

# Tips on Cycling in Time Trials and Triathlons

## Positioning

**Seat height:** Your legs have the most power when close to extended. You want your seat height to be such that at the very bottom of the pedal stroke your leg is just slightly bent. (If your seat is too high you will notice that your hips bounce when you pedal. If it is too low you may notice pain behind your kneecap.)

**Back position:** You would like your back to be as flat as possible when riding. Much of the resistance you face at 20 to 30 mph is against the wind and so the less wind resistance you face the faster you will go and the easier it will be. At first such positioning feels unnatural, but it is much more efficient and you quickly get used to it.

## Equipment

**Tires:** For a competition you want your tires at the maximum recommended pressure. This lowers the rolling resistance and also will help avoid pinch flats. Large knobby tires add rolling resistance, and road tires are much thinner and smoother and allow higher inflation pressures. If you only have access to a mountain bike, then for riding on the road find tires that are as close to road tires as possible. There are many brands and types of road tires and longstanding debates on relative merits of clinchers and sew-ups, that I won't go over here. The good news is that advances in technology has made this debate almost obsolete, and if most sets of a decent road tires will be close to the frontier.

**Chain:** You want your chain cleaned and lubricated. An old rusty chain can add quite a bit of work to your ride. You should, of course, also check that your brakes are working well and not rubbing and that the derailleurs are adjusted to shift smoothly.

**Toe clips or clipless pedals:** Toe clips are inexpensive and quite useful. They help keep your foot firmly attached to the pedals so that the energy from your leg is most efficiently transferred to the pedals. They allow you to pedal circles as described below. Clipless pedals with accompanying bike shoes and cleats that lock into the pedals are even more efficient. If you like to cycle and see yourself doing it on a regular basis, these are a great investment.

Road bike versus mountain bikes: Obviously, road bikes will be noticeably faster on the road. The most important differences are the riding position that a road bike allows (which is related to the frame geometry and handlebars), the tires, and the weight (whose advantage is shrinking as mountain bikes are becoming lighter). Mountain bikes tend to have positions that have the rider more upright, leading to increased air resistance. If you only have a mountain bike, the way to improve your position for the road is to make sure the handlebars are low enough to allow yourself as a flat back position and as low a profile as possible so that you are not acting like a parachute in the wind.

Shoes: Stiff soled shoes help transfer energy efficiently - so that when you push down with your leg it does more than just bend your shoe but really pushes on the pedals. If you don't have access to cycling shoes, then finding a shoe with a stiff sole is still a help.

Aero bars and wheels: If you are interested in doing many competitions and keeping track of times and placings, then these added bits of equipment become more essential. Aero bars increase the efficiency of your position substantially, lowering air resistance and times. They can add 1 mph or more to your speed on a flat road (which will translate to between 2 to 3 minutes savings over an hour time trial). Aero wheels dramatically decrease the air resistance of the bike, as a surprising amount of resistance comes from the spokes cutting through the air. They are not quite as dramatic as aero bars in their impact, but can make a difference of 1/2 to 1 mph, and sometimes more in the right wind conditions.

### **Basic Techniques**

Pedaling Circles: It is very effective to use your feet throughout the pedal stroke, not only pushing down, but also pulling back when the pedal is going through the bottom and pushing over the top. It also pays to feel as if you are pulling up when the pedal is moving up. In short, you want to be exerting as even a pressure as you can throughout the pedal stroke - and it helps to think of "pedaling circles." The main advantage of this is that it brings more muscle groups into play and keeps your legs from fighting each other. This takes practice and some active reminders.

Pedal Speed: When first on a bike, your natural tendency is to ride with about 60 to 80 revolutions of the pedals per minute. The most efficient pedal speed for most riders is between 90 and 110 rpm on a time trial, depending

on the terrain and the rider. This is something that you need to be aware of and to practice, so that eventually it becomes second nature. It will feel unnaturally fast at first.

Relaxed arms: Don't have a death grip on the handlebars, or ride with locked elbows. Your elbows should be bent and you should have a controlled grip. This will save you from exerting wasted energy, and will also help you to ride a straighter line. Locking your elbows leads small bumps in the road to bump throughout your body and translate back into small movements in the handlebars.

### **Training**

Anaerobic Threshold: This is the point of exertion at which your body is just able to keep the muscles with enough oxygen to keep operating at the current level. If you try to push harder you go into oxygen debt, where the muscles begin to ache and you start to gasp for air. In a time trial or triathlon, you want to keep your body operating as close to this level as you can without crossing it. If you have a heart rate monitor you can learn where your threshold is and keep track of where you are relative to it. Without one, you can learn to be aware of your exertion and guess where you are. You will find that it is easy to lose concentration in a triathlon or time trial, and you are likely slow down without even noticing it. This takes active thought.

Training will do (at least) three things for you. 1. You will raise your anaerobic threshold. As you train your heart becomes stronger and your blood chemistry changes to become more efficient at carrying oxygen and nutrients to the muscles. 2. You will speed your recovery rate. When you cross your anaerobic threshold and then ease up some it will take some time until your system comes back and can efficiently operate again. As you train more, it will take less time until you recover - which allows you to stick closer to your threshold without worrying about crossing it. 3. As you train you will be able to stay at a given level of exertion for a longer time. Obviously, one cannot maintain a given pace indefinitely, but training will help you maintain a given level for longer periods of time.

Endurance and Interval training: For triathlon and time trial types of events, you do not need to worry so much about sprint speed and top power output, but more about your anaerobic threshold and your endurance.

Training your endurance can be done with 1 or 2 long rides a week, where you are riding longer than (sometimes several times) the distance of the race.

These need not be rides where you are pushing hard, and can often be done at a moderate pace.

Interval training is where you push yourself to maximum exertion - reaching and then going slightly above your anaerobic threshold for some time (say 1 to 8 minutes per interval). Then you back off until you recover, and then go again. This training raises your threshold and speeds your recovery time. This type of training will dramatically improve your times. Longer intervals should be done for longer time trials, while very short intervals can increase peak power and sprinting ability. Sometimes I mix them up or just concentrate on longer or shorter ones, depending on an upcoming race. Also, when feeling too tired I back off. When doing longer intervals, of 2 miles or above, you will want to do fewer than if you are doing 1/2 mile intervals with a small incline. One way to tell when you have done enough is to notice when one interval is substantially slower than the previous one. Having a standard interval can help you track progress and see what works best for you. Knowing your times around a given lap can be used to monitor how your training is going, seeing which workouts have been effective, and knowing whether you are over-trained or fatigued. Interval training is physically and mentally tiring. It is very important have recovery days between such training sessions.

### **Other tips**

**Nutrition:** It is important to drink while on the bike. You lose moisture through evaporating sweat that you do not even notice. If you become dehydrated, you will slow down dramatically and possibly cramp. It helps to drink a combination of water and an energy drink or fruit juice. My favorite (and relatively cheap) option is cran-grape juice mixed 50/50 with water. If it is hot or dry out, then I mix in more water and consume more volume, and when it is cold I make it more fruit juice. A basic rule of thumb that I follow is one bottle per 30 to 45 minutes, and possibly more on very hot days. In any exertion of over 30 minutes it is fairly essential that you have at least some water and preferably something with nutrients in it. If you are riding for more than a couple of hours, taking solid food becomes essential and energy bars were a great invention.

**Warm up:** You might think that keeping a warm up to a minimum will save your energy for the coming event. You should however, make sure that you have already broken a sweat and that your body is ready to efficiently

get blood moving to your muscles. This won't use much energy. Also, there is a tendency for events to start out quickly with lots of nervous energy. You want to get moving well, but not zoom past your anaerobic threshold in the first two minutes. So start reasonably quickly, but smoothly move your exertion up so that you don't fly past your aerobic threshold.

Finally, a couple of obvious points: Start your training carefully with realistic goals in mind. Exercise and especially cycling can be dangerous, and so you should keep track of how your body is doing and be sure that the training you are setting out for is realistic and healthy and not too ambitious. Also, when doing things like interval training it is essential to find a quiet place where traffic (both car and pedestrian) is not a problem, and always keep track of the rules of the road and any traffic. Lastly, the point of all of this is to have fun! Training shouldn't be drudgery, but a fun time to release some energy and enjoy the outdoors.