

# MUSCULAR STRENGTH AND ENDURANCE/ WEIGHT TRAINING STUDY GUIDE

## WHY DO WE DO WEIGHT TRAINING?

- To improve muscular strength and muscular endurance in a non competitive format.
- To improve body composition and bone density.
- To reduce risk of injury.
- To enhance athletic performance.

## WHAT IS THE DIFFERENCE BETWEEN MUSCULAR STRENGTH AND MUSCULAR ENDURANCE?

- *Muscular strength* is the amount of force a muscle can exert one time.
- *Muscular endurance* is the ability to contract muscles **MANY** times without tiring, OR holding one contraction for a **LONG** time; i.e How long can you hold a plank position?
- Both of these are components of good physical fitness.

## HOW DO THESE COMPONENTS RELATE TO THE F.I.T.T. FORMULA?

- The **FREQUENCY** of a weight-training workout should be 2-3 days per week.
- The **INTENSITY** of your workout refers to the weight load used for each exercise; i.e., a 10-pound dumbbell might be used for each exercise; Don't lift beyond limits of your strength. If you can lift the weight more than 15 times in a row (repetitions), the weight is too light, however, if you can only lift the weight 4-6 times in a row, the weight load is too heavy for you.
- The **TIME** can be *either* how long it takes you to complete one set of exercises, how long you rest between each exercise, **OR** how long your entire workout lasts.
- **TYPE** refers to the kind of exercise you do, i.e., a push up is a type of upper body exercise, a curl up is a type of abdominal exercise, a squat is a type of lower body exercise.

## VOCABULARY

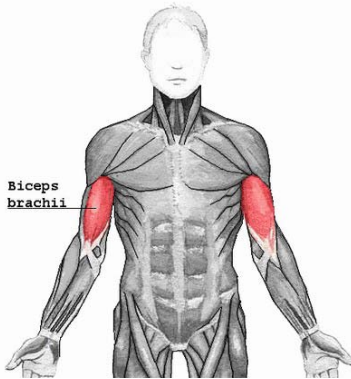
- **Body Composition:** describes the percentage of fat, bone and muscle in human bodies; or what your body is made of. Good body composition is having more muscle than fat.
- **Contraction:** tightening a muscle while moving of a body part; (i.e., performing a squat, lunge, bicep curl, pull up test).
- **Isometric:** tightening a muscle without moving of a body part; (i.e., pushing against a wall, holding a plank position, arm wrestling, doing a wall squat, flexed arm hang test).
- **Power:** the rate of performing work; the product of force and speed.

- **Principle of Overload:** making a muscle work harder than it is used to doing to gain improvement in strength or endurance, i.e., holding a medicine ball while doing a sit up increases the load to your abdominal muscles (it overloads it).
- **Principle of Progression:** a rule that states that the amount and intensity of physical activity needs to increase gradually. If you can lift the weight more than 15 times in a row (repetitions), the weight is too light. An increase in the amount of weight is needed to improve (progress) your strength.
- **Principle of Specificity:** each major muscle group should be trained; in order to improve upper body strength, exercises performed must focus on the specific body part.
- **Repetition (rep):** a performance of one particular exercise from start to finish; the number of consecutive times you do the same exercise. If you complete 10 bicep curls, you have done 10 repetitions.
- **Rest Interval:** a rest of 30-60 seconds between sets which allows muscles to recuperate before the next set.
- **Set:** a group of repetitions performed continuously without resting, i.e., if you complete 10 bicep curls in a row and then rest, you have completed one set.

### PROPER LIFTING TECHNIQUE & BACK SAFETY

- When picking up a weight from the ground, keep the weight as close to the body as possible. Keep your back straight and bend at the knees. Bending at the waist with straight legs places tremendous strain on the lower back muscles and spinal disks.
- Do most of your lifting with your legs. The large muscles of the thighs and buttocks (quadriceps & gluteus) are much stronger than those of the back, which are better suited to keeping the back straight. Keep your hips and buttocks tucked in.
- Never twist your body while lifting. Twisting places an uneven load on the back muscles, which causes strain.
- Make sure to lift in a slow and controlled manner. Lift the weight smoothly, not with a jerky motion. You should be able to stop the weight at any point in the movement, if not; you are going too fast with too little control, increasing the risk of injury.
- Allow for adequate rest between sets.
- Lift within your capacity. Don't lift beyond limits of your strength. If you can lift the weight more than 15 times in a row (repetitions), the weight is too light, however, if you can only lift the weight 4-6 times in a row, the weight load is too heavy for you.
- **DO NOT HOLD YOUR BREATH DURING AN EXERCISE; EXHALE, OR BLOW OUT, ON THE EXERTION OR LIFTING OR PUSHING PHASE, AND INHALE, OR TAKE A BREATH IN, ON THE RECOVERY OR WHEN IN THE LOWERING PHASE.**

# MUSCLES

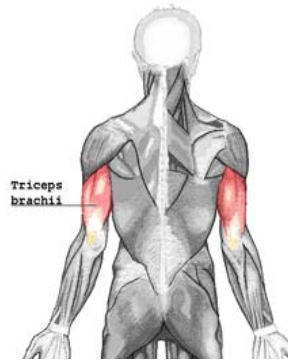


Muscle: **BICEP**

Action: Bends the elbow

Exercises:

- Dumbbell arm curl
- Body bar arm curl
- Chin up



Muscle: **TRICEP**

Action: Straightens the elbow

Exercises:

- Dips
- Overhead extensions



Muscle: **QUADRICEP**

Action: Straightens the knee

Exercises:

- Squats
- Lunges

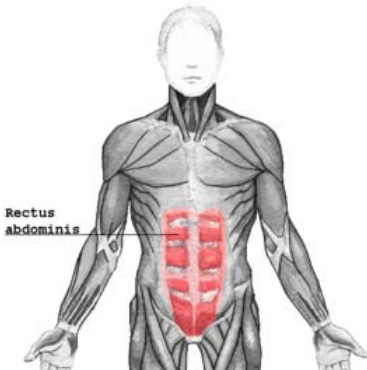


Muscle: **HAMSTRINGS**

Action: Bends the knee

Exercises:

- Legs Curls
- Squats

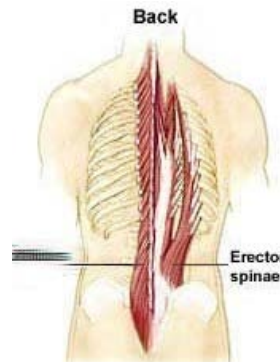


Muscle: **RECTUS ABDOMINIS**

Action: Bending forward at the waist

Exercises:

- Crunches
- Knee Raises

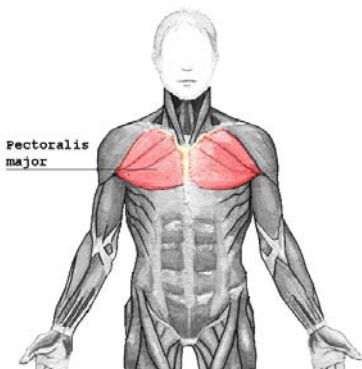


Muscle: **SPINAL ERECTORS**

Action: Straightens Torso/Trunk

Exercises:

- Cobra
- Trunk Lift

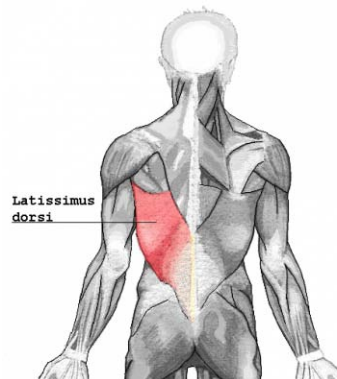


Muscle: **PECTORALS**

Action: Pushes arm away from body

Exercise:

- Push Ups
- Bench Press
- Chest Press

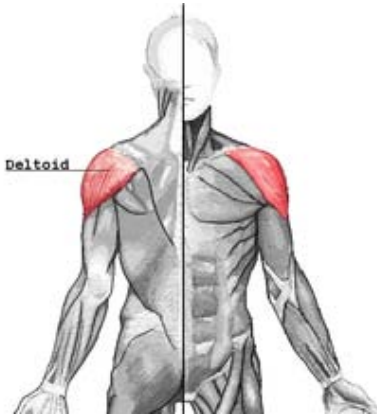


Muscle: **LATISSIMUS DORSI**

Action: Pulls arms back toward your body

Exercises:

- Lat Pull Down
- Seated Row

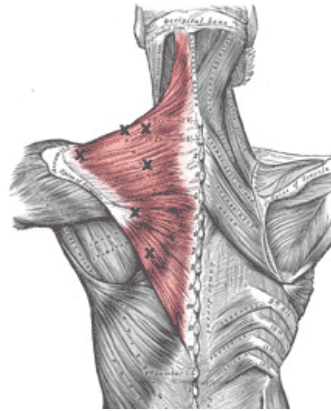


**Muscle: DELTOIDS**

**Action: Raises arms up**

**Exercises:**

- Front & Side Arm Raises
- Overhead Press
- Reverse Butterfly

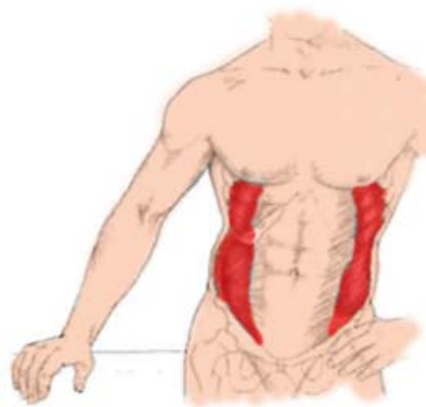


**Muscle: TRAPEZIUS**

**Action: Pulls arms back & down**

**Exercises:**

- Shoulder Shrugs
- Wide Grip pull down



**Muscle: OBLIQUE ABDOMINAL**

**Action: Sideways rotation or twisting of the torso**

**Exercises:**

- Russian Twist
- Side Bends

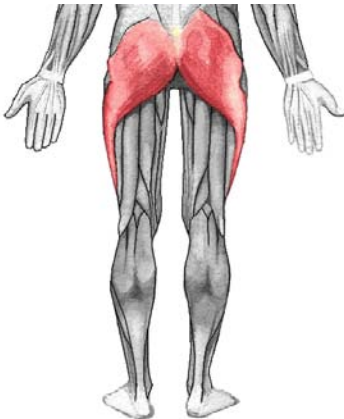


**Muscle: GASTROCNEMIUS**

**Action: Raises the heel**

**Exercises:**

- Heel Raises



**Muscle: GLUTEUS MAXIMUS**

**Action: Brings the leg behind you**

**Exercises:**

- Squats
- Leg Curl

**RULES & GUIDELINES**

- Gym shoes must be worn at all times.
- No horseplay will be tolerated.
- Weights should be placed back on the ground, never dropped.
- If using a piece of workout equipment in the Fitness Center, never let go of weights so they crash.
- Pull pins out to set up for the next person.
- Always clip safety strap to clothing if using the treadmill.
- Treat all equipment with care.
- **SAFETY IS THE MOST IMPORTANT CONSIDERATION IN ANY WEIGHT-TRAINING PROGRAM**