Chris has always been an innovator. I've relied on his training methods for 20 years, and now even the busiest everyday cyclist can too.
– Lance Armstrong

THE Time-Crunched Cyclist

Fit, Fast, AND Powerful in 6 Hours a Week

Chris Carmichael
AND
Jim Rutberg

The Time-Crunched CYCLIST

Fit, Fast, and Powerful in 6 Hours a Week

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Bringing Endurance Training into the 21st Century

I'm a cyclist at my core, but these days my life doesn't revolve around my bike the way it did when I was 20. I'm a cyclist, but I'm also a father, husband, and business owner. I don't have endless hours to spend building up the massive endurance base that characterizes so many classic training programs. I don't have time to be the cyclist I was 30 years ago, and to be honest with you, I don't have any desire to be that guy again. My life is fuller—and more fulfilling—than it has ever been, and although I'm glad cycling is an important part of my life, I'm equally glad that it ranks behind my family and business in priority.

My current relationship with cycling is not unique; there are tens of thousands of cyclists in the United States who still love to ride but used to ride a lot more than they do now. Almost every cyclist I talk to over the age of 30 has some version of the same story. They all used to go out on epic 4-hour-plus rides on weekends and put in 15 to 20 hours of training on a weekly basis; many raced, and some even claim to have kicked butt. Then they got a real job, fell in love, bought a house, had kids, and so on. Cycling is still their passion and still takes up significant space

in the garage, but now the car is worth more than the bike on the roof (instead of the other way around), and the kids' soccer games and recitals take precedence over a long training ride or driving 3 hours each way to race a 1-hour criterium.

Our relationship with our sport may have changed, but our desire to be fit, fast, and powerful hasn't diminished. I hate being slow, especially because I know what it feels like to be fast. I hate getting dropped, because I know what it feels like to drive the pace and make others suffer. And I hate to see riders soft-pedaling ahead of me at the tops of rolling hills, because I used to be the one politely slowing down so my friends could keep up.

I love the feeling of being on top of the gear, spinning along effortlessly in a fast-moving pack. I love knowing I have the power to accelerate up a small hill, jump out of a corner, bridge a gap, or take a good pull through a strong headwind. I love how it feels to look around and know I have more left in the tank than some of the other riders, and that they're closer to their limits than I am to mine. I like being fit, fast, and powerful on the bike, and after talking to thousands of cyclists on my travels around the world, I know you do, too.

For the majority of working cyclists, your training program is the only thing *stopping* you from enjoying cycling the way you used to. Why? Because predominant theories in training are still stuck in the 1980s. Yes, we have dramatically improved the precision of training with power meters, heart rate monitors, and global positioning system (GPS) units, but the fundamental infrastructure of training hasn't changed in a long time. As athletes, our lifestyles have changed dramatically, but our approach to training has remained essentially the same.

The Time-Crunched Training Program (TCTP) is a new approach to training that takes a different path to endurance fitness. It works around busy schedules by systematically applying greater intensities to achieve bigger gains with fewer and shorter rides. But that doesn't mean it's a shortcut to fitness; there's no such thing. The workouts are strenuous and the workload is high. Because of that the benefits match and sometimes exceed those achieved through programs that call for twice the weekly training hours. If your ambition is to race at a high level, either again or for the first time, the TCTP will make you competitive in local

and regional races. If you just want to improve your strength and stamina on the bike, it will give you the fitness you need to push the pace at the local group ride and enjoy challenging rides. If you want to achieve high-performance fitness in the limited time you have available for training, it's time to embrace a new approach to endurance training.

Case Study: The Decline of Sterling Swaim

In the spring of 2000, I launched Carmichael Training Systems (CTS) to deliver world-class coaching to athletes of all abilities. The limitations of the classic endurance training model, and the benefits of the time-crunched model my coaching staff and I have developed, are clearly illustrated through the experiences of three CTS athletes, who coincidentally all work in the financial industry. Sterling Swaim, Taylor Carrington, and John Fallon are three cyclists who could show up at any group ride across the country and fit right in. They're not pros or former pros, they're not freakishly gifted in terms of VO_2max (maximum aerobic capacity), and they probably wouldn't be the strongest or the weakest riders in your local ride. In other words, they're good, and a very good representation of the modern American cyclist. We'll start with Sterling.

Sterling has lived in Winston-Salem, North Carolina, pretty much all his life, and he's been racing since he was 13 years old. As a young man he raced the junior version of Paris—Roubaix and rode the United States Cycling Federation (USCF) National Road and Criterium Championships as a junior and senior rider. Throughout his twenties, he raced as a Category (Cat.) III in criteriums and road races up and down the eastern seaboard and as far west as the Mississippi River. For years his brother (a Cat. I) and other racing buddies urged him to devote more time to training and move up to the Cat. II or Cat. I level, but Sterling had other priorities. He built a lucrative car-detailing business in his driveway to raise tuition money so he could attend the University of North Carolina—Greensboro at night and earned a degree in business administration. All the while, he continued training about 14 to 16 hours a week and went racing on weekends.

After graduation Sterling gave his car-detailing business to his brother, Ben, and went to work as an investment broker. Though the work was less backbreaking, the hours were longer, and he cut his training back to about 10 to 12 hours a week. Falling in love, getting married, buying a house, and having a daughter all followed in short order, and by 2007 Sterling was struggling to find 10 hours a week for training.

With his years of experience, Sterling had become accustomed to placing in the top 10 on a consistent basis in Cat. III criteriums and road races in the Southeast. But as his training time fell below 10 hours, racing became more difficult. He found himself in the middle of the pack, then the back. Where he used to push the pace on group rides, he now followed wheels. He started opting out of most of the long loops he used to enjoy with his brother and friends because he didn't want to deal with struggling to keep up or being the "slow guy." Cycling rapidly lost its appeal, his fitness declined, his weight went up, and his bikes started collecting more dust than miles.

The Promise of a New Paradigm

Sterling's case is remarkably common. Here's a guy who loves cycling, is pretty good at it, has been doing it for years, and would genuinely like to continue doing it for years to come. But being slow and out of shape isn't much fun, and cycling is too difficult a sport to bother with when it's not fun. I can't change the reality of Sterling's life to magically create more time for him to use for training. I can't—or at least I never would—ask him to give up time reading to and playing with his daughter so he can put in more time on the bike and race for $50 primes and $200 purses at regional criteriums. The value proposition (trade-off) there doesn't make any sense (rightfully so, I might add). Yet cycling will not regain its appeal for Sterling, or for thousands of cyclists facing similar value propositions, unless he's able to perform at a level that's worth the effort of training.

The classic endurance training model won't work for Sterling because he doesn't have enough time to go through the slow and gradual buildup

of deep aerobic fitness. He has 6 hours a week, up to 8 if he's lucky, and that's it. Under the old training paradigm, there is no way for him to be competitive in Cat. III criteriums.

The reason this section refers to a new paradigm and not just a new training program is that the changes I'm going to ask you to make go way beyond adding a new interval workout to your routine. For this to work—and it will—you have to be willing to rethink your overall approach to endurance training. When CTS coach Jim Rutberg suggested the TCTP to his longtime friend and former teammate, Sterling thought he was nuts. For someone who had been a bike racer for more than 15 years, the time-crunched program Rutberg wanted to put Sterling on didn't look like anything he'd done before. Though he was an investment broker, he had read numerous cycling training books and had subscriptions to *Bicycling*, *VeloNews*, and even *Winning* magazine back in the day, and Rutberg was suggesting he train in ways those trusted publications told him not to! Then again, Sterling missed being a strong cyclist and wasn't very happy being mediocre, so what did he have to lose?

Cyclists in the Carolinas are fortunate to have two significant blocks of criterium racing each year, one from May to June and the other from September to October. In the spring the traveling circus that is professional cycling swings through the Southeast for races like the Hanes Park Classic, the Dilworth Criterium, and the Athens Twilight Criterium. Then in the fall there are a bunch of local criteriums, leading up to the Carolina Classic in Greensboro, North Carolina, and the Greenville Cycling Classic near George Hincapie's adopted hometown of Greenville, South Carolina. There is some racing at other times in the year, but not as much, and nothing that attracts such large and strong fields of pros and amateurs.

Rutberg put Sterling on the TCTP six weeks before the start of the 2007 spring races in the Carolinas. He rode four times a week, never more than 7 hours total, raced four times in 8 weeks, and finished fourth, eighth, first, and third. In the only race he had entered the previous fall, he didn't even finish.

Purists will tell you the TCTP won't work, and some will even tell you it's dangerous. Well, I'm telling you it does work, I'll show you exactly

how and why it works, and it's no more dangerous than being a cyclist in the first place. What's more, it's based on sound science, has been proven effective by real athletes, and offers the opportunity of high-speed, high-power, full-throttle fun for cyclists who can't get there using antiquated training methods.

A Brief History of Training

Even though we can trace some theories of athletic training, like periodization, back to the ancient Greeks, the level of sophistication in training was very low until the middle of the 20th century. That's not to diminish the abilities or accomplishments of athletes like Major Taylor, Jesse Owens, Babe Ruth, and Jim Thorpe. They were great athletes in their time and would be great champions today as well. But early Olympians and professional athletes rose above their competitors based largely on natural talent and their ability to endure great punishment. Some trained for their sports, a few trained maniacally, and the best athletes were those who managed to survive and adapt to brutal training regimens that destroyed everyone else. With relatively little scientific knowledge of how and why the training worked, training methods came and went as athletes observed and copied the workouts used by each new champion. Coaches saw this and theorized that improvement was based on the load an athlete could handle (recovery was largely ignored), and subsequently they based the process of athlete recruitment on pushing relative beginners harder and harder, until only a handful were left standing.

On a side note, if you want to have an interesting (although ultimately pointless) discussion, ask a sports scientist or coach how much better the greatest athletes of the early 20th century could have been if they had been trained using present-day methods. In other words, how would Jesse Owens perform against Usain Bolt in a 200-meter race if Owens could take advantage of the technologies and training methods used today? How would Major Taylor perform against Chris Hoy on the velodrome? We'll never know for sure, but it's a good cocktail party question to get a sports scientist riled up.

Structured interval training started appearing in the 1930s, when German scientist Woldemar Gerschler refined the less formal but highly effective practices already used by the Swedes and Finns (inventors of "Fartlek" running, which used natural terrain to interject periods of intensity and recovery into long runs). Gerschler made intervals more intense, kept the recovery periods short, and even used heart rate to govern the intensity of efforts. If you're interested in reading more about training during this period, I recommend *The Perfect Mile*, by Neal Bascomb, which describes the training methods used by elite runners as they sought to become the first to run a mile in less than 4 minutes.

The science of training took significant steps forward after World War II, largely because of the cold war. Even though the basic idea of periodization—systematically changing the focus and workload of training to maximize the positive impact of overload and recovery on training adaptations—had been around in various forms for thousands of years, it gained more widespread acceptance after Tudor Bompa and other Eastern Bloc coaches started creating detailed systems for improving athletic performance and winning medals by the truckload. With the world's greatest armies in a perpetual standoff, the Olympics became both a real and a symbolic battleground between East and West. Right along with the arms race and the race for space was an ongoing battle to see who could win more Olympic medals. From 1945 to 1989 the space and arms races pushed technology ahead faster than at any previous period in human history, and the cold war fight for athletic supremacy also led to giant advances in sports science. As a result, by 1990 our understanding of the athlete's response to exercise, altitude, hydration, nutrition, and recovery had never been greater. There was still plenty left to learn, and there still is, but we know more about how the body adapts to training than ever before.

Unfortunately, with great advances came horrible abuses. Doping existed before World War II, but it was largely unscientific and often pretty bizarre (cigarettes and brandy before major mountain climbs?). Applying modern science to training led to great advances in our understanding of how the body performed and how performance could be enhanced. That knowledge was used for both good and bad. On the

positive side, structure was applied to training schedules to take advantage of the body's ability to adapt to alternating periods of stress and recovery. On the negative side, scientists also learned to create and use drugs to manipulate the body's adaptations to training. To make matters worse, it's almost impossible to completely separate the honest science from the science of the cheaters, because a lot of the same research was used to advance both legitimate and illegal methods for enhancing performance. For example, the same research that helped us understand the mechanism and benefits of altitude training also helped the cheaters devise new methods for blood doping. As long as there are athletes willing to cheat, there will be scientists and coaches working to pervert good science, and there will always be honest athletes, coaches, and agencies fighting against them. Doping is an ugly and unfortunate part of the history of sports science and training, so as much as I hate to waste ink on the subject, I'd be remiss to ignore it here. Now let's move on.

When I started training seriously in the 1970s, we had a basic understanding of interval training, but all we did was break down the different aspects of bike racing and train them individually. Monday was a rest day, Tuesday was sprinting, Wednesday was endurance, Thursday was climbing or a training race, Friday was a short spin, and then you raced on the weekend. If a race was particularly important, you rested a little more than usual during the preceding week. In the winter you used smaller gears and focused more on endurance, and maybe did some cyclocross racing. As amateurs, we did exactly what the pros did, but we rode fewer hours and did fewer intervals.

In the 1980s we started doing more lab testing. We were poked and prodded and informed of our VO_2max and lactate threshold values, but those numbers were largely useless outside the lab. By the mid-1980s you could use a heart rate monitor during your rides (although they were huge and not very accurate). Dr. Edmund Burke, a physiologist with the U.S. Cycling Team who later became a great mentor and friend of mine, was one of the first scientists to realize that endurance athletes could use heart rate ranges to target specific training adaptations. It was a big step forward because it allowed athletes to establish personal training intensities instead of relying on pace and perceived effort.

In the early 1990s, as heart rate monitors became widely available and heart rate training gained widespread acceptance, a new technology was being developed that would greatly increase the effectiveness and precision of cycling training. I think I first saw an SRM power meter in 1990 at the world championships in Japan, on the Germans' team time trial bikes. In 1993, I was the U.S. National Team coach and brought Lance Armstrong to Colorado Springs for testing immediately following his victory at the world championships. Working with a team that included U.S. Olympic Committee biomechanist Jeff Broker and sports scientists Ed Burke and Jay T. Kearney, we mounted a prototype wheel-based power meter from Look on Lance's bike and evaluated the aerodynamic advantages of different time trial positions. The next year, Dean Golich, who worked for me at USA Cycling and is now a CTS Premier coach, mounted SRMs on the bikes of U.S. National Team riders to study the power output of individual cyclists during the Tour DuPont.

Power meters finally provided the ability to use the power numbers derived from VO_2max and lactate threshold tests in everyday training out on the road. We developed individual power ranges to target specific training adaptations, then developed field tests to monitor and evaluate athletes' progress without having to go back into the lab. The science and technology were later pushed even further by Hunter Allen and Andrew Coggan when they developed Trainingpeaks software, which dramatically improved the ability to analyze the data from power files.

Despite the distance that training and technology have come since the end of World War II, however, the training programs used by most modern cyclists still don't meet their needs. That is because there's a fundamental problem with the classic training model for endurance cycling (including criteriums, cyclocross, mountain biking, and road racing).

The Classic Endurance Training Model

The classic endurance training model has always taken a top-down approach, meaning we have taken principles proven at the elite level and

modified them to the needs and constraints of average and novice athletes. This is where the idea of long-term base training, or foundation training, came from. For decades pro athletes have spent a significant portion of the fall and winter engaged in high-volume, low- to moderate-intensity training. This was followed by a gradual increase in intensity and the inclusion of some longer intervals at intensities around lactate threshold. Hard intervals and training races were then thrown into the mix in the four to eight weeks prior to racing. Once the racing season started, training volume and intensity varied according to the athlete's racing schedule, but racing itself provided a significant amount of the overall training stimulus. During the season, athletes cycled through a series of race-and-recover periods in which there was very little actual training on the days between competitions. Because alternating between high-intensity racing and easy recovery days can only sustain competitive fitness for about six to eight weeks, athletes would shift to a lighter racing schedule—or a series of second-tier events they were doing for training rather than results—while devoting more attention to endurance and lactate threshold training. Then it was back to the race-and-recover cycle for several weeks in an effort to get results, earn some prize money, and keep their jobs.

And so it went from March to October. After the final race of the season, we were all so tired that we tossed the bike into the garage and slept for a month. Then the process started all over again and we were ready to race by March. It was like that in the 1970s and it's like that today for many young men and women trying to make a living as bike racers.

Lance Armstrong's Impact on the Classic Endurance Training Model

My views on training had changed very little between the time when I was racing as an amateur in Europe in the 1970s and the day Lance Armstrong was diagnosed with testicular cancer in October 1996. Technology had improved, and so had my understanding of physiology, coaching, and training methods, but none of that had changed my fundamental approach to preparing athletes for competition. In terms

of workouts I was as old-school as they come; I pushed my athletes to their limits, and those who could adapt and grow stronger were the ones who stayed on the team, went to Europe, became Olympians, and then pros. Basically, I coached the way I had been coached, but with the benefit of hindsight it's clear there were major flaws in that method.

The problems really became apparent after Lance completed his cancer treatment and set his sights on returning to professional cycling. I set up a training program that was pretty light, compared to his precancer programs, but followed the same basic structure. It crushed him physically, and he didn't have the motivation to push through the efforts. The solution was to reduce the intensity of his interval training and focus on efforts that were slightly below his lactate threshold power output. A rider's lactate threshold marks his or her maximum sustainable effort level. You can complete efforts above this power output, but only for a limited time before you're forced to slow down.

Earlier in Lance's career, we had relied more heavily on very difficult intervals at intensities well above lactate threshold. At the time we believed it worked because those intense efforts generated a lot of lactate in his muscles and forced his body to improve its ability to buffer and process that lactate. As I'll explain later, the actual mechanism may have been a bit different. Either way, the result of the training was that his lab-measured power at lactate threshold increased. And he was winning some of the biggest races in the world, which was the ultimate confirmation that the training was effective.

What we learned during Lance's comeback was that the maximal efforts weren't as necessary as we thought. Longer, submaximal efforts at power outputs just below his lactate threshold elicited similar increases in lactate threshold power, and because the training intensity was lower, Lance could do more of this targeted training in a given week or month than he could using the older, harder method. Going a little bit easier actually made him stronger and faster. This training, coupled with the loss of significant muscle mass during his cancer treatment, enabled him to return to the top of professional cycling in the fall of 1998 with fourth-place finishes at the three-week Tour of Spain and both the road race and time trial events at the world

championships. The following July, he won the first of seven consecutive Tour de France titles.

Lance's focus on subthreshold interval work and higher cadence ranges on all terrains became the most enduring training innovations from his comeback period. The concepts were explained in detail in *The Lance Armstrong Performance Program* (Rodale, 2000) and later in *The Ultimate Ride* (Penguin, 2003), and are widely used by novice, amateur, and professional athletes and their coaches to this day. Now, lest you think I'm arrogant enough to think I'm the only one to figure out the value of this approach, many of the same concepts—especially the importance of submaximal efforts in improving sustainable power at lactate threshold—were discussed in books like *The Cyclist's Training Bible* by Joe Friel, *Serious Training for Endurance Athletes* by Rob Sleamaker and Ray Browning, *Serious Cycling* by Ed Burke, *High Performance Cycling* by Asker Jeukendrup, and later *Training and Racing with a Power Meter* by Hunter Allen and Andrew Coggan.

But perhaps Lance's greater impact on training was his level of specificity. In my opinion, Eddy Merckx will forever be regarded as the greatest cyclist who ever raced a bike. He won just about every race there was, more than once in many cases, and he won races from the earliest part of the spring to the latest events in the fall. His commitment to racing and winning throughout the season was shared by all professional cyclists of the time, and indeed by most riders well into the 1990s. Riders focused a bit more on particular races they wanted to win, but for the most part they raced full bore from Milan-San Remo in March through the Giro di Lombardia in October. Lance changed that when he decided to focus his entire season on winning the Tour de France.

Instead of racing week in and week out through the spring, Lance's program focused on training first and using select races for training. There's no way to completely replicate the physical and psychological demands of racing in training, so difficult races like Paris–Nice and the Dauphiné Libéré were typically included in his Tour de France preparation. However, relative to other yellow jersey contenders, he often had fewer days of racing in his legs before starting the Tour in July. And most years from 1999 to 2005, Lance's season was essentially over once he left the Champs-Élysées. He focused on being his best at the Tour de France

and winning the race every time he said he would. It was an enormously successful strategy, and now we see groups of pro riders specializing in different portions of the season—the spring classics, the grand tours, the fall classics and world championships, and so on.

Adapting Pro-Level Training for Amateurs

As I mentioned previously, I launched CTS to deliver world-class coaching to athletes of all abilities. I was frustrated by the gap between the level of expertise available to elite athletes and the relatively archaic training methods that were being used by novice cyclists and amateur racers. Over the next 10 years I coached, educated coaches, hosted camps and clinics, wrote books and countless articles, and built a multimillion-dollar coaching business. Along the way, CTS raised awareness about the benefits of coaching and helped give rise to an industry. In 2000 there were fewer than 200 licensed USA Cycling coaches. As demand grew from the cycling community, so did the number of coaches, and by 2008 there were more than 1,400.

There are dozens of reasons why the coaching industry thrived and grew, and I believe the subtle shift to submaximal training intensities was an important factor. It made training easier and therefore more pleasant, yet still prepared athletes for great personal performances. Initially it was pretty simple for my coaches and me to adapt the principles I'd been using with Lance Armstrong to athletes who were training for one-third to one-half of his weekly training hours. If Lance was riding 24 hours a week and completing four 30-minute climbing efforts, then it was absolutely reasonable to prescribe three 15-minute climbing efforts to a Cat. III rider who was training 12 hours a week. The relative intensities were the same, expressed as an identical percentage of each rider's lactate threshold power output (if the rider had access to a lab) or average power from the CTS Field Test (the performance test used for the workouts and training programs in this book; see Chapter 3). Although heart rate intensities are less accurate than power measurements, we also derived them for athletes who did not have access to power meters.

Effective training comes down to applying a workload to an athlete that is both specific to his or her activity and goal appropriate for that person's current levels of fitness and fatigue. The load has to be enough to stimulate a training response from the body, but not so great that it creates more fatigue than the body can cope with. And you have to give the body enough recovery time to replenish energy stores and adapt to the applied stress. Physically, the principal differences between training an elite athlete and an amateur are the workloads necessary to cause positive adaptations, the workloads the athletes can handle, and the time the athletes have available to train.

From 2000 to 2008, CTS coaches worked with thousands of cyclists, and more than 95 percent of them were novices, recreational riders, and amateur competitors. In the early years, through about 2004, the average CTS athlete was training about 10 to 12 hours a week. The riders who raced Cat. II or Cat. III or fast masters categories were closer to 12 to 16 hours a week, and some of the recreational riders and century riders were at about 8 to 10 hours a week. They were all being coached using the same method I was using with Lance Armstrong, essentially an updated version of the classic endurance training model. It worked beautifully, and amateur athletes experienced incredible gains in their sustainable power outputs and race performances. They were finishing centuries faster than ever before, winning criteriums and road races left and right, leaving their riding buddies behind on climbs, and having more fun on their bikes than they had in years.

The biggest complaint we heard in those days was that the training was too easy. We had to have the same conversation with almost every athlete who signed up for coaching. My coaches would build the first few weeks of the athlete's schedule, then the athlete would log onto our Web site to see it and immediately call to let the coach know he or she could handle more. The intensity was too low, the intervals weren't long enough, the rides weren't long enough, and there were far too many rest days in the week. Yes, we'd say, we know it looks different than what you've done for the past 5 years (which was based on 30-year-old science), but try this for 6 weeks and then tell us if you want to go back to the way you trained before.

With rare exceptions, the coaching program adapted straight from what I was doing with Lance worked for novices, recreational riders, and amateur racers, and athletes were ecstatic about the results. As time went on, however, I started hearing about athletes for whom the program wasn't working. At first they were few and far between, and it was tempting to dismiss them as "uncoachable" (a term I despise, and a circumstance I don't believe in) or just within that small percentage of people you can never satisfy. But if that were true, I reasoned, the number—or at least percentage—of those athletes should remain somewhat constant. If my coaching methodology worked 95 percent of the time, it should always work 95 percent of the time.

But toward the end of 2004, I started to see an increase in the percentage of athletes who were achieving results that were below my expectations. Many of the athletes were perfectly happy with their results, but their coaches expressed concern about what they saw as diminishing returns. The athletes were still making progress, but not as much, and the gains were more difficult to come by.

It took some digging to find the common link among these athletes, but as it turned out, it was remarkably simple. The problem was time.

Endurance Training at the Crossroads

The common factor shared by athletes who were experiencing subpar results from their coaching programs was a lack of training time. In almost every case I examined, the athletes in question were training fewer than 8 hours a week, some as few as 5. Many had training schedules that called for 10 to 12 hours and weren't able to complete all the training sessions because of their hectic work and family schedules. Others had worked with their coaches to build 6- or 8-hour schedules and were following their programs to the letter, but were still not seeing results.

Time and intensity add up to workload, and all other things being equal, too little training time means there's an insufficient training stimulus. That's when it hit me. We had found the point at which the classic endurance training model breaks down. Once you get below

8 hours of training a week, the old tried-and-true methods derived from pro-level athletes no longer work. With the kind of workouts and interval intensities typically used in classically based programs, there's simply not enough time to generate the workload necessary to overload the body's systems and force them to adapt and grow stronger. Athletes stop improving and stagnate instead. And after a few months of training at a level that's insufficient to move them forward, they get frustrated, lose their motivation, complete halfhearted workouts, and subsequently experience a decline in fitness and performance.

We were seeing an increase in the percentage of people struggling to make progress, because Lance's success at the Tour de France was making cycling and coaching more attractive to athletes, and a growing number of the athletes signing up for coaching were leading extremely busy lives. At the same time, athletes who had been working with CTS coaches for two or three years were experiencing changes in their lifestyles: marriage, kids, promotions, mortgages, and so on.

As I saw it, there were two choices: Write off a highly motivated population of athletes because they weren't able to commit enough time to fit into the classic endurance training model, or change the model. Since the only time I ever encouraged athletes to stop exercising was when their physicians said their sport or activity level might kill them, I chose to change the model.

Overview of the Time-Crunched Training Program

By the time Jim Rutberg started preparing Sterling Swaim for his spring 2007 racing goals, my coaches and I had taken the loose concept of "time-crunched" training and refined it into a structured program that could be effectively used by a wide variety of athletes. Before stepping through the details and the science of how it works, I want to give you a broad overview of the program.

The TCTP consists of a maximum of four workouts per week. There's some latitude in terms of scheduling, but generally it comes down to a combination of the following:

- Two to three weekday workouts, each lasting 60 to 90 minutes
- One to two weekend rides, each lasting 1 to 3 hours

Three-hour rides are rare in the program, and there's nothing longer than that. Weekly training volume will be 6 hours, with the option to increase workout duration and accumulate up to 8 hours.

In the absence of time, intensity is the key to performance. Remember, workload is a product of time and intensity, so if you want to keep the workload constant as time decreases, then intensity must increase. For a training program to work on fewer than 8 hours a week, you pretty much have to focus entirely on intensity. Make no mistake: The workouts in this program are hard. Very hard. You will be performing some efforts just below your lactate threshold power output and some right at it, but many efforts will be much more difficult, at maximum intensity.

The TCTP is a high-intensity, low-volume training program that produces the fitness and power necessary to push the pace in local group rides and to be competitive in local and regional criteriums, cross-country and short-track mountain bike races, and cyclocross races. If you're not a competitive cyclist but want to be stronger than you are right now, this program will give you the fitness to fully enjoy weekend rides, bike tours, and cycling camps.

However, there are limits to what you're going to be able to accomplish on fewer than 8 hours of training per week. For instance, with this program you can prepare to have a good day on a century ride, but it's not likely to be the fastest 100 miles you've ever ridden. And although the program lets Sterling race for the win, there's a reason he's focusing on the spring and fall series instead of trying to win races throughout the entire season. The TCTP will not be the perfect solution for every cyclist, and I have included an important section in Chapter 2 called "Terms and Conditions" to help you decide whether this program is for you.

Placing your family and career ahead of your cycling goals is a wise choice for pretty much anyone who has either a real career or a family, and pretty much the only choice if you have both. But focusing on your career and your family doesn't change the fact that you're a cyclist, nor does it invalidate your desire to be fit, fast, and powerful. Simply put, a reduction in training time doesn't automatically doom you to back-of-the-pack

finishes or another season of fruitless suffering. If you're willing to work hard with the limited time you have, and if you're ready to let go of antiquated training methods and try something new, then it's time to get off your butt and retake your rightful place at the front of the pack.