MUSCULAR STRENGTH AND MUSCULAR ENDURANCE AND THE FITT PRINCIPLE

The five components of fitness are important for physical health. Each component is necessary to live a healthy and productive life. Understanding fitness levels in each component and how to improve or maintain them through the use of the **FITT Principle** will enhance overall health, performance and appearance.

Muscular Strength and Muscular Endurance – Muscular strength is the ability of the muscles to push or pull with their total force. **Muscular endurance** is the ability of the muscles to perform over a long period of time without becoming tired. Muscular strength is developed before muscular endurance. Before the brick layer can stack hundreds of bricks a day, he/she must have the muscular strength to lift the first brick. Once he/she has the initial strength to lift the first brick, the brick layer can begin to build muscular endurance.

The **FITT Principle** is made up of four variables that can be adjusted to help reach fitness goals. The variables are: **frequency** (sessions per week), **intensity** (training load expressed as resistance), **time** (repetitions) and **type** (activity). Adjusting **frequency**, **intensity**, **time** and **type (FITT Principle)** provides a reason for the body to make positive changes in health, performance and appearance.

Physical performance will be enhanced through the development of muscular strength and muscular endurance training using the **FITT Principle**. As muscles become stronger, physical performance is improved. Improving muscular strength and muscular endurance gives the body the ability to work, exercise or play more often, with more power and for longer periods of time.

Muscles act as tiny furnaces that burn fat. The more muscle mass the body has, the more calories it can burn. Resistance training helps control body composition by increasing muscle mass which is a part of fat-free mass. Building muscular strength and muscular endurance is a lifelong habit needed to maintain or improve physical appearance.

To improve muscular strength and muscular endurance, it is essential to remember the **FITT Principle**. When training for muscular strength and muscular endurance, the **frequency** of the workouts is 2-3 sessions per week. This allows adequate rest between training sessions so the muscles can build additional strength and endurance. When developing muscular endurance and muscular strength, **intensity** refers to resistance, **time** refers to the number of repetitions and **type** refers to the activity chosen. Muscular strength is developed by increasing **intensity** (heavy resistance) and decreasing **time** (4-8 repetitions). Muscular endurance is best developed by increasing **time** (13-20 repetitions) and using less **intensity** (lighter resistance). To develop both muscular strength and muscular endurance, it is suggested to use moderate loads with 9-12 repetitions.

Component of Fitness	Frequency Sessions per Week	Intensity Resistance	Time Repetitions	Type Activity
Muscular Strength	2-3	Heavy	4-8	Weight Training, Calisthenics, Circuit Training, Resistance Training
Muscular Strength Muscular Endurance	2-3	Moderate	9-12	
Muscular Endurance	2-3	Light	13-20	

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VOCABULARY

Key vocabulary words that will be introduced during this unit are:

- **Muscular Strength** – The ability of muscles to push or pull with their total force
- **Muscular Endurance** – The ability of the muscles to repeat a movement many times or to hold a position without stopping to rest
- **FITT Principle** – A formula in which each letter represents a variable for determining the correct amount of physical activity F=frequency, I=intensity, T=time, T=type
- **Frequency** – How often an activity is performed each week
  - o Muscular Strength – 2-3 sessions per week
  - o Muscular Endurance - 2-3 sessions per week
- **Intensity** – How hard an activity is performed each session
  - o Muscular Strength – Heavy resistance
  - o Muscular Endurance – Light resistance
- **Resistance** – The force that acts against a muscle (example – the amount of weight lifted)
- **Time** – How long an activity is performed each session
  - o Muscular Strength – 4-8 repetitions
  - o Muscular Endurance – 13-20+ repetitions
- **Type** – Which activities are chosen