# PE STUDY GUIDE

## Cardiovascular Exercise

Heart disease is the leading cause of death in the United States. Almost 700,000 people die of heart disease each year. Cardiovascular exercise helps improve the health of your heart, lungs, and blood vessels.
In order to benefit from cardiovascular exercise we use the **F.I.T. principle:**

**FIT Principle**

F= Frequency
- Number of workouts per week.
- Minimum of three times per week.
- Example: 3 to 5 days a week

I= Intensity
- Low resistance
- percent of maximum weight to workout at
- 60-80% of maximum lifting power (1RM).
- Example: target heart rate of 60 – 80% of max heart rate (150 – 180 BPM)

T= Time
- Length of Time
- Example: Running 20 minutes or longer
- or weight lifting usually referred to as sets and repetitions. 15-30 reps

**Aerobic Exercise**- Constant moderate intensity work that uses up oxygen at a rate in which the cardio respiratory system can replenish oxygen in the working muscles. Examples of such activity are exercises like stationary bike riding or walking. It is a good activity for fat loss when done in the right amounts. Also Known As**:** Cardiovascular Exercise, aerobics or simply cardio.

**Anaerobic Exercise-** Anaerobic exercise is any activity in which the working muscles require and utilize oxygen at a faster rate than your body can supply it. Anaerobic exercise is short-term exercise lasting usually less than a minute. Weight Lifting, Sprinting (running), and Jumping.

Resting heart rate is the number of heartbeats per minute when at rest. A low resting heart rate indicates a strong and efficient heart.

Arteries carry blood to the muscles away from the heart
Veins carry blood away from the muscles back to the heart

**What is Muscular Endurance?**

Muscular Endurance is the ability of the muscles to work for long periods of time without getting fatigued. Muscular Endurance differs from strength in that a person with good endurance allows the person to participate in an activity longer. Muscular Endurance is one of the components of Muscular Health. Muscular Endurance can be improved by lifting high repetitions with low resistance.

**Why is Muscular Endurance important for good health?**

- You are less apt to have backaches, muscle soreness and/or injury
- Good Muscular Endurance also allows for better posture.
- More apt to cope with physical, mental, and emotional stress.
- Muscular Endurance helps to prevent injury
- Increase strength of ligament, tendons, and bones
- Promotes self esteem and better appearance

**What is Muscular Strength?**

-Muscle strength refers to the amount of force a muscle can produce with a single maximal effort. Training for muscular strength should consist of 2-4 repititions and muscular failure should occur. In other words, Low repititions and high resistance. Muscular Strength is one of the components of Muscular Health.

**Why is Muscular Strength important for good health?**

- Muscular Strength decreases chance of injury.
- Muscular Strength prevents low back pain.
- Muscular Strength improves athletic performance
- Muscular Strength will also improve Appearance, Fitness, Physical & Mental Health.

**Muscle Actions/Contractions:**

- **Concentric** - a muscle contraction in which the muscle gets
- shorter as it contracts. ex. biceps, curl. (positive contractions against gravity)
- **Eccentric** - a muscle gets longer as it contracts. ex. lowering self from a pull up bar. (negative contraction with gravity)

**Hypertrophy** - increase in the size of muscles as the result of strength training, increase in bulk/girth.

**Atrophy** - Decrease in size/girth of muscle due to inactivity.

**Progression** - slight/gradual increase in intensity, frequency and/or duration of the workout over the course of the training program.

**Overload Principle** - applying greater than normal stress (weight) to physiological system (muscles) to improve strength.

**Range of Motion** - (ROM), motion allowed by the joints and body position.

## What is Flexibility

Stretching helps prevent your muscles and joints from getting injured. Stretching makes your body more flexible. This allows you to move more easily and perform your best. A regular stretching routine can reduce muscular tension and promote relaxation. It is best to stretch when you are comfortable and relaxed. If you do not stretch on a regular basis your muscular flexibility will worsen and your muscles will become stiffer.

Stretching before and after a workout can help you stay flexible and prevent injuries. Stretching can be simple, painless and enjoyable. The key to stretching is to be relaxed and to stretch regularly. The object of stretching is to reduce muscular tension (exercises like running, cycling, and tennis promote tightness and inflexibility). The right way to stretch is a relaxed, sustained stretch focusing on the muscles being stretched.

The best time to stretch for flexibility improvement (the developmental stretch) is after exercise. The best order for your workout should be: warm-up, stretch, exercise, cool down, and stretch. You are likely to get injured while stretching if you overstretch a cold muscle. Bouncing during a stretch can cause harm and tears in the muscles.

The purpose of a warm up is to break a light sweat, increase muscle temperature, and slowly increase the heart rate. The wrong choice for a proper warm-up would be 40-yard sprints. Joints and muscles are prepared for vigorous exercise by warm-ups and stretching.

Stretching can be done any time before and after workouts or when you feel stiff. While you stretch, breathing should be slow and under control. Increased flexibility will reduce the chance of a muscle injury. Always consult your physician before beginning a stretching program after surgery.

Sedentary lifestyles have been linked to heart disease, America's number one killer. A sedentary lifestyle is characterized by watching T.V. or by working at a computer. The ratio of lean body mass to fat is defined as body composition. If you improve your fitness you will improve your body composition. Physical fitness is important for health, physical performance, and mental well being.

# Principles of Physical Fitness

**The Principle of Overload** is a basic sports fitness training concept. It means that in order to improve, athletes must continually work harder as they their bodies adjust to existing workouts. Overloading also plays a role in skill learning.

Tips on Applying the Overload Principle

1. Increase loads gradually and progressively.
2. Test maximums.
3. Avoid muscular failure.
4. Allow ample recovery time.
5. Plan and monitor training loads.
6. Individual progress.
7. Alternate activities.

**The Principle of Specificity** simply states that training must go from highly general training to highly specific training. The principle of Specificity also implies that to become better at a particular exercise or skill, you must perform that exercise or skill.

**Typical Make-up of Diet**
Carbohydrates – Around 50%
Fats – Around 30%
Protein – Around 20%

**The Principle of Progression** is a training principle used to create a personal training program to improve physical fitness, skill and performance. The principle implies that for athletes to improve their fitness levels, they must continually increase the physical demands to reach an optimum level of overload.