

Week 4

Introduction of Muscle Fitness Exercise

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What is Muscular Fitness?

Muscular Endurance

Ability of a muscle group to execute repeated muscle contraction over an extended period.



Muscular Strength

Ability of a muscle group to exert maximal force against a resistance in a single repetition.



Muscular Power

Muscular power - Product of force and velocity. The more the work done in limited time, the higher the power it contains.



What Muscles Do We Have?

► Body contains muscles varying in size, shape and use.

1. Cardiac muscles

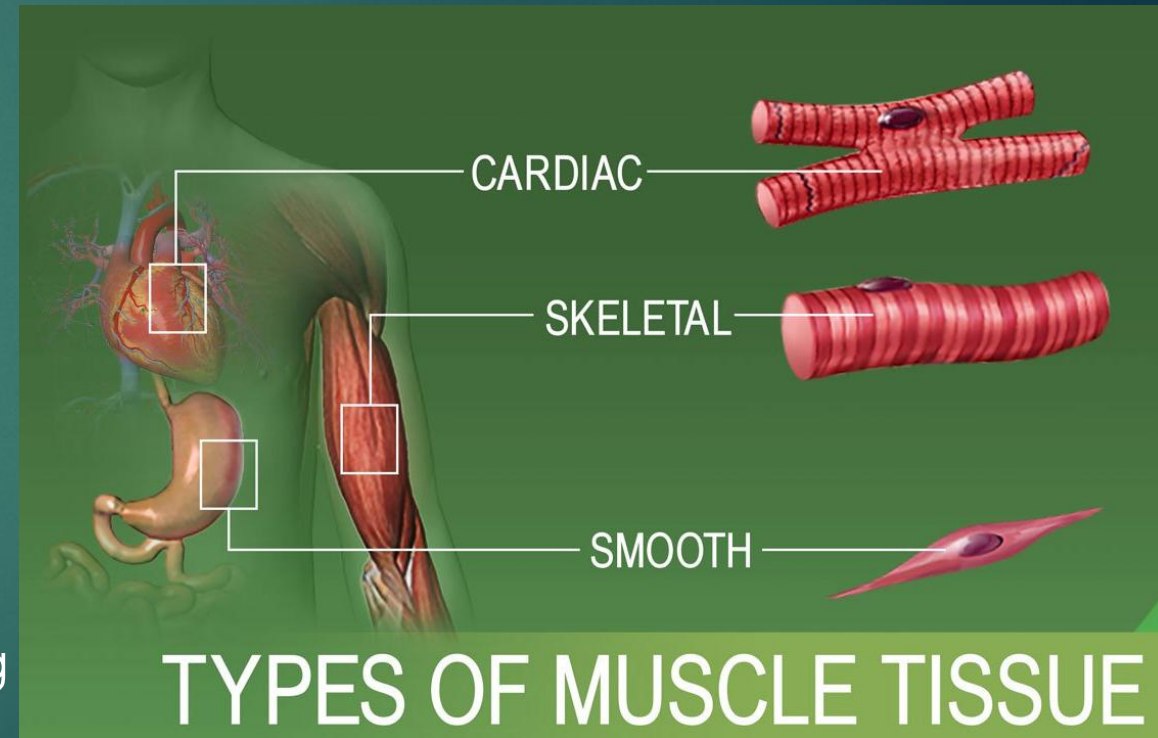
- Only located in the wall of heart
- Involuntary contraction

2. Smooth muscles

- Found in the walls of hollow organs throughout the body **except heart**
- Involuntary contraction

3. Skeletal muscles

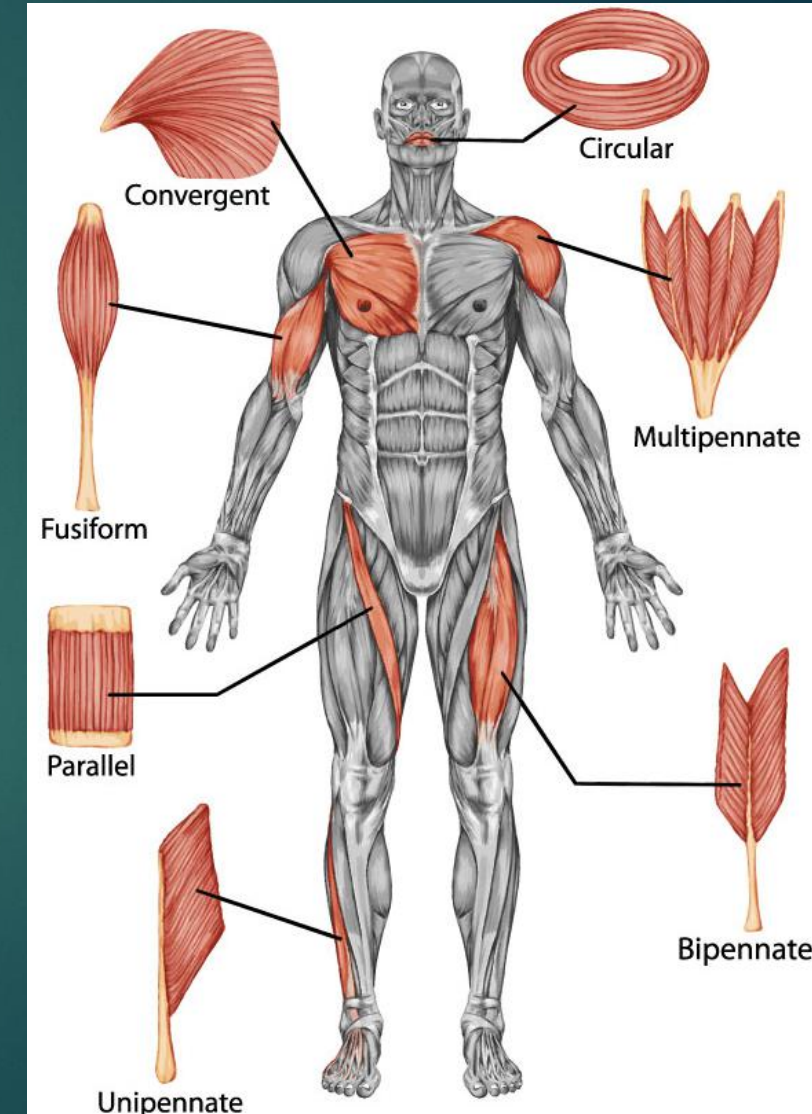
- Attach to and move bones by contracting and relaxing
- Voluntary contraction



Skeletal Muscles

- ▶ Main purpose of skeletal muscles is to provide force to move the joints.
- ▶ Skeletal muscles come in 2 basic types:

Type I (Slow-twitch muscle fibre)	Type II (Fast-twitch muscle fibre)
-High aerobic capability	-High glycolytic capacity
-Lower contractile force	-Higher contractile force
-High resistance to fatigue	-Low resistance to fatigue
-Made for endurance	-Made for strength and power



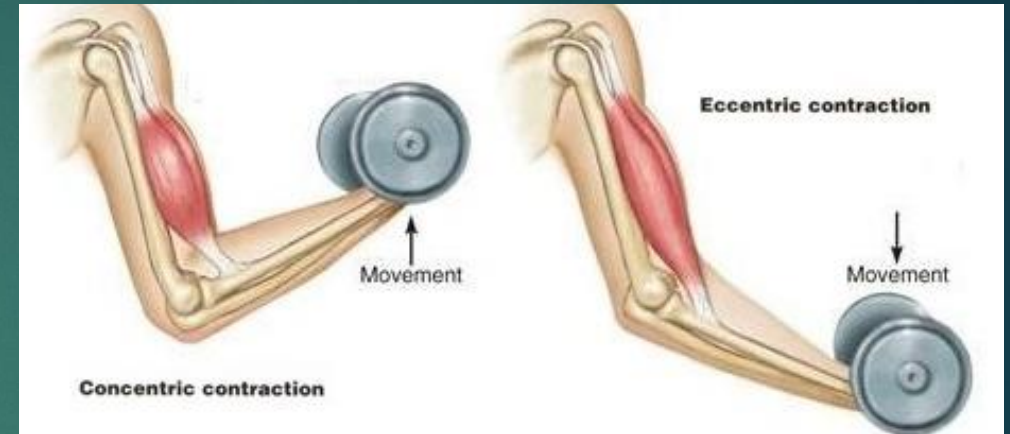
Resistance Training

- ▶ Also known as strength or weight training.
- ▶ It is a systematic training program contain exercises that required body muscles to exert force against resistance.
- ▶ Trains the nervous and muscular systems to recruit more muscle fibers to produce greater force.
- ▶ To develop not only strength, but also endurance, power & speed.
- ▶ Can be done with different type of equipment or training aid such as plyometric box, elastic band, own body weight, medicine ball, kettlebell and water.



Types of Resistance Training

- ▶ Isometric training
 - ▶ Develops muscles by involving muscles contraction with no movement in joints.
- ▶ Isotonic training
 - ▶ Isotonic exercise includes contraction against a constant external resistance (manual or mechanical resistance).



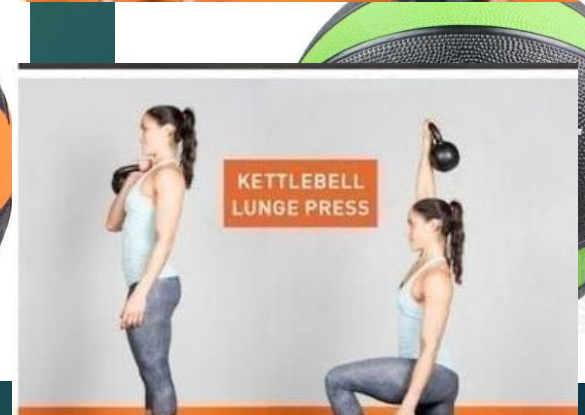
Types of Resistance Training

- ▶ Body weight training
 - ▶ Using individual's body weight to provide resistance against gravity.
- ▶ Plyometric training
 - ▶ Involves hop, jump or bound movement to create rapid muscle contraction to improve agility, speed and power.



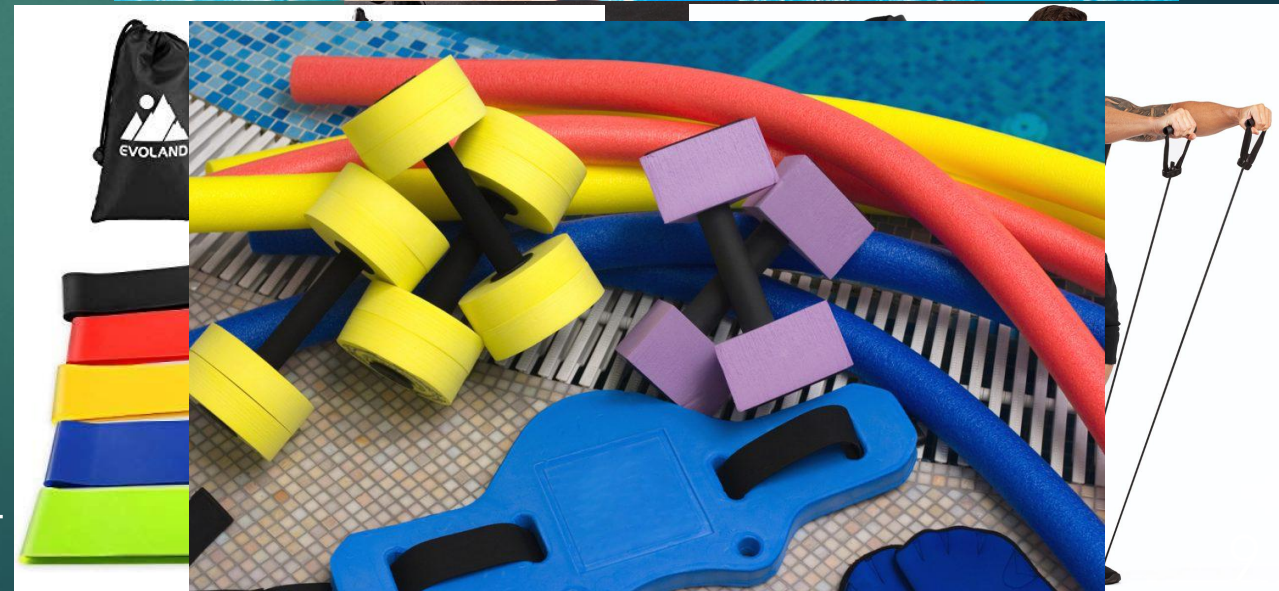
Resistance Training Aid / Equipment

- ▶ Medicine balls
 - ▶ Comes in variety of weights, colors and sizes
 - ▶ Can be used to develop strength and power
- ▶ Kettlebells
 - ▶ Shaped like cannon-balls with handle.
 - ▶ Works well for exercise with swinging movement and stability work



Resistance Training Aid / Equipment

- ▶ Suspension training system (TRX)
 - ▶ Using rope, straps or webbing to let a person work against their body weight
- ▶ Resistance band
 - ▶ Lightweight elastic band used to induce muscular contraction when pull against the band
- ▶ Water / Buoyancy / Aquafit
 - ▶ Done in waist-deep, or deeper water
 - ▶ With the aids of aqua dumbbells, pool noodles or water jogging belt



Benefits of Resistance Training

- ▶ Increase strength
- ▶ Improve in physical appearance and body composition
 - ▶ Increase fat-free mass
 - ▶ Decrease body fat
- ▶ Increase muscle fiber size (muscle hypertrophy)
- ▶ Increase muscle contractile strength
- ▶ Improve in physical capacity
- ▶ Improve sport performance
- ▶ Improve in metabolic function
- ▶ Reduce injury risk
- ▶ Increase bone mineral density (BMD)