TTIPS VOL. 19/22 – TECHNIQUES
PERFECTING YOUR PACELINE TECHNIQUE

What the cyclist says: "I'm carbo loading"

What the cyclists means: "Let's order another beer."

INTRODUCTION

I joined a group of KABC riders on Memorial Day for a ride in Georgia. The eight of us rode nearly 50 miles spending virtually the whole ride in a fast-moving pace line. We encountered a healthy headwind for nearly the entire second half of the ride. Riding in a pace line while changing the lead rider periodically was quite appropriate, helping us sustain our speed at an average likely much higher any single rider could have achieved over the same course.

I know I've written much about pace lines in the TTIPS series. Hopefully, you are interested in this topic no matter how fast, or in which KABC group you ride. You don't need to ride fast to be interested in pace line advantages. All cyclists encounter aerodynamic resistance at speeds exceeding 11 miles per hour, and pace lining is the most effective way for cooperative groups to achieve mutual aerodynamic efficiency. So, I'd like to talk a bit more about it.

In TTIPS volume 15 we covered pace line safety. In this volume I'd like to discuss techniques individuals can use in a pace line to ease their individual workload and be as efficient as possible. Let's go.

REVIEW

Eighty per cent of a bike rider's energy is expended overcoming aerodynamic resistance. As a quick review, in a pace line, the lead rider in the line is encountering the greatest amount of wind resistance compared to the following riders. In fact, in situations where the line is riding directly or nearly directly into the oncoming wind, the trailing riders enjoy about a 30 per cent advantage. Said another way, the trailing riders need to expend 30 per cent less energy to achieve the same speed as the lead rider. The whole point is that, unless you are the lead rider, you should be trying to minimize your power output to the greatest extent. In some cases, the advantage can be so great that trailing riders don't need to pedal continuously. Here are some ways to improve your technique to minimize power output.

WHAT TO DO WITH YOUR TORSO AND HEAD

With your hands on the brake hoods, bend your elbows and lower your torso to a degree that remains comfortable, safe, and allows you to operate the brake levers. While maintaining good forward sight lines, tuck your neck towards your chest.

WHAT TO DO WITH YOUR KNEES AND ELBOWS

If you are in the line and can coast (not pedal), put your pedals at the three and nine o'clock positions. When both knees are bent in this manner, and your leg(s) are not straightened, you decrease greatly the wind resistance of your legs. Simultaneously bring your knees and legs towards the centerline of the bike. When your body is tucked in this position, you are aerodynamically super-efficient.

WHAT TO DO WITH YOUR HANDS

If you are the lead rider, you should put your hands on the lower portion of the drop bars, as close to the upward curve as comfortable. Ideally you can reach and operate the brake levers and shifters in this position. This is the most aerodynamically efficient hand position because it bends your elbows and lowers your torso. The closer your torso is to being parallel to the ground, the more efficient.

If you are a trailing rider, and in close proximity to the rider in front of you, you should keep your hands on the hoods and at least on finger on each hand on the brakes. Professional riders (pros) often will grip the lower part of the drop bar when they are trailing riders, but we are not pros. Most of us have habituated our riding style to riding with hands on the hoods, and consequently are more proficient at bike handling, braking, and shifting in this position.

Most clubs prohibit participation of riders on Tri-bikes or Time Trial bikes in pace lines. If, however, a Tri-bike or Time Trial bike is in a paceline, the rider should never ride in the full aero position. These bikes can be difficult to maneuver quickly, and rarely, if ever, have brake levers on the aero bars.

HOW TO HANDLE BRAKING

None of us likes to bleed-off hard-earned speed through excessive braking. Yet, one of the challenges of riding in a pace line is that the line can accelerate and decelerate because of changing wind speed and direction, inclines and declines, a pedal-pause by the rider in front of you, etc. In such cases, you practically have no choice but to slow your bike while staying in the line.

One way to slow your bike in small amounts is through aerodynamic braking. You can do this by sitting up and/or moving your knees and arms outward, away from the bike's centerline into

the passing air flow in amounts sufficient to the amount needed to slow you minutely. Obviously, this won't work in extreme situations where hard braking is necessary. Here is a situation, however, commonly encountered during a ride. The line starts encounters gently declining road. Gravity causes slight acceleration. If the lead rider doesn't pedal faster, however, the following riders will start to gain speed because they are encountering less wind resistance than the lead rider. This is a good time to use aerodynamic braking. Aerodynamic braking on bikes is subtle, and not severe.

Aerodynamic braking can also be used on level ground. Sometimes riders in the line will start edging closer to the rider in front of them. In such cases, the gaining rider can move slightly left or right int the oncoming airflow without departing the line. The oncoming airflow often is sufficient to slow the rider and arrest the "gain" on the rider immediately in front.

Another way, a less subtle form of braking, is for riders to "feather" their brake levers. This is done by lightly tapping the brake levers so that there is only momentary contact of the braking surfaces. If more braking is needed, the rider can further feather the brakes by slightly engaging and dragging the brakes very lightly which can bleed-speed very effectively.

HOW TO DESCEND SAFELY

On gentle descents, it is prudent to increase distance between riders, using braking as describe above. On more severe descents in a group setting, such as downhills, it is prudent to break up the line, ride as individuals and reorganize in a pace line once on level terrain.

Okay riders, until next time,

Make Every Ride Epic,

Darryl