

SAFETY AND EDUCATION (S&E) VOL. 14/23
- Improve Your Cycling Efficiency –



INTRODUCTION

The first time I went to a bona fide bike fitter – not the guy at the bike shop who did a 2-minute fit – but a real, no kidding, trained professional, he first asked me, “what are you here for?” Of course my response was “to get a proper fit to my bike.” He responded, “well, yeah, but what do you think is wrong with your current fit?” Oh, I thought, good question! I told him that I had this great bike but I felt as if I had more power available, and I can’t get it to the pedals. “I’ve hit a plateau, and no amount of training helps.” “Alright” he said, a “we’ll start there.”

That’s the day I became a believer. When I left the fitting studio, I felt as if I not only had a new, bike, but a new body too. The seemingly minor adjustments he made turned out to effect major improvements in my cycling efficiency. As it turns out, I learned for the very first time in my life, from my fitter of all people, that my right leg is shorter than my left leg. Not by a lot, mind you, but still it was short enough to make a major difference in my ability to translate leg and glute strength into energy via the pedals. There were many other such seemingly minor issues that, when corrected by the fitter, raised my performance considerably.

I’ve discussed proper “fit” in many previous volumes, so I won’t beat that dead horse here. But, perhaps you feel you are not performing to your potential and maybe you could be more efficient? Or, perhaps you feel like you might want to ride with a faster/further group but feel that you need something extra in your ride to do that? If so, take a look at the details within the article below.

- No matter what group you ride in, when it comes to cycling performance, details count. -

6 Ways to Improve Cycling Efficiency for Better Performances

WANT TO GO FASTER OR FARTHER? HERE ARE SIX EASY AND IMPACTFUL TWEAKS YOU CAN MAKE TO BE MORE EFFICIENT.

BY KRISTEN ARNOLD / Published: Dec 14, 2022
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If you're looking for a breakthrough in your performance—say, if you hit a plateau or you're searching for a way to crank up your [average speed](#)—it often comes down to cycling efficiency. In other words, making the most of each [pedal stroke](#) and putting speed and force through each revolution. This makes your rides feel easier, while still improving on [speed](#) and [endurance](#), and producing high watts.

Looking at a few key focus areas—including mechanical, physiological, and environmental—will help you improve on these essential performance parameters.

Mechanical advantage speaks to the equipment used and positioning. If your gear is positioned in a way in which you can recruit a wider variety of muscle fibers which fatigue less quickly, you'll ride longer or faster without tiring as quickly.

Physiological factors speak to setting your body and [mind](#) up for success at each ride. Are you getting the most out of your rides and training to get the best stimulus and to [build strength](#) and endurance?

Finally, efficiency cannot be discussed without also acknowledging the importance of optimizing the terrain, weather conditions, and dynamics of other riders (if you are riding in a group).

Check out these six ways you may be robbing yourself of cycling efficiency, plus how to fix the issues for better performances. Big gains in speed don't always require big miles and [hard rides](#). [Reflect](#) on the little tweaks you can make in your current riding and training style to see where you can improve your efficiency to ride smarter—not harder.

The thief: improper cleat positioning

Cyclists who ride [clipless](#) have cleats on the bottoms of their shoes. Cleat position (where the cleat is screwed into the shoe) can be a key factor in comfort and muscle recruitment.

“Oftentimes, I see cyclists who have their cleats placed all the way forward,” says [Nikki Peterson, M.Ed.](#), USA Cycling-certified coach with Source Endurance. “This engages [calf](#) musculature, and these muscles fatigue rather quickly, which then leads to heel drop. In this case, the rest of the kinetic chain suffers, and the rider will be [unstable in the pelvis](#) as one side is favored over the other.”

How to take it back: Some cleats have a notch on the side to indicate where the cleat should line up with the part of your foot that sticks out the furthest laterally. Check for this when you’re applying your cleats to your shoes, and read more about [how to install your cleats](#). Hiring a professional [bike fitter](#) will allow for even further optimization of cleat position (and help you avoid other issues that might affect mechanics).

The thief: saddle height too low or too high

The number and type of muscles recruited during an effort will partially depend on your [saddle](#) height and position. “From a bike fit perspective, if someone’s saddle is too low, they’re not getting the whole usage and range of motion from their [glutes](#) in the power stroke,” explains professional bike fitter and USA Cycling-certified coach, [Zack Allison](#). “If the saddle is too high, [it can] cause power to be absorbed by [stretching the hamstring](#) past its [ideal] range of motion.” This will ultimately affect your ability to ride at a [cadence](#) that’s most efficient for a required power output.

The thief: lack of proficiency at different cadences

Different cadence speeds use different [muscle groups](#). By regularly riding at a variety of cadence speeds, you are stimulating the use of a range of muscle groups and therefore, preventing fatigue of individual ones. “When you spend [time] pedaling with a good bike fit, your proprioception, muscle synapses, and total musculature become more efficient in the [pedal stroke](#) and your power propels you forward more effectively,” says Allison. “Working on form, high and low cadence drills, and time at endurance pace can accelerate this efficiency gain.”

How to take it back: Incorporate fast [pedaling](#) drills into your training. For example, do three to five 1-minute intervals at an easy effort, hitting 100 to 120 rpm, and take 2 minutes rest at a comfortable cadence between intervals. You should also incorporate low cadence drills into your rides. For example, go for three to five 1-minute intervals at a moderate effort and 50 to 70 rpm, with 5 minutes rest at a comfortable cadence between intervals. Schedule rides or [workouts](#) with the intention of riding at cadences which are not your default (higher or lower

depending on your preferred cadence speed). You can also try other [cadence drills](#) to continue working on getting comfortable at different rpms.

The thief: ignoring strength training

[Resistance training](#), usually in the form of [weightlifting](#), can be a great way to increase muscle mass, build strength, [prevent injury](#), and strengthen neuromuscular connections to ride more efficiently.

A [review article](#) published in the *International Journal of Sports Physiology and Performance* in 2016, explains that athletes who have more lower-body lean mass have higher one-second to 10-minute mean maximal power than athletes with less lower-body lean mass. Resistance training has been shown to increase lean body mass and [muscle strength](#), as the authors point out.

One of the proposed mechanisms of action for this higher mean maximal power is more efficient use of type I or slow-twitch muscle fibers—those important for [endurance](#) performance. In short, athletes who do resistance training and have relatively more lean mass in their lower bodies don't need to activate highly fatigable muscle fibers (a.k.a. fast twitch) types as quickly. Another proposed mechanism of action is that with resistance training, type IIx muscle fibers are converted into more fatigue-resistant type IIa muscle fibers, which may improve [muscular endurance](#).

For cycling efficiency, it's not only important to incorporate [lower-body strength training](#) into your routine, but [core work](#) too. One [study](#) published in the *International Journal of Physiology, Nutrition, and Physical Education* in 2018 found that a six-week core strength-training program improved the speed of 30 male, university-level cyclists in a 40-meter sprint test.

Authors of an [article](#) published in *Current Sports Medicine Reports* in 2010 also points to research that says a lack of core strength and stability can lead to inefficient technique on the bike, leading to increased risk of [injury](#) and detriments to performance. When the core fatigues, it compromises alignment of the lower body, resulting in compromised power output, while a stable midsection allows for greater force through the pedals, per the article.

How to take it back: Become more efficient at higher power output efforts with resistance training for both your [lower body and core](#). Incorporate a [leg day workout](#) and [core stability routine](#) into your weekly schedule.

The thief: under fueling and/or under hydrating

A cyclist's ability to efficiently put out power during a ride will directly depend on how well fueled and hydrated they are going into and during the ride. One of the most common and immediate [symptoms of dehydration](#) and under fueling is loss of mental alertness. This [mental](#)

[fatigue](#) can cause cyclists to lose focus on their pedaling form and cadence speed. Both factors will lead to losses in efficiency while riding.

How to take it back: The American College of Sports Medicine recommends 30 to 60 grams of [carbohydrate](#) per hour of exercise, plus you'll want to load up on some carbs for energy *before* your ride. How much food you take in before and during your ride will depend on what type of ride you're doing, so follow our guide to [fueling for different distances](#).

When it comes to [hydration](#), it's important to understand how much water you need each day, which is different for everyone. Figure out your [hydration strategy](#) with tips from an expert.

The thief: not building group riding skills

Many cyclists lose the group, not because the other riders are stronger or more fit, but because the others have been riding more efficiently up to that point during the ride. Major factors to consider when [riding in a group](#) of cyclists on the road or even [gravel](#) include where the wind is coming from, how many other riders are in the group, and how much surging is required to stay in the position you are riding. Understanding the relationship between power output, other riders, drafting, and the environment is complex.

How to take it back: "If you want to be more efficient in a pack/peloton setting, then practice exactly that," says [Adam Mills](#), exercise physiologist, USA Cycling-certified coach and owner of Source Endurance. "There are so many nuances to riding efficiently in a bunch and while I could write a book about it, the best way to improve is to watch a veteran and practice what they do." Consider mixing in some [group rides](#) throughout your training and practice pack riding skills if you are working up to an event which is mass start and will require you to ride in a big group.

Okay you Superstars, I hope that is useful insight for you. Now, get out there, analyze your ride using these tips, and then,

Make every ride epic,

Darryl