Warm-ups, cool-downs and stretching

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A short warm-up improves performance, long static stretches before lifting don't, and strength training, not stretching, prevents injuries.

Why it matters: Many people skip the warm-up, spend 15 minutes stretching, or finish with a cool-down they believe prevents soreness. The research points to a shorter, more useful routine.

The big picture: A warm-up improved performance in most studies, short static stretches before training cost little, and cool-downs did little for recovery.

What to do with this

- **Warm up for about 10 minutes:** easy cardio, moving stretches, then lighter sets of your first exercise. "A 10-minute warm-up" has the routine.
- **Keep static stretches short before training,** under about 60 seconds per muscle group [2].
- **Stretch for flexibility at another time,** if range of motion is a goal.
- **Lift to prevent injuries.** Stretching didn't prevent them [3].
- **Cool down only if you enjoy it** [4].

Go deeper

Warming up:

- A 2010 meta-analysis of 32 high-quality studies found that warming up improved performance in 79% of the measures examined [1].
- There was little evidence that warming up harms performance.

What people believe: Any static stretching before lifting ruins your strength. Long stretching and foam rolling sessions are needed before every workout.

Static vs. dynamic stretching before exercise:

- Static stretching means holding a stretch. Dynamic stretching means moving through a range, such as leg swings or arm circles.
- A 2016 review found that static stretching just before activity lowered performance by about 3.7% on average [2].
- The size of the drop depended on how long people held: about 1.1% with holds totaling under 60 seconds per muscle group, and 4.6% with 60 seconds or more.
- Dynamic stretching done within minutes of activity improved performance slightly, by about 1.3%.
- All forms of stretching improved range of motion, typically for less than 30 minutes.
- The authors suggested that stretching within a warm-up, followed by more dynamic activity, has little effect on performance.
- Foam rolling before training gives a small, short boost in flexibility without hurting performance. See "Foam rolling: what it really does."

Preventing injuries:

- A 2014 meta-analysis of 25 trials with 26,610 people compared exercise programs for preventing sports injuries [3].
- Strength training cut the injury risk to about a third of the control groups' risk. Balance and coordination training cut it roughly in half.
- Stretching showed no benefit.

Cooling down:

- A 2018 review concluded that an active cool-down, such as easy jogging or cycling after exercise, did little to improve same-day or next-day performance, mostly did not reduce soreness, and did not prevent injuries [4].
- It also did not blunt the long-term benefits of training, so a cool-down you enjoy does no harm.

Between the lines: Warm up to perform better, stretch to gain flexibility, and lift to protect yourself from injury.

Reality check: Many studies tested athletes and measured performance minutes after the warm-up, not over months of training.

How sure are we: Moderate that warm-ups improve performance and that strength training prevents more injuries than stretching. Early on cool-downs, which have few studies.

Build your warm-up

1. **Raise your temperature for 5 minutes** with easy cardio, such as brisk walking, cycling or rowing.
2. **Add dynamic movements** for the joints you'll use: leg swings, hip circles, arm circles and bodyweight squats. The warm-up guide has a full routine.

3. **Do 1 or 2 lighter sets** of your first exercise before your working sets.
4. **Keep static stretches short before training,** under about 60 seconds per muscle group, or move them to the end or another time.
5. **Stretch for flexibility on its own schedule** if range of motion is a goal.
6. **Cool down if you like it.** A few minutes of easy movement is fine, but it's optional.
7. **Count your strength training as injury prevention.**

Sources

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