

Strength Training for an Active Life

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Lifting weights is a great way to strengthen the muscles, bones, and connective tissues to increase personal effectiveness and reduce the chance of injury. It also improves our cardiovascular fitness, strengthening the heart and lungs, reducing blood pressure, and reducing cholesterol levels.

While getting into a routine of strength training is the most important thing to do, we can increase the effectiveness of our routines if we follow a few guidelines.

Begin with a Compound Movement

A compound movement involves moving more than one joint through a range of motion. Examples of compound movements are listed in Table 1 for each body part.

Body Part	Exercise
Legs	Leg Press, Squat, Lunge
Shoulders	Military Press, Arnold Press
Biceps	Chin-up
Triceps	Dip
Chest	Bench Press
Back	Lateral Pull-down, Seated Row

Compound movements engage several muscle groups and help the body to increase the blood supply to the targeted body part. Besides acting as a warm-up, this increased blood supply facilitates the removal of lactic acid during and after activity and allows the muscle to perform a greater amount of work.

Additional compound movements can be included to complete the workout, or you can

begin to isolate individual muscle groups with simple movements utilizing a single joint.

The Sum of the Parts

Isolation, or single joint, movements can be used to fatigue specific parts of your body while reducing the effect of other parts that may already be fatigued. You can build mass while increasing definition *at the same time* if you break large muscle groups into its parts and train them to complete fatigue.

Body Part	Exercise
Legs	Quadriceps Extension, Hamstring Curl
Shoulders	Lateral Raise, Front Raise
Biceps	Preacher Curl, Zottman Curl
Triceps	Cable Triceps Extension, Dumbbell Kickback
Chest	Pectoral Fly (Upper, Middle, Lower)
Back	Rhomboid Fly, Straight Arm Kickdown

For example, a good biceps workout could begin with chin-ups, which is a compound movement involving the biceps, several muscles of the back, and several muscles of the shoulder. The lateral head, or outer biceps, could then be targeted with dumbbell hammer curls, and the medial head, or inner biceps, could be targeted with straight bar concentration curls (see references below for exercise descriptions). Such a workout guarantees that each part of the biceps has been completely fatigued and stimulated to grow.

Table 2 lists a very small fraction of the isolation exercises available within an average fitness facility. At last count, I rotate between 105 low-risk exercises with variations totaling over 250.

The Importance of Proper Form

The next time you are in a gym, observe how others perform various exercises and do your best not to look like they do. In a gym with over 2,500 members, I've seen only a handful who really know what they're doing without receiving training from me or my company. It's not that the proper form for strength training exercises is that elusive- books devoted to this topic fill the shelves of every bookstore. Rather, the "more is better" mentality is as prevalent in the gym as it is on the typical monster truck. Most use too much weight for too many sets, requiring that they use a ridiculous amount of body English if they even manage to move the weight around their bodies rather than the other way around.

Every exercise has a target muscle group or groups. These are the only muscles that should be moving through a range of motion. The rest remain relaxed or statically stabilize the body. Proper form is merely the motion required to keep the target muscles moving, the rest of the body still, and joints and internal organs protected from injury.

This is not just a matter of safety. Just as importantly, proper form is what leads to maximum gains for the effort expended. Once you break the proper form, you replace the effort required from the target muscle group with effort from entirely different muscle groups. Though your fatigue may continue to build, you are no longer performing the same exercise, nor are you effectively training your body.

Though many books depicting the proper form for various exercises exist, one series stands out as particularly accurate and thorough. The "Complete Book" series, by the Brungardts will keep even the most motivated athlete busy for a long time. These include:

- *The Complete Book of Shoulders and Arms*, published by HarperPerennial 1997
- *The Complete Book of Butt and Legs*, published by Villard Books, 1995
- *The Complete Book of Abs*, published by Villard Books, 1993

Form Fundamentals

Each repetition should be on a "5 count": two counts to raise the weight, pause for one count, then two counts to lower the weight. The speed throughout should remain constant to limit the amount of momentum placed upon the weight. This will ensure that you are stressing the muscle throughout its range of motion.

Avoid relaxing the targeted muscle between repetitions. Don't let the plates touch in machines, lock out joints (such as the knees in leg press), or dangle the dumbbells from limp arms (such as in biceps curls). Maintaining tension on the muscle reduces elastic stress while increasing the fatigue generated by a given weight used.

Use a weight that will result in complete failure of the targeted muscle in 10-15 repetitions. Complete failure means that you are no longer able to maintain the proper form of the exercise for an additional repetition. Lower the weight for subsequent sets if necessary to remain within the 10-15 repetition range.

Recent research suggests that the great majority of strength conditioning comes from the first set performed for each exercise. There are still important benefits to performing multiple sets, however. First of all, each repetition burns calories. The more reps, the more calories you burn. Second of all, you condition your motor neurons through repetition, so the more reps, the better you will become at performing the technique of a given exercise. Two to three sets per exercise balances efficiency of effort with a reasonable amount of repetition for learning and metabolic purposes.

Training Frequency

For strength training, significant results can come from two days per week, either by splitting the body and doing some parts each session, or by doing fewer sets of every body part each session. Adding a third day will result in even greater gains, but raw strength is not as much of an issue for the diver as is cardiovascular fitness.

Example 1: Two Day Split

Day 1	Day 2
Leg Press Hamstring Curl Leg Extension Adduction Abduction Seated Calf Raise Standing Calf Raise Lower Back Hyperextension Abdominal Crunch Lateral Oblique Machine or Crunch	Latissimus Pulldown Seated Row Bench Press Pectoral Fly Shoulder Press Lateral Fly Chin-up Biceps Curl Triceps Dip Triceps Extension

Example 2: Whole Body Workout

Leg Press Hamstring Curl Leg Extension Standing Calf Raise Latissimus Pulldown Bench Press Chin-up Dip Shoulder Press Abdominal Crunch Lower Back Hyperextension
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Avoid the Routine

Athletic conditioning depends upon the body's ability to adapt to new stresses. Eventually, however, the new stress becomes routine- the body habituates and ceases to increase in fitness. By frequently changing the exercises used, an athlete can avoid strength plateaus. With all of the exercises and variations available, there is no reason to repeat a workout.

Not only is it easy to vary the exercises that you perform, but you can also change the method of exercise ordering that you use.

Circuit Training

Circuit training involves multiple exercises performed with little rest between for the duration of the workout session. The entire body can be exercised in a relatively short period of time this way. Each exercise is performed for one set to failure, then followed by the next exercise with a minimum of rest. The entire circuit can be repeated if multiple sets are desired.

Split Routine

Split routines focus on several body parts each session rather than the whole body. Different muscles groups are targeted each session until the entire body is trained, then the routine is repeated. Most split routines follow a two day or three day cycle. Two day cycles typically split the upper body and lower body. Two examples of three day cycles are shown below.

Three Day Cycles

Day One	Day Two	Day Three
Legs	Back, Abdominals, Chest	Shoulders, Triceps, Biceps
Legs, Shoulders	Upper Back, Biceps, Abdominals	Chest, Triceps, Lower Back

Supersets

Supersets pair two different movements with no rest in between. Supersets can pair exercises involving the same muscle groups, such as performing a chest press immediately followed by a chest fly, or opposing muscle groups, such as performing leg extensions followed immediately by leg curls. Use supersets to achieve maximum fatigue in a short period of time.

Push/Pull Method

The *push/pull method* pairs a pushing movement with a pulling movement. These antagonistic movements can be alternated upon completion of all sets of each exercise, or combined into supersets by performing one movement and rapidly proceeding to the next with a minimum of rest.

Push/Pull Exercise Orders

Chest Movement/Back Movement
Biceps Movement/Triceps Movement
Anterior Deltoid Movement/Posterior Deltoid Movement
Abdominal Movement/Lower Back Movement
Quadriceps Movement/Hamstring Movement
Calf Movement/Tibialis Anterior Movement

Pre-Fatigue Method

The *pre-fatigue method* pairs a compound movement with a movement isolating one of the secondary muscle groups involved in the compound movement. The compound movement pre-fatigues the secondary muscles, which are then taken to total fatigue with the second movement. An example would be to pair chest press with triceps extension. The chest press is performed to fatigue, which usually occurs upon failure of the chest muscles while pre-fatiguing the triceps. This is followed by a triceps extension, which then fully fatigues the triceps muscles. Like the push/pull method, pre-fatigue exercises can be alternated upon completion of all sets or combined into supersets.

Pre-Fatigue Exercise Orders (Primary Exercise/Secondary Exercise)

Compound Movement for Any Bodypart/Isolation Movement for Same Bodypart
Compound Chest Movement/Triceps or Anterior Deltoid Isolation
Compound Back Movement/Biceps or Posterior Deltoid Isolation
Compound Leg Movement/Quadriceps or Hamstring Isolation

References:

Essentials of Strength Training and Conditioning, National Strength and Conditioning Association (Thomas R. Baechle, Editor), Human Kinetics, 1994

Maximize Your Training: Insights from Leading Strength and Fitness Professionals (Matt Bryzcki, Editor), Masters Press, 1999