The cardio dose

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Higher aerobic fitness is strongly linked to a longer life, and both steady cardio and intervals (short hard efforts with easy recovery between) raise it.

Why it matters: Cardio advice often comes with precise heart rate zones and firm rules. Those numbers are rougher than they look, and the research leaves you free to choose a style you can keep up.

Go deeper

The big picture: Cardio fitness is measured as VO2max, the most oxygen your body can use during all-out effort. It rises with training at a wide range of intensities.

Fitness and lifespan:

- A 2009 meta-analysis of 33 studies followed about 103,000 healthy adults [1].
- Fitness was measured in METs, where 1 MET is the energy you burn at rest. One MET is roughly the difference of jogging about 0.6 mph (1 km/h) faster.
- Each 1-MET gain in fitness was linked to a 13% lower risk of death and a 15% lower risk of heart disease events.
- People below about 8 METs had clearly higher rates of both.
- These are associations from observational studies, so other factors may play a part.

Steady cardio vs. intervals:

- A 2015 meta-analysis pooled 28 trials with 723 healthy adults aged 18 to 45 [2].
- Compared with no exercise, steady cardio raised VO2max by 4.9 mL/kg/min and high-intensity intervals by 5.5.
- Head to head, intervals came out about 1.2 units ahead, a small edge.

Less time, with a catch:

- A 2016 trial followed 25 inactive young men for 12 weeks, three sessions a week [3].
- Nine of them did three 20-second all-out sprints on a stationary bike, with easy pedaling between. Each session took 10 minutes in all.
- Ten others cycled steadily for 45 minutes, a 50-minute session in all.
- Both groups raised their fitness by 19%, and both improved how their bodies handled blood sugar.
- The sprint protocol is demanding, and this was one small trial in young men. It shows that some interval formats can raise fitness in less session time. It does not show the two approaches are equal for every health outcome.

Cardio for fat loss:

- A 2017 meta-analysis of 13 studies covered 424 adults with overweight or obesity [4].
- Intervals cut about 3.7 lb (1.7 kg) of body fat and steady cardio about 4.6 lb (2.1 kg). The difference was not significant.
- Intervals took about 40% less training time. With either approach, cardio alone produced modest fat loss.

Heart rate formulas:

- Most zone charts start from "220 minus your age" as maximum heart rate.
- A 2001 analysis of 351 studies and 18,712 people found that formula runs high in young adults and low after about age 40, missing by about 10 beats by age 70 [5].
- The same team proposed a better fit: 208 minus 0.7 times your age. It gives an average, and your own maximum can differ.

Between the lines: Zones built on a percentage of maximum heart rate are useful for rough pacing. A 2020 review concluded that prescribing intensity this way "has little merit" for producing a specific training effect, because people cross key metabolic thresholds at different percentages [6].

What athletes do: In a 2024 meta-analysis of 17 studies and 437 athletes, polarized training (mostly easy sessions, a few very hard ones) gave a small edge in VO2max, seen only in programs shorter than 12 weeks and in highly trained athletes. Race times and other performance tests came out the same [7]. How well this applies to recreational exercisers is unclear.

Reality check: Most of these trials were short and tested younger adults. All-out sprints are very demanding. If you have heart disease or symptoms such as chest pain, talk to a doctor before you start them.

How sure are we: Strong that higher aerobic fitness is linked to longer life and that both steady cardio and intervals raise it. Moderate on which method works best for whom.

Build your own cardio plan

1. **Hit your weekly minutes.** Aim for 150 moderate or 75 vigorous minutes, or a mix, as covered in the exercise dose article.
2. **Judge effort by your breathing.** Moderate means you can talk but not sing. Vigorous means you can say only a few words at a time. If you use heart rate, estimate your maximum with 208 minus 0.7 times your age (about 173 beats a minute at age 50) and treat any zone as a rough guide.
3. **Pick steady, intervals, or both.** Both raised fitness and took off similar amounts of fat. Intervals can save session time.
4. **Treat all-out sprints as an advanced option.** The 10-minute protocol above was tested in a handful of young men on bikes. Build up gradually, and check with a doctor first if you have heart concerns.
5. **Check your progress.** Time yourself over the same route every few weeks. Finishing faster at the same effort means your fitness is improving.

Sources

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