

Strength Training Basics

There is an endless array of strength training programs and theories out there, much of it geared toward bodybuilders and advanced exercisers. If you're just getting started, it's quite easy to become totally confused by all of the anatomical terms and gym jargon. We'd like to fill in the gap by giving you the foundation of any safe and effective strength training routine. You'll learn the names of the major muscle groups and the exercises that target them, the difference between sets and reps, the elements of proper form, and the basics of frequency and progression.

The Major Muscle Groups

When selecting exercises for your strength routine, it's important to choose at least one exercise for each major muscle group. This prevents muscle imbalances that can lead to injury. Let's take a look at the major muscle groups and a few of the exercises that target them:

- **Gluteals** – This group of muscles (often referred to as 'glutes') includes the gluteus maximus, which is the big muscle covering your butt. Common exercises are the squat and the leg press machine. The glutes also come into play during lunges, tall box step ups, and plyometric jumps.
- **Quadriceps** – This group of muscles makes up the front of the thigh. Exercises include squats, lunges, leg extension machine, and leg press machine.
- **Hamstrings** – These muscles make up the back of the thigh. Exercises include squats, lunges, leg press machine, and leg curl machine
- **Hip abductors and adductors** – These are the muscles of the inner and outer thigh. The *abductors* are on the outside and move the leg away from the body. The *adductors* are on the inside and pull the leg across the centerline of the body. These muscles can be worked with a variety of side-lying leg lifts, standing cable pulls, and multi-hip machines.
- **Calf** – The calf muscles are on the back or the lower leg. They include the gastrocnemius and the soleus. The gastrocnemius is what gives the calf its strong rounded shape. The soleus is a flat muscle running under the gastrocnemius. Standing calf raises give the gastrocnemius a good workout, while seated or bent knee calf raises place special emphasis on the soleus. These small muscles can handle a relatively large amount of weight.
- **Low back** – The erector spinae muscles extend the back and aid in good posture. Exercises include the back extension machine and prone back extension exercises. These muscles also come into play during the squat and dead lift.
- **Abdominals** – These muscles include the rectus abdominus, a large flat muscle running the length of the abdomen, and the external obliques, which run down the sides and front of the abdomen. Exercises such as standard crunches and curls target the rectus abdominus. Reverse curls and crunches (where the hips are lifted instead of the head and

shoulders) target the lower portion of this muscle. Crunches involving a rotation or twist work the external obliques.

- **Pectoralis major** – Large fan shaped muscle that covers the front of the upper chest. Exercises include push-ups, pull-ups, regular and incline bench press, and the pec deck machine.
- **Rhomboids** – Muscles in the middle of the upper back between the shoulder blades. They're worked during chin-ups, dumbbell bent rows, and other moves that bring the shoulder blades together.
- **Trapezius** – Upper portion of the back, sometimes referred to as 'traps.' The upper trapezius is the muscle running from the back of the neck to the shoulder. Exercises include upright rows, and shoulder shrugs with resistance.
- **Latisimus dorsi** – Large muscles of the mid-back. When properly trained they give the back a nice V shape, making the waist appear smaller. Exercises include pull-ups, chin-ups, one arm bent rows, dips on parallel bars, and the lat pull-down machine.
- **Deltoids** – The cap of the shoulder. This muscle has three parts, anterior deltoid (the front), medial deltoid (the middle), and posterior deltoid (the rear). Different movements target the different heads. The anterior deltoid is worked with push-ups, bench press, and front dumbbell raises. Standing lateral (side) dumbbell raises target the medial deltoid. Rear dumbbell raises (done while seated and bent at the waist, or lying face down on a flat bench) target the posterior deltoid.
- **Biceps** – The front of the upper arm. The best moves are biceps curls. They can be done with a barbell, dumbbells, or a machine. Other pulling movements like chin-ups and upright rows also involve the biceps.
- **Triceps** – The back of the upper arm. Exercises include pushing movements like push-ups, dips, triceps extensions, triceps kick-backs, and overhead (French) presses. The triceps also come into play during the bench press and military press.

Sequence and Speed

When doing a series of exercises, you'll generally want to start with the larger muscle groups and compound movements and work toward the smaller muscle groups and isolation movements. This allows you to do the most demanding moves when you're the least fatigued. For example, you're less likely to lose your balance during a lunge if you do the lunges before exhausting the muscles of quads and hamstrings with machine exercises. You'll use better form on your push-ups if you do them before fatiguing the triceps with presses or kick-backs.

The speed of the movement is also an important element of each exercise. A reasonable training pace is one to two seconds for the lifting (concentric) portion of the exercise and three to four seconds for the lowering (eccentric) portion of the move. Fast, jerky movements should be

avoided. They place undue stress on the muscle and connective tissue at the beginning of the movement, substantially increasing the likelihood of an injury. Fast lifting also cheats you out of some of the strength benefits. When lifting at a fast pace, momentum (not the muscle) is doing a good deal of the work.

Sets and Reps

A set is a group of successive repetitions performed without resting. A rep or repetition is the number of times you repeat the move in each set. Therefore, if your instructions were to do 3 sets of 12 (3 x 12) biceps curls, you would curl the weight 12 times in a row to complete the first set. Then you'd put the weight down, rest a moment and do 12 more in a row to complete the second set, and so on until you've finished the prescribed number of sets for that exercise.

There have been studies showing similar strength gains from one, two, or three sets. Single set exercises are usually done to the point of failure, meaning to the point where you can't complete another full repetition. This is commonly referred to as high-intensity training or HIT. Multiple set exercises are usually done with one to three minutes of rest between each set. An advantage of single set training is that it requires less time in the gym. An advantage of multiple set training is that the longer training session can result in higher calorie expenditure.

Resistance and Range

The number of repetitions chosen for each exercise depends on the amount of resistance (weight) you're using. Maximum resistance is the most weight you can lift with proper form one time. In general, most people can complete 6 repetitions with 85% of their maximum resistance, 8 repetitions with 80% of maximum resistance, 10 repetitions with 75% of maximum resistance, 12 repetitions with 70% of maximum resistance and 14 repetitions with 65% of maximum resistance. Training with more than 85% of your maximum resistance increases the risk of injury, and training with less than 65 percent of maximum resistance decreases strength gains. So, a safe and productive training recommendation would be 8-12 repetitions using 70% to 80% of maximum resistance.

Full range of motion is an important component of proper form. Each exercise should be taken through the complete range of joint movement in a slow controlled manner, with emphasis placed on the completely contracted position. If a weight is so heavy that you have to jerk, bounce or swing to get it to the top of the movement, it's too heavy. Your form is compromised. Full-range of motion movements contract and strengthen the muscle you're working (the prime mover) and stretch the opposing (antagonist) muscle. This contributes to both muscle strength and joint flexibility.

Progression and Frequency

Progressive resistance is the key to any well designed strength program. This means that as your muscles adapt to a given exercise, you need to gradually increase the resistance or the repetitions to promote further gains. You should start out with a weight that allows you to do at least 8 repetitions of a particular exercise. Once you can complete 12 repetitions with that weight, you

increase the weight by about 5 percent. Now, you're doing 8 repetitions with the slightly heavier weight. Once you've worked up to 12 repetitions with the heavier weight, you increase it by another 5 percent (or no more than 10%) and go back to doing 8 repetitions. The idea is to keep alternately increasing repetitions and resistance, so that you continue to see results.

Increases in muscle size and strength don't occur while you're training, they occur during the rest period between workouts. This is when your muscles recover and rebuild, gradually becoming bigger and stronger. The recovery process takes at least 48 hours. For this reason, strength training sessions should be scheduled no more frequently than every other day. If you prefer to train more often, you should avoid hitting the same muscle group on consecutive days.

Source: Renee Cloe, A.C.E. Personal Trainer