

Small Gears

Make sure you have easy gears. Smaller gears save your muscles. Although you may average a higher cadence over the course of a climb, you want to be able to spin a cadence of at least 50 rpm on the steeper pitches.

Almost every strong rider needs at least a 39-27 on ACE rides. That means 39 teeth on the small chainring and 27 teeth on the largest cog on the rear wheel. This gearing may be enough for riders who can sustain climbing rates greater than 3,500 feet per hour up 10% grades.

Even smaller gears are recommended for most riders.

Consider regearing your road bike with mountain bike cogs and a mountain bike rear derailleur. Or a triple chainring. Or all three.

For information about derailleur capacities, see *Appendix C: Rear Derailleur Capacities*.

Gearing Math

Climb at about 2,000 feet per hour up 10% grades? Let's do the math:

2,000 feet up climbing per hour up a 10% grade means you are riding about 20,000 feet along the road per hour, or about 333 feet per minute.

A 28 inch wheel will travel $28/12 \text{ feet} \times \pi \times \text{cadence} \times \text{gear ratio}$ per minute.

Therefore, for a 10%-grade-2,000-foot-per-hour climber, $\text{cadence} \times \text{gear ratio} = 45$.

To keep a cadence above 50 rpm on a 10% grade you need a gear ratio of less than 0.9.

I suggest a 30-34. That's a 30-tooth front chainring (generally the smallest chainring of a road triple) and a 34-tooth rear cog. This is a gear ratio of 0.88.

To make this set-up, you need a triple chainring and a mountain bike derailleur.

Perform the ACE Gearing Test

Although you may occasionally allow your cadence to drop to as low as 50 rpm on the steepest pitches, in general you would like to have the option to be able to keep cadence above 70 rpm and your heart rate under 75% on long grades.

So do the ACE gearing test: Ride up a long grade similar to ones you will face during your ACE event. Can you keep cadence over 70 rpm and heart rate under 75% of max? If not, you need easier gears.

Gearing Summary

I often hear riders complain that they did not have easy enough gears. No one has ever complained to me that they had too easy gears. Even if you end up having a "bail-out" gear you never need, so what? There are plenty of other gears you'll probably never use. Like that 53-12.

You are not a wimp to have easy gears—you are smart.