How Many Sets Do You Need to Build Muscle?

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Getting bigger and stronger is a beautifully simple science. You lift something heavy, stress your muscles, eat, rest and repeat. Do this with enough intensity and consistency, and you’ll grow big and strong.

If it’s that simple, why on earth do most trainers and gym-goers insist on making weightlifting mind-numbingly complicated? Undulating periodization? Compensatory acceleration? Alactic capacity? These sound like topics from a trigonometry textbook, not ways to get jacked.

Like most things in fitness, there’s no absolute right or wrong way to build muscle, but there’s certainly an optimal way, especially regarding the number of sets and reps you use.

So what’s the right combination of sets and reps to build muscle? 3x10? 5x5? 10x10? Somewhere in between? This article will shed some light on the science of how many sets you should do to maximize muscle growth and strength.

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**Origin of 3 sets of 10**

First and foremost, we need to address the famous three sets of 10 reps, hands down the most popular set-and-rep scheme in fitness. Even couch potatoes know that when you lift weights, you do three sets of 10. It’s what everybody does, so it must work, right?
Well, not always.

Three sets of 10 reps actually originated as a rehabilitation protocol created by an army physician back in the 1940s. Dr. Thomas L. DeLorme, an avid weightlifter, was desperate for a better alternative to the subpar rehab protocols at Gardiner General Army Hospital in Chicago during World War II. With the hospital overflowing with injured soldiers, Dr. DeLorme needed a faster way to get them back on the battlefield.

DeLorme’s program called for three sets of 10 reps with increasingly heavier weights, which he called “Progressive Resistance Exercise,” and it worked wonders. Previously, soldiers rehabbed with light weights and never tired their muscles, only to spend six to nine months in therapy. By focusing on strength rather than endurance, DeLorme got soldiers in and out of the hospital in record time.

And so was born the concept of progressive overload, which is now the heart and soul of almost every effective weightlifting program. But was 3x10 the secret to DeLorme’s success? Or was it something else?

**Single Sets vs. Multiple Sets**

Alright, story time is over. Now the argument begins.

Despite DeLorme’s success with three sets, many people argue you only need one set to build muscle and strength. They point to the fact that in DeLorme’s method, the first two sets were just warm-ups and only the third set was a maximal effort. Hence, one set done with maximal effort (i.e., as many reps as possible) is all you need to build muscle.

Researchers have tried to prove which method works better, but without much luck. Some studies say multiple sets build up to 40 percent more muscle than a single set, whereas others say there’s virtually no difference.

Truthfully, it’s a silly argument, because both methods work, but each one is better suited for different situations.

**When to Use Single Sets**
Single-set training works, especially with new lifters. But for single sets to be effective, you have to train the muscle to all-out failure. And once your progress starts to stall, you have to make a change.

The key ingredient for single sets is intensity—not in the sense of grunting and screaming, but to the point where the muscle can no longer move the weight. This ensures full recruitment of both slow- and fast-twitch muscle fibers and stimulates hypertrophy by accumulating metabolic byproducts that tell your muscles to grow.

Single sets work better for smaller muscles groups and simple exercises. To grow bigger and stronger, the biceps, forearms and calves don’t need nearly as much volume (i.e., total number of sets and reps) as the chest, back and quads. And it’s a lot safer to do an all-out set of Dumbbell Curls than it is to do a set of 20 Deadlifts to failure.

Single sets also make sense if you’re crunched for time. It’s completely possible to hit each major muscle group with one set to failure in less than 15 minutes, and you’ll still build size and strength.

But be careful—single sets to failure can make you brutally sore, which can reduce your athletic performance and increase injury risk for up to 72 hours. If you’re an athlete who needs to practice or play games, this is not ideal. (If you’re sore, try these recovery methods.)

That said, stick with smaller muscles and simple exercises (machines, dumbbells or body weight) for single-set training. If you’re an athlete, use them only during the off-season when you don’t practice as often.

**When to Use Multiple Sets**

Multiple sets work best for intermediate or advanced lifters who need a more sustainable approach to make steady gains. They’re also better for athletes, because you don’t have to train to failure as often, allowing you to recover before your next workout, practice or game.

If you want to get better at complicated exercises like the Squat, Deadlift or Clean, multiple sets work best. You need practice to perfect the skill necessary to move big weights—just like shooting a basketball or throwing a
basball.

If you’re an athlete, you know that exercises like the Squat are closely linked to your sports performance. Training barbell lifts to failure can be sketchy, so stick with multiple sets and stop short of failure.

Finally, the bigger and stronger you are, the more you can benefit from multiple sets. Beginners can use one set to failure and increase the weight each workout. But once you plateau and the weight doesn’t go up each workout, you need to increase the number of sets to keep pushing your progress.

**To Fail or Not to Fail?**
The argument is that if training a muscle to failure makes it grow, why not do it once and be done with it? At first glance, this makes sense, but experience shows to isn’t practical in the long run.

Lifting to failure is only one way to make muscles grow. The body is extremely adaptive to stressors and will do whatever it needs to survive. Muscles grow in response to three types of stress:

1. Mechanical tension: heavy weight
2. Metabolic stress: lifting to failure or getting a “pump”
3. Muscle damage: microscopic tears in muscle fibers

Research suggests you don’t need all three to build muscle—one usually does the trick. Which method you choose depends on your athletic goals, available equipment and how much time you can spend training.

**Bottom line:** Training to failure may be the quickest way to spark muscle growth, but beware of soreness and reduced performance over the next few days.

**RELATED:** [When Training to Failure Goes Wrong](https://www.readability.com/articles/oqxqu8p1)

**Lift for Your Goal**
There’s a time and a place to use different combinations of sets and reps.
Here are a few popular choices and how to use them:

5 Sets of 5 Reps

- Experience Level: Beginner
- Goal: Strength
- Equipment: Free weights
- Intensity: At least two reps shy of failure

5x5 is an old-school strength method that works incredibly well for adding pounds to the bar. Low-rep sets of five let you go heavy, but 25 total reps give you enough volume to add some muscle mass, too. For safety’s sake, stop each set shy of failure to maintain proper form.

1 Set to Failure

- Experience Level: Beginner
- Goal: Muscle gain
- Equipment: Machines
- Intensity: Failure

Using a single set to failure can spark quick muscle growth, especially in beginners. Research suggests that experienced lifters need more volume, but rookies can use machines to safely exhaust their muscles. But be careful—this method will leave you sore and tired.

4 Sets of 8 Reps

- Experience Level: Intermediate to Advanced
- Goal: Muscle gain
- Equipment: Free weights or machines
- Intensity: One rep shy of failure

Intermediate lifters with more muscle mass need more volume to keep growing. Four sets of eight reps allows for heavier loads to add mechanical stress, while stopping one rep shy of failure adds a solid amount of metabolic stress to force muscle growth.
10 Sets of 3 Reps

- Experience Level: Advanced
- Goal: Maximal strength
- Equipment: Free weights
- Intensity: Two reps shy of failure

Strong athletes can handle more volume with heavy weights. Ten sets of three reps allows for lots of heavy, low-rep sets to build massive strength and keep perfect form. This rep scheme works best with barbell lifts like the Squat, Bench and Deadlift.

**RELATED:** How to Use Rep Ranges to Gain Muscle

**References**


