

# The Exercise F.I.T.T. Principles

## Frequency, Intensity, Time & Type of Exercise

### THE EXERCISE FITT PRINCIPLES

F.I.T.T.	CARDIOVASCULAR TRAINING	MUSCLE TRAINING
Frequency	3-5 days a week; Alternate exercise types to help avoid overuse injuries and boredom.	Rest each joint area and muscle group 48-72 hours between workouts. Very intensive workouts may require extended rest intervals.
Intensity	60-90% maximum heart rate (max = 220 - age) or 50-65% functional capacity.	65-85% of 1 Repetition Maximum (1RM) Beginners should remain near lower end for safety.
Time	15-60 Minutes work up to this slowly for safety.	1-3 Sets of 6-14 Repetitions per exercise Beginners should use lighter weight at higher repetitions for safety.
Type of Exercise	All continuous rhythmic movements including but not limited to: Walking; Cycling; Aerobics; Stair Climbing; Rowing; Swimming; Running; Cross Country Skiing.	All resistance exercise including but not limited to: Machine, Pneumatic, Computerized, Selectorized, Plate Loaded, Free Weights, Manual Resistance.

1. Partly based from the guidelines recommended by the ACSM, ACE, and the NSCA.

2. Note:

- Always think safety first!
- This is a generalized guideline for most healthy individuals; nevertheless, remember everyone is different and programs do vary.
- Beginners should start slowly with lower weight and higher repetition for safety.
- Remember individuals will progress more quickly to their goals without injury.  
\*Functional Capacity =  $((220 - \text{age}) \times \text{resting heart rate}) \times \text{target\%} + \text{Resting heart rate}$ .
- Always consider safety first-Progression toward your goals will occur much faster when injuries from overuse or abuse are avoided.
- These are reasonable guidelines for health individuals - Your routine may vary. Individuals interested in body fat loss should increase duration of lower intensity cardiovascular workouts before increasing intensity.
- Individuals interested in muscular fitness gains should perfect technique before increasing intensity.
- As a general rule, 6 repetitions or less primary concentrates on strength; 12 repetitions or more focuses on muscular endurance. It is recommend to choose exercises working larger muscle groups first, gradually adding small group assistance exercises.
- To achieve total fitness, include both cardiovascular and muscular fitness aspects of training as well as a flexibility routine. Please see your exercise counselor for proper advice on warm-up, cool down, and changes to your workout.

**\*Functional Capacity = ((220 - age) x resting heart rate) x target% + Resting heart rate.**

This is based in part from the guidelines recommended by the American College of Sports Medicine, The American Council on Exercise and The National Strength and Conditioning Association.

The ACSM defines the four components of fitness, the FITT Principles, as follows:

1. **Cardio-respiratory** – the ability of the heart to pump blood and transport nutrients such as oxygen to and from the working muscle fibers and the rest of the body.
  2. **Muscular** – muscular strength and endurance.
  3. **Flexibility** – the ability of the joint to move through the full range of motion.
  4. **Body Composition** – body fat percent and lean mass percent.
- Cardio-respiratory training is aerobic exercise, which “burns” carbohydrates with oxygen, so it also “burns” stored body fat to produce energy>
  - Muscle training is anaerobic exercise, which “burns” carbohydrates without oxygen to produce energy. It yields lactic acid as a byproduct, which causes that “burning sensation” and fatigue in the muscles.
  - Muscular strength is power which equals force times velocity, usually 1 repetition maximum.
  - Muscular endurance is the ability to repeat many repetitions, usually 12 to 30.

## EXERCISE PRINCIPLES

**Specificity** – the specific exercises, as a function of your goals; training certain body parts to assist in a sport.

**Overload** – each body part must be overloaded high enough above normal for it to adapt to become stronger.

**Progression** – overload is progressively increased.

**Whole Body Exercise** – The muscles must be in balance. Many people do not exercise their whole body; they will work only certain body parts, such as their stomach, hips, and thighs. The body must be in balance or an injury is more likely to occur. The saying “a system is strongest only by its weakest link” is true. The body is a system and if certain body parts are not correctly exercised, such as the lower back, they will most likely become injured or muscle asymmetry may develop.

**Full Range of Motion** – each exercise should move through the full range of motion for maximal benefit; injury or muscle asymmetry may develop otherwise.

**Speed of Movement** – the speed of the positive part of the exercise (resistance) should be about 2 seconds and the speed of the negative should be about 3-4 seconds.

**Control** – control the weight and do not let it control you.

**Breathing** – exhale through the positive resistance part of the exercise and inhale through the negative.

**Intensity** – amount of stress on a body part. One popular method is the 1 to 10 scale, with 1 being very easy, 5 being moderate, and 10 being very hard. Another method involves the heart rate.

**Frequency** – number of workouts per week, number of exercises per workout, number of sets per exercise, number of repetitions per set.

**Duration** – amount of time to perform the workouts, exercises, sets, and repetitions.

**Perseverance** – continuing exercise until the goals are met and then continuing on a maintenance program.

## MUSCLE CHARACTERISTICS

**Agonist** – the primary working muscle group.

**Antagonist** – the opposing stabilizing muscle group, i.e. if the biceps is the agonist then the triceps is the antagonist.

**Concentric Contraction** – when a muscle group exerts a force and shortens, as in the positive part of the exercise (resistance).

**Eccentric Contraction** – when a muscle group exerts a force and lengthens, as in the negative part of the exercise, popularly known as a “negative”.

**Isometric Contraction** – when a muscle group exerts a force and no change occurs i.e. pressing your hand against a wall and holding it there.

**Slow Twitch Muscle Fiber** – endurance muscle fibers primarily used in cardio-respiratory “aerobic” training.

**Fast Twitch Muscle Fiber** – strength muscle fibers primarily used in muscular “anaerobic” training.

## WORKOUT COMPONENTS

**Warm-ups** – low intensity exercise that prepares the body for more intense exercise.

**Cardio-vascular/Cardio-respiratory/Cardio-pulmonary training/Cardio** – aerobic exercise which “burns” carbohydrates with oxygen, therefore it also “burns” stored body fat to produce energy; a component of total fitness involving the heart, lungs, blood, and blood vessels.

**Muscular Training** – anaerobic exercise, which “burns” carbohydrates without oxygen to produce energy. It yields lactic acid as a byproduct, which causes that “burning sensation” and fatigue in the muscles; a component of total fitness involving muscle strength and endurance.

**Muscular Strength** – power which equals force times velocity, usually 1 repetition maximum.

**Muscular Endurance** – is the ability to repeat many repetitions, usually 12 to 30.

**Cool Down** – low intensity exercise that prepares the body for more intense exercise.

**Flexibility** – the ability to move a joint through its full range of motion.

**Max VO<sub>2</sub>** – maximum oxygen uptake; relative test for fitness.

## PROGRESSIVE RESISTANCE EXERCISE

**Hypertrophy** – enlargement of skeletal muscle.

**Tendon** – connects muscle to bone.

**Ligament** – connects bone to bone.

**Fast Twitch Muscle Fiber** – anaerobic muscle fibers used in explosive activities.

**Slow Twitch Muscle Fiber** – aerobic muscle fibers used in slow, continuous activities.

**Absolute Fat** – pounds of fat.

**Relative Fat** – percent of fat.

**Isotonic Contraction** – muscles shortens with varying tension while lifting a constant load (concentric or dynamic).

**Isometric Contraction** – tension develops but there is no change in muscle length (static contraction).

**Eccentric Contraction** – muscle lengthens while developing tension (negative contraction).

**Circuit Training** -

