

Develop Perfect Pedal Technique By Silas Cullen

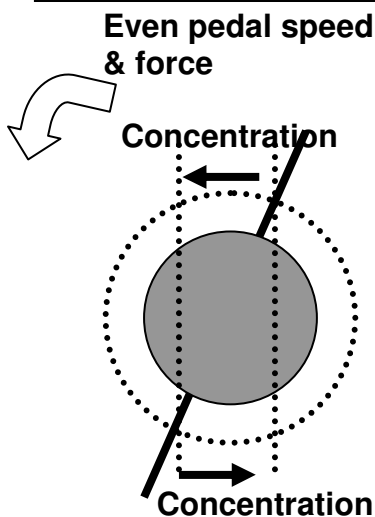
“Everyone pedals in circles”! You might say, sounds simple but there is a huge difference in pedal technique between good and great cyclists. If one cyclist accelerates and decelerates even slightly within each pedal stroke more energy is used than another cyclist who maintains a more continuous force throughout the pedal stroke. If you perform a 4-hour race with a cadence of 90 rpm then you will do 21,600 pedal strokes. If all of those pedal strokes have taken less energy for you than the cyclist next to you then toward the end of an event you will appear much stronger and fitter even if they have done more training. ***The most efficient athlete will go faster for longer!***

Research was carried out by the U.S. Olympic training centre on elite cyclists analysing pedal fluidity by measuring torque between the cleat and pedal. Two common theories were proven. The first is that the cyclists with a smooth even pedal stroke used less energy and greater muscular efficiency. The second was that the dead point or weak point of the pedal stroke was at 12 and 6 o'clock. Consequently the athletes who pedal well through these points had the most fluid pedal strokes and use less energy. Even if two cyclists are pedalling at the same cadence pushing the same wattage and going the same speed the athlete with the best pedal fluidity will use less energy and muscular effort to do the same thing.

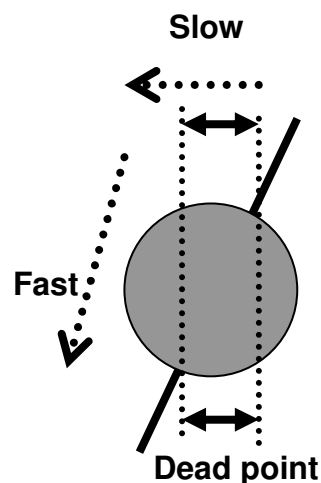
1. Fresh at the end for sprint or attack.

2. Toast at the end, finish in the bunch or get dropped with 2km to go.

Efficient energy /pedal stroke



Inefficient energy expenditure/pedal stroke



Equal Speed & Cadence



The interesting thing was that track cyclists, road cyclists and mountain bikers were all tested. Who do you think had the most efficient pedal action? Track cyclists right, renowned for their efficiency speed and still positions and they spend the most time perfecting it. Then probably roadies, who focus on pedal technique also and then the mountain bikers, where technical skills are more focussed on balance and staying on. As well as dodging trees getting muddy and generally growing longer hair than their counter

parts, mountain bikers often sit down while climbing to increase traction on the back wheel. They also have to constantly keep an even pedal action to avoid the back wheel spinning out while climbing in the wet. If they have a slightly uneven action the wheel will slip, if a track or road rider has a slightly uneven pedal action they do not get the same instant feedback and it is much harder to gauge how they are doing. This constantly even pedal action while seated up hill was the answer to having the best technique for mountain bikers followed by roadies and then track cyclists last. However this can be achieved on the road with the power of concentration and some simple principles.

Concentration and the Push Pull Principle

When pedalling up a hill if less pressure is applied to the dead point in the pedal stroke (12 and 6 o'clock) the deceleration of the pedal stroke and the bike is more noticeable than if pedalling on the flat. Based on the above findings concentration needs to be focussed on pushing over the top and simultaneously pulling underneath the pedal stroke (the dead point). If the action does not feel fluid then changing into an easier gear will help. Initially the climbs need to be gradual. Then as technique and strength improve the climbs can become first longer and then steeper as strength improves further.

If spinning in circles you should also feel relatively the same pressure on your seat. If you are starting to un-weight off the seat then you are starting to develop a "push down" pedal stroke. When this happens change into an easier gear straight away and concentrate harder on pushing though 360 degrees. This feeling can also be assimilated to wearing glass cycle shoes, if your cycle shoes were made of glass then you would break them on the down stroke if you are not pedalling smoothly. Feel like you are trying not to push down but to constantly maintain the momentum though your pedal stroke with even pressure. If you are doing this you will feel light in your shoes often you will feel like you are going slower when you are doing this as your legs will not be working as hard at any point in the pedal stroke but look at your speedo and you will notice you will not slow down much at all. Then look at your Heart rate and you will notice that over time it will become lower you might even notice it drop on a climb as you start to concentrate harder. That is what becoming more efficient is all about!

Fluidity on the Trainer

Another drill to help you in your quest for the perfect pedal stroke can be carried out if you have a wind trainer with an adjustable pressure lever. Adjust the roller on the rear wheel until it is very light or just touching the wheel, then start to pedal. If you have an uneven pedal action the wheel will skid losing traction on the back of the trainer and you will feel it slipping. To avoid this you must pedal very evenly throughout your pedal stroke just like a mountain biker up a wet slippery slope. As you get better you can ease the pressure on the tyre even more and pedal at faster rates. Doing some 1-leg drills concentrating on the push pull theory will compliment this workout but be very careful of your knees doing one leg and always keep the resistance very low.

Your potential to improve

How much you improve during any given build will be set by basic training principles a good coach and motivation. However ultimately you can never improve by more than your technique allows the best way to improve for the rest of your life and with little physical effort is to become technically more efficient. Being on a bike that is set up correctly and riding it efficiently are the two most fundamental principles of cycling. No matter what your level - ***Olympic champion or six hour round Taupo rider the better your technique the faster you will become!***

For more information on coaching or bike set up please contact:

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