

TTIPS VOL. 40/22 – TECHNIQUES

- Cadence -



Introduction

Hello riders. Ever notice that some of our fellow riders seem to pedal really fast while others pedal slower while moving at the same speed? Usually this is because the two riders are using different gears and thus their pedals rotate at different speeds. In bicycling, we refer to the number of times the pedals make a complete revolution as “cadence.”

In bike slang, riders that typically pedal their bikes quickly for any given speed are said to be “spinning” and they are called “spinners.” Those who prefer a comparatively slower cadence are said to be “mashing” or “crunching.” I mostly hear other bikers call them “mashers.”

So, you may ask, which is better? Well, I’m glad you askedwhat a coincidence. The article below explores that very thing.

Enjoy!

Beginners Guide to Cadence: What it is, Why it Matters, and How to Improve Yours

How Fast Should You Pedal on the Bike?

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By Paul Norman

When you start cycling, there's a whole glossary of jargon to get your head around, and one of the most cryptic terms is "cadence." What is cadence and why is it important to your riding?

What is Cadence?

Cadence is fundamentally very simple: it's the number of revolutions your pedals make per minute as you ride. But you don't have to spend too long cycling to see that riders will often pedal at different rates.

Watch a bunch of pros in a race and they'll seem to be pedaling really fast, particularly on a flat course. Their cadence will typically be very high, often 100 revolutions per minute (rpm) or more.

Most will be pedaling slightly slower on a climb, but still much faster than the average cyclist. Chris Froome's extreme climbing style is a prime example of this, with a cadence still often around 100rpm even going uphill.



(Chris Froome is known for having an extremely high cadence. *Simon Wilkinson/SWPix.com*)

On the other hand, the average recreational rider will typically pedal much slower, at around 60rpm, while a fit amateur might be doing 80 to 90rpm.

Does it matter whether you have a high or low cadence? Let's take a closer look at why cadence matters, how you measure cadence and whether there's an ideal cadence to aim for.

Why is Cadence Important?

Cadence is a key measurement because it's a vital component in the power you put out on the bike. After all, power is a calculation of how hard you push on the pedals (torque) multiplied by how fast you are turning them (cadence).

Cycling at a lower cadence typically puts more strain on your muscles, while a higher cadence shifts the load more to your cardiovascular system, says Dr Xavier Disley of AeroCoach, who has researched cycling efficiency and cadence, working with a number of elite cyclists.

If you have a more muscular build, you're likely to be more comfortable at a lower cadence, while a wiry rider will probably want to push a lower gear at higher revs. There's an energy cost to just turning the legs, which will vary with your physique, Disley points out.

Experiments have shown that trying to ride faster at a lower cadence (in a high/difficult gear) is more likely to lead to muscle strains and muscle soreness after a ride than achieving the same speed at a faster cadence, but with a lower load.

On the other hand, too fast a cadence and you're likely to find your pelvis rocking, which could lower pedaling efficiency. You'll also tire quickly.

Measuring Cadence



(Some bikes, such as the Giant Defy Advanced Pro 2, have an integrated cadence sensor. David Caudery / Immediate Media)

The simplest way to measure your cadence is just to count how many times your legs go up and down in a minute. But for a more accurate record, there are electronic devices (cadence sensors) you can use.

Many cadence sensors for bikes are designed to attach to the left-side chainstay. A magnet attached to your crank arm passes the sensor, which in turn records how many times it goes past and then sends a signal to your bike computer. You will then have a record of your cadence over time, which you can analyse as your training progresses.

Wahoo's RPM Cadence sensor, on the other hand, attaches to your crank and works as a standalone unit, transmitting cadence data to your computer.

And if you have a power meter, this will measure cadence and send the data to your computer too. Some bikes come with an integrated cadence sensor.

What is the Ideal Cycling Cadence?



(The ‘ideal’ cadence will vary from one rider to another and will be determined by a number of factors, including terrain. *Russell Burton/Immediate Media*)

In truth, there isn’t one. The ‘ideal’ cadence depends on a number of factors and can vary from one rider to another.

Measuring in a lab how much power cyclists can put out relative to the energy they’re using shows that most cyclists will self-select their optimal cadence, says Disley.

Experience also matters, and riders who have logged lots of miles in the saddle will likely have found a range of cadences that work for them, depending on the terrain and demands of a particular ride.

Disley also points out it’s important to experiment with different cadences to find your optimum – and one cadence may not be best across all situations.



(Time trialists tend to use a higher cadence in short events, according to Xavier Disley of AeroCoach. *Alex Whitehead/SWPix.com*)

Time trialists, for example, tend to use a higher cadence in shorter events than they do in longer tests, Disley says. “Your aim should be to improve your cadence, rather than just to increase it,” he adds.

There are also benefits to varying your cadence in training sessions to improve your cycling technique and provoke specific adaptations.

Using a high cadence at lower loads will train your neuromuscular system to pedal more smoothly, while a lower-cadence/higher-load session will help to increase your strength.

Riding Rollers is a good way to smooth your ride style, while structured drills are better than long, steady rides to get your legs spinning smoothly and efficiently.

Want to know more? The training sessions below will help you to pedal more efficiently. Two training drills to improve your cadence.

We asked Matt Rowe of Rowe and King to recommend two training sessions to work on different aspects of cadence: one to build strength and one to improve pedaling fluidity.

He's coached pro cyclists and is an advocate of indoor training.

1. Pedaling fluidity and coordination

Rowe recommends a 20-minute session of 4x (4 minutes at 120rpm + 1 minute easy). For the whole 20-minute block, keep your upper body as still as possible. A strong core is key. Allow power transfer to come from the waist down. You can then rest and repeat the block for a second time if you feel adventurous, Rowe says.

2. Strength endurance session

To build your strength, Rowe recommends a lower-cadence drill with high power output.

2x 15-minute blocks at 89 to 90 per cent of FTP, at a cadence of 50 to 60rpm. If you're not familiar with FTP (Functional Threshold Power) [read our guide](#).

The lower the cadence and higher the power, the more torque is created. So, over time, as you progress you can nudge the power up and decrease the cadence.

Rest well between each block (between 10 and 15 minutes) for full recovery.

Marginal Gains



(Cadence will vary according to the demands of a particular event. *Alex Whitehead/SWPix.com*)

Get into elite-level cycling and it's not just about cadence and power output.

Expert bike fitter Andy Sexton of [Bike Science](#) points out that elite time-trialists and triathletes are going so fast that a small increase in power output from a faster cadence will be more than outweighed if that stops a rider being able to maintain an optimal aero position.

Cadence will also vary with the type of riding: a track sprinter will put up with a much more extreme riding position and cadence for a handful of seconds in a sprint relative to a pro road rider who's in the saddle for hours.

Meanwhile, physiotherapist Phil Burt, who has worked at British Cycling and Team Sky supporting elite Olympic and pro cyclists, points out that crank length is also an important determinant of cadence because it contributes to the rider's gearing.

It's easier to maintain a higher cadence with shorter cranks, Burt says, and there's a trend for triathletes to ride short cranks for smoother power delivery at higher revs.

Crank length is typically determined by frame size on off-the-shelf bikes, but this may be an appropriate component to swap for riders looking to fine-tune their pedal stroke.

Okay riders, hope you enjoyed that. Until next time,

Make Every Ride Epic,

Darryl