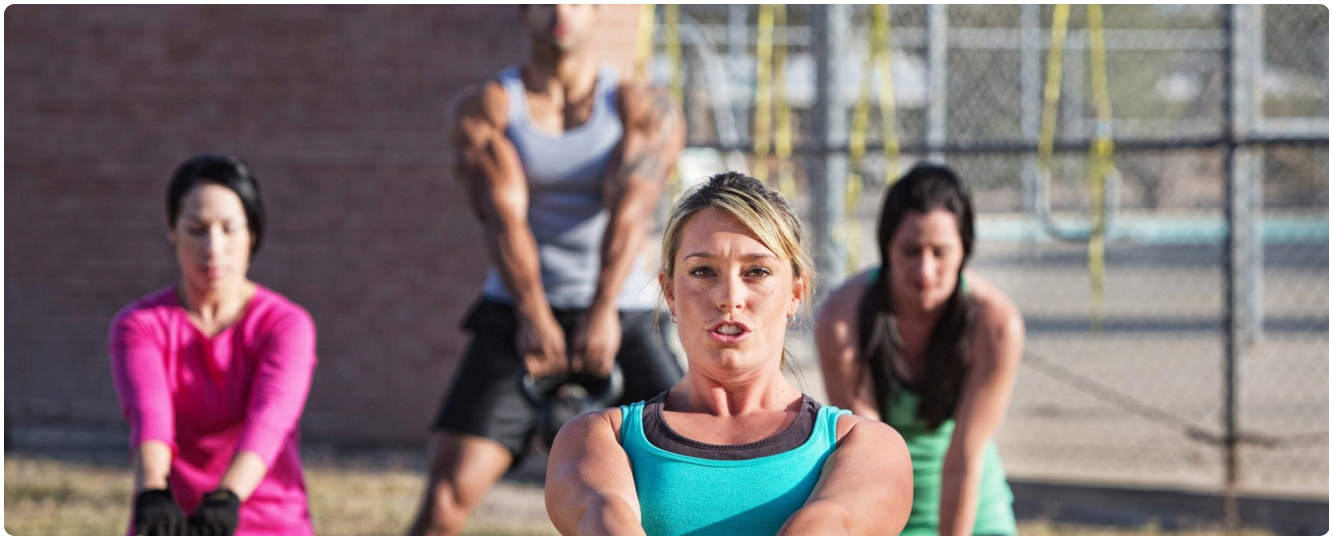
Muscular endurance: train to keep going

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Lighter weights lifted for many reps, with short rests, build muscular endurance best. You still gain muscle, but less strength than with heavy weights.

Why it matters: Carrying groceries up the stairs, shoveling snow, hiking with a pack and long rounds of yard work all ask muscles to keep working without tiring. That ability, muscular endurance, responds to training like strength does, but to a different kind of training.

What to do with this

- **Use lighter weights for 15 to 25 reps a set,** taking most sets close to the point where you can't do another good rep.
- **Keep rests short:** about 30 to 60 seconds, or move straight from one exercise to the next in a circuit or superset.
- **Train two or three times a week,** working all the major muscle groups.
- **Want strength too?** Keep one or two heavier lifts in your week. High reps alone build little maximum strength.
- **Short on time?** Circuits and supersets fit a full workout into 20 to 30 minutes. See "Circuit training" and "Supersets and shorter workouts."

Go deeper

The terms:

- **Muscular endurance:** how many times, or for how long, a muscle can keep working against a load before it tires. A common test is the most reps you can do at a fixed weight, such as 60% of your one-rep max.
- **One-rep max:** the most weight you can lift once with good form.
- **Circuit:** a series of exercises done back to back with little rest, then repeated.

What people believe: Light weights and high reps "tone" muscle without building it, and heavy weights are the only way to grow.

What the research shows:

- **Reps decide what improves.** In a 2002 trial, 32 untrained young men trained their legs for 8 weeks with heavy sets of 3 to 5 reps, moderate sets of 9 to 11 reps, or light sets of 20 to 28 reps [1].
- **Strength:** the most weight each man could leg-press once rose 61% in the heavy group and 32% in the light group.
- **Endurance:** the test counted how many reps each man could do with 60% of his new one-rep max. The light group nearly doubled its reps, up 94%.
- The heavy group didn't get weaker. Its test weight went up because its one-rep max went up, and its endurance didn't keep pace: it managed about 20% fewer reps, a drop similar to the men who didn't train.
- **Heart and lungs:** only the light group improved on a cycling test of aerobic fitness (how much oxygen the body can use during hard effort).
- **Trained lifters showed the same split.** In a 2015 trial, 18 experienced lifters trained for 8 weeks with sets of 25 to 35 reps or sets of 8 to 12 reps, all taken to failure (the point where you can't do another rep with good form) [2].
- Muscle growth was similar in both groups.
- Squat strength rose 19.6% with heavier weights and 8.8% with lighter ones.
- Bench-press endurance at 50% of the one-rep max rose 16.6% with lighter weights and didn't change with heavier ones.
- **Circuits work for older adults too.** A 2017 meta-analysis of 10 trials in 362 adults with an average age of about 65 found circuit resistance training improved strength, with larger gains in the legs than the arms [3]. Programs longer than 24 sessions also improved aerobic fitness.

The "40 push-ups" headline: A widely shared 2019 study of 1,104 male firefighters found men who could do more than 40 push-ups had far fewer heart problems over 10 years than men who did fewer than 10 [4]. But after the authors accounted for age and body weight, that difference was no longer statistically clear, and they wrote that push-up capacity was not shown to predict heart risk on its own. Push-ups are a good test of your progress, not a heart test.

Between the lines: Muscular endurance training is muscle-building training with lighter weights. As long as sets end close to failure, light loads grow muscle about as well as heavy ones (see "The strength training dose"). The trade is strength: heavy weights build more of it.

Reality check: The training trials were small, short and mostly in young men. The circuit meta-analysis had only 10 trials of varied quality.

How sure are we: Moderate that high-rep training builds more muscular endurance than low-rep training. Strong that light and heavy loads build similar muscle when sets go close to failure. Moderate that circuit training improves strength in middle-aged and older adults. Not supported that push-up counts predict heart disease on their own.

Build endurance into your week

1. **Pick 6 to 8 exercises** that cover legs, hips, push, pull and core.
2. **Choose a weight you can lift 15 to 25 times** with good form, and stop each set 1 to 3 reps short of failure.
3. **Rest 30 to 60 seconds,** or run the exercises as a circuit.
4. **Do 2 to 3 rounds,** two or three times a week.
5. **Progress** by adding reps first, then a little weight, or by trimming rest.
6. **Test yourself** every 6 to 8 weeks with a push-up or wall-sit test (see "Test your own fitness").

Sources

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2. Schoenfeld BJ, Peterson MD, Ogborn D, Contreras B, Sonmez GT. Effects of low- vs. high-load resistance training on muscle strength and hypertrophy in well-trained men. *Journal of Strength and Conditioning Research*. 2015;29(10):2954–2963. doi:10.1519/JSC.0000000000000958
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