

8th GRADE AEROBIC STUDY GUIDE

HISTORY

- Dr. Kenneth H. Cooper, an exercise physiologist for the San Antonio Air Force Hospital, Texas, coined the term 'aerobics' to describe the system of exercise that he devised to help prevent coronary artery disease.
- Dr. Cooper originally formulated aerobic exercises specifically for astronauts, but soon realized that the same set of exercises are useful for the general public as well, especially those suffering from obesity, who are more likely to develop various heart diseases.
- At first, aerobic exercises included activities such as running, walking and bicycling. Over the years, aerobic programs such as dance aerobics, water aerobics and step aerobics were introduced. Aerobics continue to evolve and popular forms include yoga, cardio-kickboxing, pilates, and taebo.

TAKING YOUR PULSE

- Taking your pulse regularly during exercise helps to know how hard you are working.
 - There are many locations on the human body where your pulse can be felt. Your pulse is the pressure wave of blood that is generated when your heart muscles contract.
 - It reflects the rhythm, rate and strength of your heart's contractions. You can feel your pulse anywhere that an artery (a blood vessel that carries blood away from the heart) crosses over a bone and is close to the skin's surface.
 - Some of the most common places to easily find your pulse are listed below. To take your pulse use your index and middle fingers, not thumb.
1. **Carotid Artery** - Your carotid artery runs vertically along both sides of your neck. To find your carotid pulse, place your fingers at the top of your neck, just under your jaw at about the mid-point between your earlobe and chin.
 2. **Radial Artery** - The radial artery is the pulse point most commonly used to determine someone's heart rate. Face either hand palm up and use the

fingers from your other hand to locate your pulse. Your radial artery is on the thumb's side (or outside) of your wrist when the palm of your hand is facing you. Place your fingers half way between the tendons that run down the center of your forearm and the edge of your arm, on the thumb side, right at your wrist. Make sure one finger is closer to your palm than the other, so they appear "stacked"; your fingers should be vertical on your wrist, not side-by-side. You should feel a strong pulse here.

*The radial and the carotid arteries are the easiest and most accessible places to take your pulse. There are a couple other arteries that can be used: Brachial, Femoral and Dorsalis Pedis.

*Resting heart rate is affected by:

1. age
2. gender (men are lower usually)
3. physical fitness
4. some drugs/medication
5. genetics
6. anxiety

FITNESS CONCEPTS

Components of Physical Fitness:

1. Body composition - A ratio used to describe the percentages of fat, bone and muscle in human bodies.
2. Flexibility - The ability to move a body part through a full range of motion.
3. Muscular strength - The amount of force a muscle can exert.
4. Muscular endurance - The ability of muscle to do difficult physical tasks over a period of time without fatigue.
5. Cardiovascular endurance (what we are doing in aerobics) - The ability of the heart, lungs and blood vessels to send fuel and oxygen to the body's tissues during long periods of activity.

Two categories of cardio exercise

1. **Aerobic** - Literally, "living or occurring in the presence of oxygen." Aerobic movement or exercise is an activity or a series of activities performed strenuously enough to increase heart rate and respiration but not so strenuously that it results in an oxygen debt (called anaerobic).
2. **Anaerobic** - A technical word which literally means *without oxygen*.

F.I.T.T Principle - Is an acronym for *frequency, intensity, time and type*.

The **F.I.T.T. principle** is a basic philosophy of what is necessary to gain a training effect from an exercise program.

1. **Frequency** - The number of exercise or activity sessions, usually defined by the number per week.
2. **Intensity** - The amount of exercise completed in a specific period of time or how "hard" a person exercises.
3. **Time** - The duration or amount of time spent exercising, usually defined by the total time per session.
4. **Type** - There are two types of exercises for muscle groups, main and assistance (minor). Basically, your main exercises involve the most muscle mass. They usually involve more than one muscle group when exercising and you can use the greatest weight resistance with these exercises. The assistance exercises isolate the muscle group by concentrating on the simple movement of that muscle group and eliminating or minimizing the involvement of other muscle groups. Have variety in your choice of exercises. Don't do the same exercises the same way every time you train. Variety will shock the body and won't allow it to get used to the same exercises.

Benefits of Physical Fitness

1. Exercise reduces the risk of heart disease
2. Exercise reduces the risk of diabetes (Diabetes is a metabolic disorder characterized by high blood glucose levels. Chronic elevation of blood glucose is associated with increased incidence of heart disease, kidney disease, nerve dysfunction, and eye damage.)

3. Exercise increases bone mass - This becomes possible as your muscular force is applied during activity. Studies have found that this can prevent bone loss in the elderly.
4. Exercise maintains physical working capacity during aging.
5. Exercise increases longevity - lifespan.
6. Exercise improves psychological well-being.

There are 3 parts/stages to every workout:

1. Warm-up - The preparation of the body before a session of vigorous exercise. Getting the blood flowing, and it helps to prevent injuries.
2. Exercise/workout - A bodily activity that enhances or maintains physical fitness and overall health. It is performed for many different reasons. These include: strengthening muscles and the cardiovascular system, honing athletic skills, and weight loss or maintenance.
3. Cool-down - A short period of mild exercise after a session of vigorous activity. To return blood flow to normal.

TERMINOLOGY

- **Aerobics** - A system of physical conditioning that involves aerobic exercise (e.g. running, walking, and swimming).
- **Aerobic fitness** - An indication of the heart's ability to recover from vigorous exercise. Aerobic fitness is a component of overall (physical) fitness and is sometimes called *cardiovascular fitness*.
- **Atrophy** - The partial or complete wasting away of a part of the body. It is a loss of size or mass: usually refers to loss of muscle due to non-use. Can occur as soon as 48 hours of non-use.
- **Calorie** - A basic measure of energy from food that is used by the body. One pound of fat equals 3500 calories.
- **Heart rate recovery AKA "recovery heart rate"** - The amount of time it takes the heart to return to a non-exercising heart rate. This is contingent on the heart's ability to intake, transport and utilize oxygen efficiently, which is also a measure of aerobic fitness.

- **Heart zone** - A target range of heart rates that approximate 65 to 85 percent of a person's average maximum heart rate.
- **Interval training** - Alternating exercise period of heavy and light effort.
- **Resting heart rate** - A person's heart rate at rest. A resting heart rate is considered "normal" if it is between **about 60-90 beats per minute**.
- **Target heart rate** - AKA "training heart rate," is a desired range of heart rate reached during *aerobic* exercise which enables one's heart and lungs to receive the most benefit from a workout. This theoretical range varies based on one's physical condition, gender and previous training.