

Exercise



Today, Americans are on the move. They're walking, running, playing tennis, bicycling, swimming, performing aerobics, and weightlifting. They are exercising to keep fit, to lose weight, to firm up their figure, and to improve their overall sense of well-being. Probably most important of all, they believe that physical fitness will prevent or reduce the risk of developing one of the major chronic diseases that now kill or disable most Americans: heart and blood vessel disease, today's major killer; cancer, today's second leading killer; and osteoporosis, a major bone problem.

Being physically fit means feeling good, looking good, and functioning well. When you are physically fit, your muscles are well developed, your joints are limber, your bones are strong, your lungs hold large amounts of oxygen, your heart and blood vessels are well developed, and you have stamina.

Benefits Of Exercise

The benefits of an exercise program are numerous. Toning of sagging muscles and ridding the body of excess fat improves appearance. Better health; improved sleep, digestion, and disposition; increased strength and flexibility; and better heart function can generally improve the quality of life. The pressures and

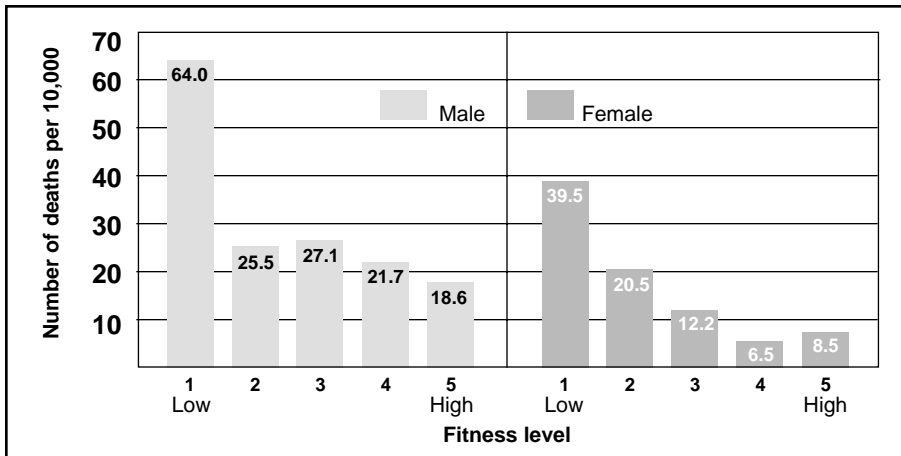
stress of daily living can be lessened with exercise.

Exercise helps the body use carbohydrates, so less insulin is required for physically active diabetics. Exercise also increases the use of body fat as a fuel source thus helping to prevent the accumulation of body fat.

Bones that are not used tend to decalcify (lose calcium); they become brittle and break more easily. Exercise tends to reduce the decalcification of bones and possibly slows down the development of osteoporosis. Proper exercise may improve posture and reduce backache.

Exercise also lessens some risk factors associated with heart disease. It reduces blood pressure and blood triglyceride levels. While exercise does not seem to appreciably lower total serum cholesterol, aerobic exercise can raise the HDL cholesterol levels in the blood. HDL cholesterol is the good cholesterol in the blood, and high levels are related to less heart disease. Certain exercises make the lungs, heart, and circulation more efficient. The clotting power of the blood also is changed so that clotting, or forming of plaques, is less apt to occur in arteries of the heart.

In addition to reducing heart disease, exercise has been shown to reduce the incidence of some cancers, particularly colon cancer. Colon cancer is one of the major cancers in the American population.



Exercise reduces risk of death.

Adapted from: Blair 1989.

Thus, proper exercise can reduce the risk of dying prematurely from several chronic diseases currently plaguing the American population. Exercise, by preventing the occurrence of many of these chronic diseases, can greatly reduce the medical costs that would occur when a person is treated for conditions such as heart disease. The cost of prevention is much less than the cost for treatment once a person has a chronic disease.

Exercise And The Heart

Does exercise reduce the risk of developing premature cardiovascular disease? Evidence is fairly strong that it does. Jogging, running, and other selective aerobic exercises increase the efficiency of the heart and circulatory system.

Studies have shown that the risk of developing heart disease in physically active people is only 20 to 80 percent of the risk in inactive or sedentary persons. Several public health related groups now believe that lack of physical activity is almost as large a risk factor for developing premature heart disease as is smoking or having high blood cholesterol and high blood pressure.

Other studies have shown that patients who have had heart attacks and are now in medically supervised exercise programs have a reduced chance of having a fatal heart attack. If a heart attack occurs, it will probably be milder in physically fit persons.

Overall changes in lifestyle, such as dieting and giving up smoking, also tend to lessen the severity of heart attacks among the physically fit.

Only certain types of exercise promote cardiovascular fitness. These are aerobic exercises, such as running, swimming, and bicycling, which force the heart and lungs to work harder. Long-term training in these activities can produce several benefits. Breathing rate eventually lessens since the lungs can expand and take in more oxygen with each breath. The massaging action of the large working muscles, such as the legs, increases the flow of blood. Thus, the heart and blood vessels enlarge and become stronger. As this occurs, more blood is pumped with each beat, so fewer heartbeats per minute are needed. A slower heartbeat gives the heart more time to rest. Reducing the resting heartbeat from 80 to 60 beats per minute is equal to 18 days of rest per year for the heart.

Your Exercise Program

Aerobic exercises require a greater amount of oxygen than is normally used in day-to-day activity. Aside from choosing the proper exercises, there are three factors required for you to reach cardiovascular fitness: frequency (how often), duration (how long), and intensity (how hard).

Exercise. Aerobic exercises are probably the most important exercises for good health. They include

brisk walking, running (around or in place), bicycling (on a movable or permanent bike), rowing, rope skipping, swimming, and aerobics among others. These exercises increase the continuous flow of blood through the heart and large skeletal muscles. Continuous movement of legs and, to some extent, arms results in rhythmic tensing and relaxing of muscles and blood vessels.

Likewise, in the aerobic group are sports such as basketball, handball, squash, skating, hockey, cross-country skiing, soccer, and hiking. In contrast, sports with long pauses and only occasional brisk efforts, such as baseball, softball, golf, or bowling, are inadequate in developing cardiovascular fitness.

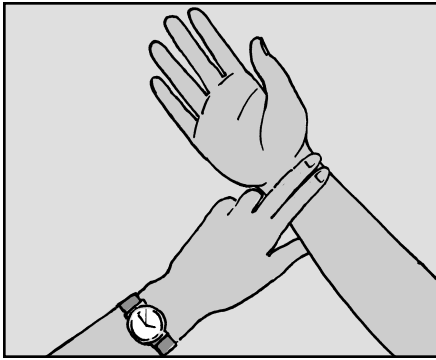
Frequency. Exercise at least three times a week, preferably on alternate days, for the first three months to reduce chances of joint or muscle problems. After that, you can exercise daily. However, exercising three days per week is enough to keep fit.

Duration. Exercise continuously at a suitable level of intensity for a minimum of 15 to 30 minutes, not including the warm-up and cool-down periods.

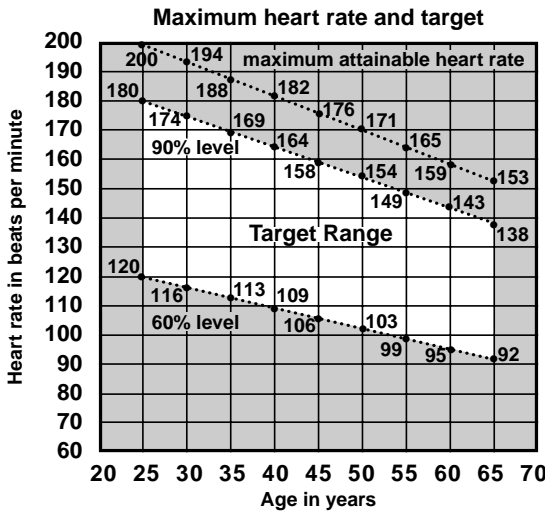
Intensity. Exercise strenuously enough to reach your target range of exertion. There is a point where the heart and circulation cannot deliver any more oxygen to the tissues or work any faster without exhaustion. This is your maximum heart rate (number of heartbeats per minute). Your target range is about 60 to 90 percent of your maximum heart rate.

Your normal resting heart rate is the same as your pulse rate. An average resting pulse rate is 70 to 80 beats per minute. However, resting pulse rates as low as 50 beats per minute are not uncommon in persons with a high level of aerobic fitness.

To take your pulse, press the index and middle fingers of one hand on the upturned wrist of you other hand at the thumb side. Using a watch that can record seconds, count the beats that occur in 10 seconds and multiply that number by 6. That gives you your pulse rate or the number of times your heart beats per minute.



Count the pulse for 10 seconds and multiply by 6 to get heartbeats per minute.



The maximum heart rate you can reach declines with age and so does the target range for exercise. These are "average" ranges.

Adapted from: Zohman 1977.

Use the chart in Figure 3 to find your target range. Locate your age at the bottom and move up to the lighter area. However, any untrained person with a resting heartbeat (pulse rate) under 60 should let a physician determine the appropriate target range.

Check your pulse periodically during exercise and immediately after exercising to get a reading. Increase or decrease exercise intensity until your pulse reading is within the target heart rate range. Do not count your pulse rate for a whole minute since the rate drops quickly after 10 seconds.

Medical Checkup And Supervision

If you are older than 35 and not accustomed to frequent exercise or if you have health problems, you should have a thorough checkup before starting an exercise program. A cardiovascular problem does not always rule out exercise. In fact, exer-

cise may be part of the treatment ordered under the doctor's supervision.

Many medical centers, community hospitals, and private organizations now offer medically-supervised exercise programs for heart patients and the general public. Your local chapter of the American Heart Association may know of such services in the community.

Your Exercise Plan

How much exercise is enough? Research has shown that any amount of exercise is better than no exercise. However, for most adults, staying within the target range during the aerobic exercises provides enough exertion to achieve fitness and still be within safe limits. An exercise plan for cardiovascular fitness should consist of a warm-up, the aerobic exercise, and a cool-down period.

Warm-up. Begin each exercise session with 5 to 10 minutes of bending, twisting, and stretching the trunk, head, arms, shoulders, legs, and feet. If your exercise is to be a brisk walk, warm up by walking at a normal rate. If you are planning to bicycle, start leisurely and gradually increase the speed.

Aerobic Exercise. As a beginner, plan to exercise for 2 to 3 minutes and then to rest 2 minutes, repeating three or four times. Even more rest periods may be needed during the first week or so. At the start of rest periods, check your pulse immediately since this is the trial period.

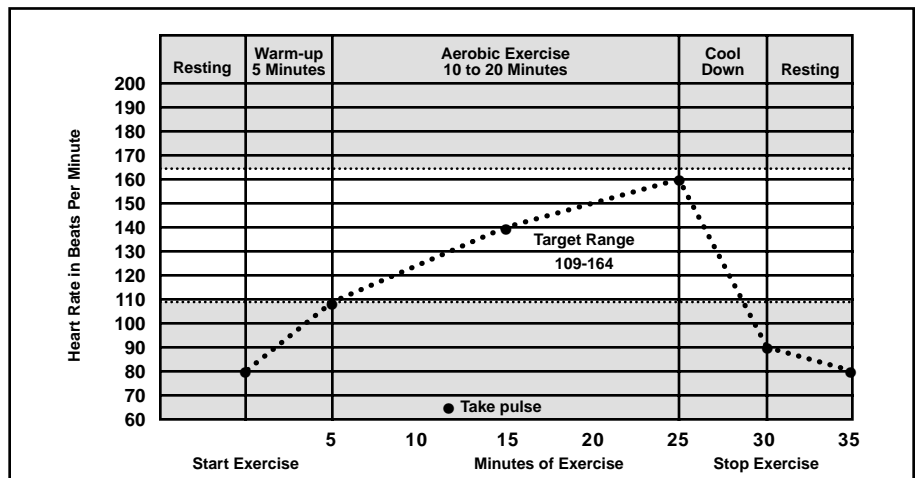
Exercise more or less intensely to reach the target range, and rest frequently. The idea is to increase the heart rate and circulation gradually without putting too sudden a strain on the cardiovascular system or working muscles. You may wish to limit intense periods of exercise to 10 to 15 minutes for the first month or two.

After 2 to 3 weeks of regular exercise, physical fitness begins to improve for most persons. After 4 to 6 weeks, there should be a measurable improvement. You'll find it easier to exercise; you'll sleep better and be less tired at the end of the day. You may miss this new invigorating feeling if you skip exercising. Better yet, regular exercise helps with weight control. A general rule of thumb is that 1 mile of walking burns about 100 calories.

Every 4 to 6 weeks evaluate or upgrade the exercise program. Keep an exercise plan for a guide.

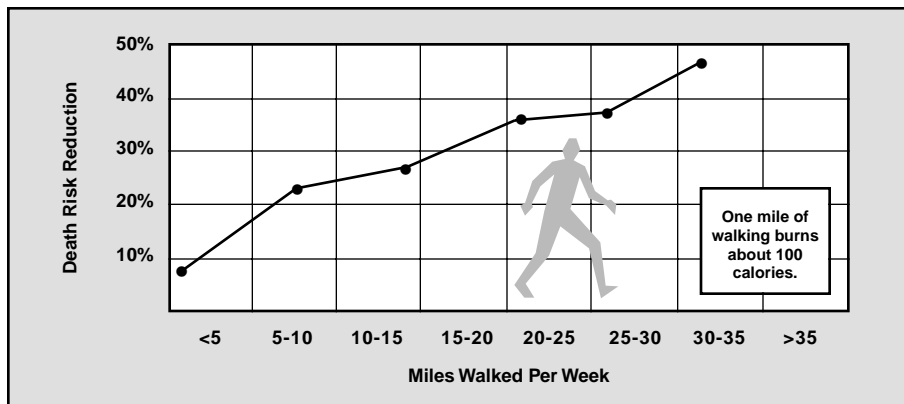
Even though most people reach a state of fitness in 3 to 6 months, regular workouts must be continued to stay physically fit. If you cut back to exercising only once a week or greatly reduce the amount of exercise, you will quickly lose a lot of your fitness. If you discontinue exercising completely, you will lose almost all fitness and health achievements within a month or two.

If illness or unavoidable circumstances prevent your exercising for a few days or weeks, resume the pro-



An exercise plan for a 40-year-old with maximum heart rate of 182 beats per minutes.

Adapted from: Zohman 1977.



Regular exercise reduces risk of death.

Adapted from: Paffenbarger 1986.

gram at a lower level, taking about as much time as you missed to work back up to the previous level.

Cool Down. After intense exercise, you need a cooling down period of 5 to 10 minutes. Cool down by walking around, stretching and reaching, arching and sagging, or bending and shaking. These activities relax the muscles, slow down the heart, and move blood away from the leg muscles. Unless you cool down, the blood will pool in the legs and arms, reducing the blood supply to the brain. This can cause dizziness or fainting.

Warning

The heart rate may climb faster than suspected during hot weather or under stressful situations. If this happens, cool down and stop exercising. Evaluate what you have done and adjust the exercise. Warning signs, such as dizziness, weakness, goose bumps, nausea, or headache, may occur while you are exercising or from 2 to 24 hours later.

Avoid exercising in the middle of a hot and humid day. Do not exercise at bedtime since it may interfere with normal sleep.

Exercise And Eating

Most people are comfortable if they wait at least 2 to 4 hours after eating before exercising. The larger the meal the more time that should elapse between eating and exercise.

Exercise burns calories but the relationships between exercise and eating are not totally clear. Moderate amounts of exercise before meals may actually decrease the appetite. Intense, prolonged exercise also may suppress appetite for a period of time following the exercise. Enjoyable exercise on a routine basis can relieve tension and boredom which frequently stimulate eating.

A balanced diet provides the necessary energy, protein, fat, carbohydrates, vitamins, and minerals needed for exercise. Drink enough fluids, though, particularly on hot, humid days.

Summary

Technical advances have changed our way of living. We have succumbed to easy living. Yet the needs of the human body have not changed. Muscles need to be used,

particularly the lungs, heart, and blood vessels. When not used enough, they deteriorate. Thus, selective exercise must be a part of this easy life style if cardiovascular fitness is to be achieved. This requires time and discipline.

For healthy adults to develop and maintain cardiovascular fitness, they must perform aerobic exercises in the target range for 15- to 30-minute sessions three times a week. It usually takes 3 to 6 months to reach cardiovascular fitness. However, any exercise is better than no exercise.

Exercise is a powerful tool that can be used to prevent heart disease. Regular aerobic exercise of proper intensity and duration can greatly reduce your chances of developing heart disease.

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