

FITNESS FUNDAMENTALS



Guidelines for Personal Exercise Programs



Developed by the President's Council
on Physical Fitness and Sports

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MAKING A COMMITMENT

You have taken the important first step on the path to physical fitness by seeking information. The next step is to decide that you are going to **be** physically fit. This pamphlet is designed to help you reach that decision and your goal.

The decision to carry out a physical fitness program cannot be taken lightly. It requires a lifelong commitment of time and effort. Exercise must become one of those things that you do without question, like bathing and brushing your teeth. Unless you are convinced of the benefits of fitness and the risks of unfitness, you will not succeed.

Patience is essential. Don't try to do too much too soon and don't quit before you have a chance to experience the rewards of improved fitness. You can't regain in a few days or weeks what you have lost in years of sedentary living, but you can get it back if you persevere. And the prize is worth the price.

In the following pages you will find the basic information you need to begin and maintain a personal physical fitness program. These guidelines are intended for the average healthy adult. It tells you what your goals should be and how often, how long and how hard you must exercise to achieve them. It also includes information that will make your workouts easier, safer and more satisfying. The rest is up to you.

CHECKING YOUR HEALTH

If you're under 35 and in good health, you don't need to see a doctor before beginning an exercise program. But if you are over 35 and have been inactive for several years, you should consult your physician, who may or may not recommend a graded exercise test. Other conditions that indicate a need for medical clearance are:

- o High blood pressure.
- o Heart trouble.
- o Family history of early stroke or heart attack deaths.
- o Frequent dizzy spells.
- o Extreme breathlessness after mild exertion.
- o Arthritis or other bone problems.
- o Severe muscular, ligament or tendon problems.
- o Other known or suspected disease.

Vigorous exercise involves minimal health risks for persons in good health or those following a doctor's advice. Far greater risks are presented by habitual inactivity and obesity.

DEFINING FITNESS

Physical fitness is to the human body what fine tuning is to an engine. It enables us to perform up to our potential. Fitness can be described as a condition that helps us look, feel and do our best. More specifically, it is:

“The ability to perform daily tasks vigorously and alertly, with energy left over for enjoying leisure-time activities and meeting emergency demands. It is the ability to endure, to bear up, to withstand stress, to carry on in circumstances where an unfit person could not continue, and is a major basis for good health and well-being.”

Physical fitness involves the performance of the heart and lungs, and the muscles of the body. And, since what we do with our bodies also affects what we can do with our minds, fitness influences to some degree qualities such as mental alertness and emotional stability.

As you undertake your fitness program, it's important to remember that fitness is an individual quality that varies from person to person. It is influenced by age, sex, heredity, personal habits, exercise and eating practices. You can't do anything about the first three factors. However, it is within your power to change and improve the others where needed.

KNOWING THE BASICS

Physical fitness is most easily understood by examining its components, or “parts.” There is widespread agreement that these four components are basic:

Cardiorespiratory Endurance - the ability to deliver oxygen and nutrients to tissues, and to remove wastes, over sustained periods of time. Long runs and swims are among the methods employed in measuring this component.

Muscular Strength - the ability of a muscle to exert force for a brief period of time. Upper-body strength, for example, can be measured by various weight-lifting exercises.

Muscular Endurance - the ability of a muscle, or a group of muscles, to sustain repeated contractions or to continue applying force against a fixed object. Pushups are often used to test endurance of arm and shoulder muscles.

Flexibility - the ability to move joints and use muscles through their full range of motion. The sit-and-reach test is a good measure of flexibility of the lower back and backs of the upper legs.

BODY COMPOSITION is often considered a component of fitness. It refers to the makeup of the body in terms of lean mass (muscle, bone, vital tissue and organs) and fat mass. An optimal ratio of fat

to lean mass is an indication of fitness, and the right types of exercises will help you decrease body fat and increase or maintain muscle mass.

A WORKOUT SCHEDULE

How often, how long and how hard you exercise, and what kinds of exercises you do should be determined by what you are trying to accomplish. Your goals, your present fitness level, age, health, skills, interest and convenience are among the factors you should consider. For example, an athlete training for high-level competition would follow a different program than a person whose goals are good health and the ability to meet work and recreational needs.

Your exercise program should include something from each of the four basic fitness components described previously. Each workout should begin with a warmup and end with a cooldown. As a general rule, space your workouts throughout the week and avoid consecutive days of hard exercise.

Here are the amounts of activity necessary for the average healthy person to maintain a minimum level of overall fitness. Included are some of the popular exercises for each category.

WARMUP - 5-10 minutes of exercise such as walking, slow jogging, knee lifts, arm circles or trunk rotations. Low intensity movements that simulate movements to be used in the activity can also be included in the warmup.

MUSCULAR STRENGTH - a minimum of two 20-minute sessions per week that include exercises for all the major muscle groups. Lifting weights is the most effective way to increase strength.

MUSCULAR ENDURANCE - at least three 30-minute sessions each week that include exercises such as calisthenics, pushups, situps, pullups, and weight training for all the major muscle groups.

CARDIORESPIRATORY ENDURANCE - at least three 20-minute bouts of continuous aerobic (activity requiring oxygen) rhythmic exercise each week. Popular aerobic conditioning activities include brisk walking, jogging, swimming, cycling, rope-jumping, rowing, cross-country skiing, and some continuous action games like racquetball and handball.

FLEXIBILITY - 10-12 minutes of daily stretching exercises performed slowly, without a bouncing motion. This can be included after a warmup or during a cooldown.

COOL DOWN - a minimum of 5-10 minutes of slow walking, low-level exercise, combined with stretching.

A MATTER OF PRINCIPLE

The keys to selecting the right kinds of exercises for developing and maintaining each of the basic components of fitness are found in these principles:

SPECIFICITY - pick the right kind of activities to affect each component. Strength training results in specific strength changes. Also, train for the specific activity you're interested in. For example, optimal swimming performance is best achieved when the muscles involved in swimming are trained for the movements required. It does not necessarily follow that a good runner is a good swimmer.

OVERLOAD - work hard enough, at levels that are vigorous and long enough to overload your body above its resting level, to bring about improvement.

REGULARITY - you can't hoard physical fitness. At least three balanced workouts a week are necessary to maintain a desirable level of fitness.

PROGRESSION - increase the intensity, frequency and/or duration of activity over periods of time in order to improve.

Some activities can be used to fulfill more than one of your basic exercise requirements. For example, in addition to increasing cardiorespiratory endurance, running builds muscular endurance in the legs, and swimming develops the arm, shoulder and chest muscles. If you select the proper activities, it is possible to fit parts of your muscular endurance workout into your cardiorespiratory workout and save time.

MEASURING YOUR HEART RATE

Heart rate is widely accepted as a good method for measuring intensity during running, swimming, cycling, and other aerobic activities. Exercise that doesn't raise your heart rate to a certain level and keep it there for 20 minutes won't contribute significantly to cardiovascular fitness.

The heart rate you should maintain is called your **target heart rate**. There are several ways of arriving at this figure. One of the simplest is: **maximum heart rate** $(220 - \text{age}) \times 70\%$. Thus, the target heart rate for a 40 year-old would be 126.

Some methods for figuring the target rate take individual differences into consideration. Here is one of them:

1. Subtract age from 220 to find **maximum heart rate**.
2. Subtract resting heart rate (see below) from maximum heart rate to determine **heart rate reserve**.
3. Take 70% of heart rate reserve to determine **heart rate raise**.

4. Add heart rate raise to resting heart rate to find **target rate**.

Resting heart rate should be determined by taking your pulse after sitting quietly for five minutes. When checking heart rate during a workout, take your pulse within five seconds after interrupting exercise because it starts to go down once you stop moving. Count pulse for 10 seconds and multiply by six to get the per-minute rate.

CONTROLLING YOUR WEIGHT

The key to weight control is keeping energy intake (food) and energy output (physical activity) in balance. When you consume only as many calories as your body needs, your weight will usually remain constant. If you take in more calories than your body needs, you will put on excess fat. If you expend more energy than you take in you will burn excess fat.

Exercise plays an important role in weight control by increasing energy output, calling on stored calories for extra fuel. Recent studies show that not only does exercise increase metabolism during a workout, but it causes your metabolism to stay increased for a period of time after exercising, allowing you to burn more calories.

How much exercise is needed to make a difference in your weight depends on the amount and type of activity, and on how much you eat. Aerobic exercise burns body fat. A medium-sized adult would have to walk more than 30 miles to burn up 3,500 calories, the equivalent of one pound of fat. Although that may seem like a lot, you don't have to walk the 30 miles all at once. Walking a mile a day for 30 days will achieve the same result, providing you don't increase your food intake to negate the effects of walking.

If you consume 100 calories a day more than your body needs, you will gain approximately 10 pounds in a year. You could take that weight off, or keep it off, by doing 30 minutes of moderate exercise daily. The combination of exercise and diet offers the most flexible and effective approach to weight control.

Since muscle tissue weighs more than fat tissue, and exercise develops muscle to a certain degree, your bathroom scale won't necessarily tell you whether or not you are "fat." Well-muscled individuals, with relatively little body fat, invariably are "overweight" according to standard weight charts. If you are doing a regular program of strength training, your muscles will increase in weight, and possibly your overall weight will increase. Body composition is a better indicator of your condition than body weight.

Lack of physical activity causes muscles to get soft, and if food intake is not decreased, added body weight is almost always fat. Once-active people, who continue to eat as they always have after settling into sedentary lifestyles, tend to suffer from "creeping obesity."

CLOTHING

All exercise clothing should be loose-fitting to permit freedom of movement, and should make the wearer feel comfortable and self-assured.

As a general rule, you should wear lighter clothes than temperatures might indicate. Exercise generates great amounts of body heat. Light-colored clothing that reflects the sun's rays is cooler in the summer, and dark clothes are warmer in winter. When the weather is very cold, it's better to wear several layers of light clothing than one or two heavy layers. The extra layers help trap heat, and it's easy to shed one of them if you become too warm.

In cold weather, and in hot, sunny weather, it's a good idea to wear something on your head. Wool watch or ski caps are recommended for winter wear, and some form of tennis or sailor's hat that provides shade and can be soaked in water is good for summer.

Never wear rubberized or plastic clothing, such garments interfere with the evaporation of perspiration and can cause body temperature to rise to dangerous levels.

The most important item of equipment for the runner is a pair of sturdy, properly-fitting running shoes. Training shoes with heavy, cushioned soles and arch supports are preferable to flimsy sneakers and light racing flats.

WHEN TO EXERCISE

The hour just before the evening meal is a popular time for exercise. The late afternoon workout provides a welcome change of pace at the end of the work day and helps dissolve the day's worries and tensions.

Another popular time to work out is early morning, before the work day begins. Advocates of the early start say it makes them more alert and energetic on the job.

Among the factors you should consider in developing your workout schedule are personal preference, job and family responsibilities, availability of exercise facilities and weather. It's important to schedule your workouts for a time when there is little chance that you will have to cancel or interrupt them because of other demands on your time.

You should not exercise strenuously during extremely hot, humid weather or within two hours after eating. Heat and/or digestion both make heavy demands on the circulatory system, and in combination with exercise can be an overtaxing double load.