



## **Momentum**

To the bicycle racer, the dictionary definition of the word 'momentum' only serves a starting point. The true importance of momentum during a bike race is felt throughout one's entire body and mind. When momentum is on your side, it's a beautiful thing. The flowing pulse of momentum is much of what makes the bicycle such a wonderful machine. The closest thing we have to flying under our own power while on land. To begin at the beginning, let's look at the word.

Momentum: 1. Physics, The quantity of motion of a moving body, measured as a product of its mass and velocity. 2. The impetus gained by a moving object. 3. The impetus and driving force gained by the development of a process or course of events.

As a racer, you will never master momentum. If you are conscious of it, you will continue to hone your skills, but you will not master it. Compared to other individual performance sports, the bicycle racing community of coaches has lagged in its ability to even examine the subject. Cycling is so focused on training and feeding the body that it hasn't been able to move to the topic of momentum. Momentum is a far more interesting subject. Alpine ski racing and motorcycle racing are two examples of sports that have highly trained athletes separated entirely by their skills of momentum. In those sports, every turn, every entry and exit, every undulation in terrain is meaningful. It is studied meticulously day after day. I have seen bicycle racers, on the other hand, go week after week, year after year, wondering why they were not able to attain success at certain events. If motorcycle races are won and lost by skills of momentum, powered by gasoline engines, why is momentum not more important in bicycle racing, wherein we are our own motors? The answer is that it is just as important, only no one is talking about it.

Here's a secret: Very few riders corner their bicycles anywhere near the limit of adhesion. In criteriums, the ones that consistently do so are the ones that save energy and vie for the win. Adhesion is a different subject than momentum, but not exploring the limits of adhesion on a bicycle means that a lot of momentum has been left on the table, so to speak. Most crashes in a bicycle race are the result of sloppy riding and lack of attention from other racers. If a rider crashes on their own in a turn (very rare) it's usually the result of poor braking and/or choice of line. The same criterium that sees one rider pulling their hair out, heart rate maxed stuck in 80th position, finds another rider that has worked at maximizing momentum into and out of corners. This rider cruises from last position to first in a matter of laps at only 80% of their maximum, taking no undue risk. They are not crazy. They are simply confident, attentive, placing momentum in their favor.

Fighting momentum in a criterium is very costly. Some riders develop a hatred for criteriums, even though they may be among the strongest riders in the field. The stereotype of the thin climber comes to mind. Momentum does not come into play just in corners, though. The racer's effort to continually develop momentum skills in flat corners and on descents should never relent. The easiest place to start, however, is not laterally but horizontally. The first thing a rider notices when graduating to a higher level of racing is the amount of speed (momentum) that is carried through all types of terrain. Part of that is the presence of more powerful riders, mixed with a greater collective understanding of momentum. When a racer returns to a lower level race they realize immediately when a lack of momentum has created an opportunity. Is this because the rider is stronger from their previous racing, and therefore faster? That is easily debatable, and I would happily debate on the 'no' side.

The point of all of this is to become more aware of our surroundings in a race. We need to produce momentum where others are not, and be more prepared to match our opponents momentum when it is created. This can easily mean the difference between winning and even finishing a race at all. This

subject is at the very heart of racing, yet it is the least discussed. It's a skill that makes some 'naturals', but can be, must be, developed in every racer. To a professional racer, being back in their home city out on the local competitive ride is a joyous time. Mixed in with the Category 1-5's and juniors, everyone is fit from months of racing. The speeds on the climbs are high. Impressive, in fact. Then, suddenly, within view of each summit, the riders relax. To them, the climb was seemingly over. To the professional, this loss of momentum is as obvious as day or night. The other riders were not exhausted, they simply felt that the obstacle had been surmounted. The reality is that no climb, not even a subtle incline, is 'over' until a terminal velocity has been reached on the other side. Whether the other side is downhill or flat, the effort should not end until this terminal speed has been reached. Category 3's through juniors, listen up: You can win certain races by identifying terrain where simply keeping the same pressure on the pedals and not letting up will open large gaps between you and the rest of the field.

Experiment. Test your opponents throughout the race just by staying 'on' for a bit during a dead spot on the course. You may find the achilles heel of the race. While on a training ride on the course of US PRO Road Championship course in Philadelphia in 1992, I told my teammate Bart Bowen about a particular section of the course that I had realized the prior year was strangely 'dead'. It was a stretch of road that meandered along a park on the backside of the course. The road had a slight incline, maybe only 1 or 2 percent. The pavement was a little rougher than the rest of the course. Velcroish. There were a lot of shadows from tall trees, and it came right after a particularly difficult section of the race had been completed and riders were gathering themselves. For a rider like me, winning with a show of brute force was a rare occurrence. I had to make my living by staving off the obvious and finding gold where no one was looking. This spot, towards the end of a hard, hot day, would be the honey pot. Things sometimes work out to plan more for a teammate than for ones self. The next day, on the final large loop of the race, my small breakaway group was reeled in after 15 miles on our own. We were caught just as we were entering the honey pot. As if making a huge sigh of relief, the front group, now down to about 50, practically came to a standstill. Never slowing down, Bart simply stood on his gear for a dozen pedal strokes, sat down in the shadows, and by himself opened a massive gap in one mile. As I watched him grow smaller in the distance, I felt the group collapse into a deadly, lazy comfort. I smiled the smile that comes from knowing something that no one else knows. There were still 10 miles to go, but I knew they had been dealt their final blow. It was one of the beautiful moments that had been made not by raw strength, but simple momentum. In fact, it was the definition of the word at its best: The flowing form of a bicycle racer en route to victory.