-cholesterol, unsaturated fat, high-fiber diet, and medications.

### **Factors That Increase Risk of Cardiovascular Disease**

- High LDL cholesterol
- Obesity
- High triglycerides
- Inactivity
- Diabetes
- Stress
- Family history
- Poor diet
- Smoking
- Older age

Because women who have been through menopause are at an increased risk of heart disease and stroke, and women taking oral contraceptives or hormone replacement can be at an increased risk of stroke and blood clots, if you are in these categories and have the risk factors mentioned above, consult with your doctor for the best prevention strategies. Other heart-protective dietary behaviors can include a high-fiber, low glycemic index diet, increasing amount of omega-3 fatty acids, adding soy products, and having (only) one alcoholic drink per day.

### **Health Benefits of Aerobic Exercise**

- Prevents heart disease
- Decreases osteoporosis risk
- Lowers blood pressure
- Reduces depression
- Reduces strokes
- Reduces cancer
- Prevents obesity
- Reduces stress
- Prevents diabetes
- Improves sleep
- Reduces cholesterol

Source <http://life.familyeducation.com/preventive-medicine/health/35895.html?detoured=1>

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i although – ačkoli, i když,  
ii conscious - vědomý  
iii arranged - uspořádaný  
iv enhance – zvýšit, zvětšit  
v observe - pozorovat  
vi weight lifting - vzpírání  
vii demand - požadavek

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viii	supply - dodávat
ix	stroke - mozková mrtvice/ příhoda
x	longevity - dlouhověkost
xi	beneficial - blahodárný, prospěšný