# The strength training dose

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**For muscle size, the number of hard sets you do each week matters more than your rep range or training split (how you divide muscle groups across the week).**

**Why it matters:** Lifting programs come with rigid rules about reps, rest and splits. The research leaves more room to choose than those rules suggest, but which choices matter depends on whether you want bigger muscles, more strength, or both.

**The details:** For strength, regular practice with heavy weights also matters.

## Go deeper

**The big picture:** A program has five settings you control: sets, weight, effort, frequency and rest. Their importance shifts with your goal.

**What people believe:** You must do at least three sets of each exercise. Each goal has a fixed rep zone: 1 to 5 for strength, 6 to 12 for size, 15 or more for endurance. Light weights only build "sarcoplasmic" muscle, a puffed-up kind that isn't real muscle.

**What the research says about those rules:**

- Fewer sets still work. In the 2017 analysis, fewer than 5 weekly sets per muscle still built muscle, just less than 10 or more [1]. Three sets per exercise is a habit, not a requirement.
- Rep zones overlap. Heavy, moderate and light loads built similar muscle when sets went close to failure (the point where you can't do another rep with good form) [3]. Heavy loads do build more strength [3].
- Some researchers propose that muscle cells also expand through fluid and other non-contractile content, sometimes called sarcoplasmic hypertrophy. A 2020 review called the evidence limited and didn't tie it to light loads [9]. Muscle grown with light loads in trials was real growth, measured the same way as with heavy loads.

**Weekly sets:**

- A 2017 meta-analysis of 15 studies found that each added weekly set per muscle was linked to more growth [1].
- Grouped by dose, 10 or more weekly sets produced the largest average effect (0.52), compared with 0.38 for 5 to 9 sets and 0.31 for fewer than 5. That grouped comparison fell short of statistical significance.
- A 2026 analysis of 67 studies and 2,058 people found that more weekly sets meant more size and more strength, with shrinking returns. The returns shrank faster for strength [2].
- In that analysis, the model that fit best counted a set at half value for muscles that only assist, such as the triceps during a bench press. That was a modeling choice for counting volume (total hard sets per muscle each week), not a measured rule for every exercise.

**Weight and rep range:**

- A 2021 network meta-analysis compared 28 studies with 747 adults who took every set to failure [3].
- Muscle growth was similar with heavy (8 or fewer reps), moderate (9 to 15 reps) and light (more than 15 reps) loads.
- Strength was different. Heavy and moderate loads beat light loads.

**How close to failure:**

- A 2024 set of analyses estimated how many reps people left "in the tank" across studies. Muscle growth improved as sets ended closer to failure, while strength gains looked similar across a wide range of effort [4].
- The authors called the work exploratory, because most studies did not record effort directly.
- In one trial of 18 trained lifters, thigh growth over eight weeks was similar whether sets went to failure or stopped short. Going to failure caused more fatigue [5].

**How often to train:**

- A 2016 meta-analysis concluded that, in studies with matched weekly volume, training a muscle twice a week grew it more than once a week [6].
- A 2019 review with a larger evidence base reached a different conclusion: with matched volume, frequency made no meaningful difference to growth [7].
- The 2026 analysis agreed for size. For strength, more frequent training helped, though each added day helped less [2].
- In a 2021 trial, 67 untrained young men did either a body-part split (each muscle once a week) or full-body sessions for 8 weeks, with 16 weekly sets per muscle in both. Strength and muscle growth were similar [10]. The authors disclosed a financial interest related to the topic.

**Between the lines:** The frequency evidence changed as more studies came in. The current reading is that, for size, how many hard sets you do each week matters more than how you split them. Frequency is mostly a way to fit your weekly sets into your week; spreading them over two or more sessions keeps each one shorter. "Choosing a split" turns this into a weekly plan.

**Rest between sets:** In a 2016 trial, 21 trained men rested one or three minutes between sets for eight weeks. The three-minute group raised its squat max 15.2%, compared with 7.6%, and grew front thigh thickness 13.3%, compared with 6.9% [8]. That is one small study, so treat it as a lean rather than a rule.

**Reality check:** Most of these studies lasted weeks or a few months. In the 2026 analysis, the average age was 25 and 79% of participants were men. The numbers are less certain for older adults and women.

**How sure are we:** Strong that more weekly hard sets build more muscle, with shrinking returns. Moderate on exact set numbers for older adults and women.

## Build your own program

**For muscle size:**

1. **Pick a starting number of hard sets per muscle each week.** About 10 is a reasonable start, not a required minimum. If progress stalls and you recover well, add sets, expecting each to pay off a little less.
2. **Use the rep range you like.** Heavy, moderate and light loads all built muscle when sets ended close to failure.
3. **Split the sets across the week however suits your schedule.**

**For strength:**

1. **Include heavy sets of 8 reps or fewer.**
2. **Practice your main lifts more than once a week if you can.** Main lifts are the heavy, multi-joint exercises a program is built on, usually a squat or leg press, a deadlift or other hip hinge, a bench or chest press, an overhead press, and a row or pull-up.
3. **Stop short of failure if you like.** Strength gains held up across a wide range of effort.

**For both:** On big lifts such as squats, longer rests of about three minutes built more strength in a trial. Presses also work your triceps and rows work your biceps, so count that assisting work loosely when you plan direct arm sets. Write down your weights and reps, and add a rep or a little weight when a set gets easier.

## Sources


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