

Muscular Strength & Muscular Endurance

Muscle Fitness Basics (pg. 175-176)

- Muscle fitness is comprised of 2 health related parts of physical fitness: strength & muscular endurance.
- **Muscular endurance** is the ability to contract muscles many times without tiring or to hold muscle contraction for a long time.
 - Muscular endurance is developed by doing an exercise many times with less resistance
- **Muscular Strength** – the amount of force a muscle can exert. OR the amount of weight a muscle group can lift one time.
 - Strength is developed by doing an exercise a few times with a lot of resistance
- **Progressive Resistance Exercise (PRE)** – the gradual increase in resistance used to improve muscle fitness (pg.175)
- Strength training tends to increase the size of muscles as they become stronger.
- **Hypertrophy** is the increase in muscle size (pg. 176)

Muscle Fitness Terminology (pg. 176)

- **Reps** – the number of consecutive times you do an exercise
- **Set** – a group of repetitions

Muscle Fibers (pg. 177)

- **Slow Twitch Muscle Fibers** – contract at slow rate and usually red in color
 - Generate less force than fast-twitch but are able to resist fatigue.
- **Fast Twitch Muscle Fibers** – contract quickly and white in color
 - Generate more force when they contract and are important for strength activities.
- Types of fibers in your muscles are determined by your genes. But you can increase strength and endurance with proper training.

Muscle Fitness Assessment (pg. 180)

- **One Repetition Maximum (1RM)** – measures strength
 - A 1RM test requires a person to determine the amount of weight that can be lifted in 1 repetition.
 - Example: a person lifts 100 lbs. 1 time, but not twice. The 1RM is 100 lbs.

Resistance Training Guidelines (pg. 189)

- 3 S method – slow, smooth & steady
- Exercise through a full range of motion
- Always use spotters when working with free weights
- Start with a moderate program
- Don't hold your breath
- Avoid overhead lifts with free weights, use the machines
- Avoid positions that can cause the lower back to arch or wrists to bend backwards.
- Never use weights carelessly
- Never compete when you do resistance training

Muscular Strength

Types of Muscular Strength (Resistance Exercises) (pg. 179)

- **Weight Training** – improves muscular strength and endurance
- **Resistance Training** – same as weight training except machine provides resistance used rather than weights.
- **Circuit Training** – a type of physical activity program in which the person performs a group of exercises in a sequence with brief rests between exercises.
- **Weight Lifting** – the lifting of weights to build strength; also called resistance training. Athletes try to lift a maximum load.
 - 2 exercises: snatch & clean and jerk
- **Powerlifting** – competitive sport using free weights. The athletes try to make 1 maximal lift for each type of lift.
 - 3 exercises: bench press, squat, deadlift
- **Body building** – competitive sport where athletes are concerned about the appearance of their bodies. Athletes are judged on how large and well defined their muscles are.

Building Strength (pg. 185-186)

- If your muscles regularly work against heavy load, they will stay strong.
- If you do not use your muscles they will become weak.
- Muscular strength can help prevent some health problems.
- Muscular strength can also strengthen bones & reduce the risk of osteoporosis.
- Muscular strength can help prevent muscle injuries and soreness.
- Muscle burns more calories than fat.

Myths & Misconceptions (pg. 186-187)

- **Body Dysmorphia** – a term used to identify a condition that occurs when people become obsessed with building muscle.
- Muscle fitness for females
 - Some females fear that strength training will cause their bodies to look masculine, BUT the hormones in female bodies prevent them from developing large bulky muscles.
- **Muscle Bound** – having bulky muscles that decrease a person's flexibility

Fitness Principles and Strength (pg. 187-188)

- **Principle of Overload** – muscles must work against a greater load than they normally have in regular daily activity.
 - Muscle must contract to at least 60% of 1RM if it is going to increase in strength.
- **Principle of Progression** – overload gradually
 - Increase the load over a period of time to get the best improvement in muscle strength.
- **Principle of Specificity** – you must exercise the specific muscles you wish to develop.
 - 8-10 exercises to build each of the specific muscle groups in the body.
- **Principle of Rest & Recovery** – you need to allow muscles time to rest and recover after a workout.
 - Should allow at least one day between workouts.
 - Some people choose to workout each day, but do leg exercises one day and arms the next.

Muscular Endurance

Benefits of muscular endurance

1. Improves appearance, fitness, physical & mental health
2. Enables people to work longer without getting tired
3. Better posture
4. Less likely to have back aches
5. Less likely to have muscle soreness and muscle injuries
6. Increases your lean body mass and decreases fat.
7. Decreases heart rate which reduces the risk of cardiovascular diseases.

FIT formula for Muscular Endurance – (Frequency, Intensity & Time)

- Muscular endurance exercises can be done more **frequently** than strength exercises
- Strength exercises are typically done 2-3 times per week, and muscular endurance exercises can be done on most days of the week.
- Since resistance is lower for muscular endurance exercises compared to strength, multiple sets can be performed.

Circuit Training

- Circuit Training involves moving from one exercise to another with short breaks (changing stations)
- Circuit training is very good for developing muscular endurance.

Building muscle fitness using inexpensive equipment:

- **Elastic band exercise** - provide resistance for exercise.
 - Example: Dyna-Bands
- **Homemade weights**
 - Example: cans of food, milk jugs
- **Exercise Ball** – stability ball, help stabilize the body to build good posture.
- **Core Exercises** – exercises that help build the muscles of the trunk and help the body maintain good posture.

Methods of building muscle fitness for enhanced performance

- **Plyometrics** – designed to improve power
 - Hopping drills
 - Jumping on/off plyo boxes
- **Periodization** – method of scheduling progressive resistance exercise to provide variety and to enhance peak performance.
 - 1st period you focus on muscular endurance, 2nd period focus on strength exercises, 3rd period combination of both.
 - Many different schedules exist.
- **Interval Training** – involves short sprints and high intensity exercise followed by rest periods.

FIT Principle

F Frequency	How many days a week? Ex: 7 days or 4 days
I Intensity	How hard or what level? Ex: Walking fast or jogging Level 2 on treadmill or level 6
T Time	How long? Ex: 20 minutes or 40 minutes

Muscular Strength vs Muscular Endurance

Muscular Endurance

FIT Principle	Target Zone
Frequency	3-6 days a week
Intensity	20-55% of 1RM
Time	1-3 sets of 11-25 reps of each exercise

*once you can perform 3 sets of 25 it is time to increase the weight

Muscular Strength

FIT Principle	Target Zone
Frequency	2-3 days a week
Intensity	40-80% 1RM
Time	1-3 sets of 8-12 reps with 1-2 minutes between sets. *Adults - 1-3 sets of 3-8 reps