PERFORMANCE CYCLING CONDITIONING

A Newsletter Dedicated to Improving Cyclists

Volume 15, Number 1

Exploring the Six Factors or Principles of Developing Athletes for Optimal Performance: Environment (competitive and training)

In a previous issue in this column, we presented the intervention principles of developing athletes for optimal performance. We will examine Environment in this issue. Applying these principles is limited to things the coach can control or, to a lesser degree, influence. It is also important to know the limitation of things coaches cannot control.

#6-Environment

Environment is divided into two aspects, competitive and training. In the competitive environment the coach has very little if any control. Lance Armstrong dropped out of the Tour de Ireland due to heavy rain. The U.S. National Soccer Team has never beaten the Mexican team in Mexico City at their altitude of 7,000+ feet. In volleyball, the University of Nebraska plays their home matches in a packed house with fans almost on the floor resulting in an almost unbeatable atmosphere. Baseball players have trouble tracking fly balls in the Metro Dome, home of the Minnesota Twins. For the coach there's little s/he can do other than deal with the competitive environment.

Training Environment

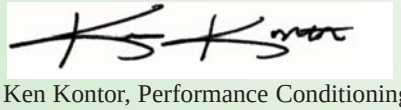
The training environment is a different story. In certain circumstances coaches can adapt an athlete by acclimating to altitude. Options may include oxygen tents, bringing in the team early (where practical) to get used to altitude (and smog), which was done with the U.S. Olympic team in Beijing to name two. The coach can create almost any training environment to challenge the athletes not to panic when conditions aren't ideal. Coaches have been known to reduce the size of a goal mouth to make goal scoring more difficult. I've heard of a strength coach who kept his weight room temperature above 85 degrees when the athletes trained-don't ask me why. If it's agility day and it's raining outside, the coach can bring the players into the gym to run drills and get the most out of quality training without slipping and sliding all over with the chance of pulling something.

These examples of controlling training environment are specific to two basic concepts: one is to challenge (smaller goal mouths example), the other to ensure quality (coming in from the rain and mud example). Controlling training environment can be a tricky business. Mental and physical periodization must be considered with sound recovery practices as part of the environment. If an athlete is constantly facing adversity, s/he may become discouraged and lose heart. If an athlete is under constant fatigue, over reaching can turn into overtraining and potential injury or illness can result. It's a fine line for coaches to walk. On the other hand, if everything is Utopian, traveling on the road can create doubt in an athlete's mind and confidence can be lost.

Here are some training tips you can apply to properly control your athletes' training environment to reach optimal performance.

1. Don't use conditioning as punishment (wrong message of what conditioning is all about).
2. Make adversity fun and then challenging (get the athletes to buy in).
3. Be sure the environment is free of potential injury (medicine balls lying on the floor).
4. Follow your periodization plan (know when to go hard and when to recover).
5. Don't make a big deal out of a hostile environment or travel (get into a routine and follow it).

Something to think about.

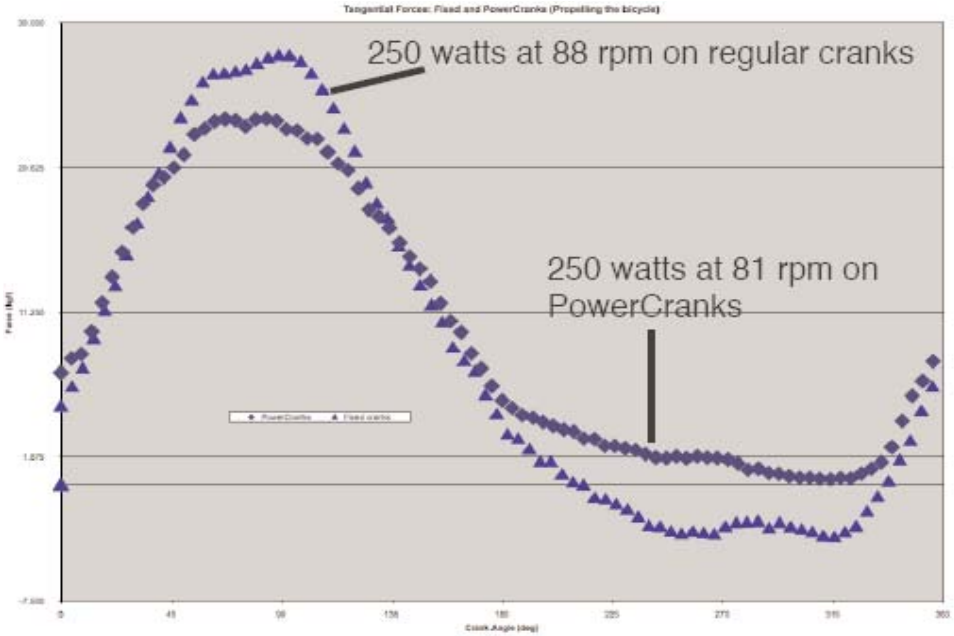


Ken Kontor, Performance Conditioning, Inc.

WHAT'S INSIDE?

Do you want to improve pedaling effectiveness for your clients?

Below is a graph of actual tangential pedal forces around the entire pedaling circle for one person riding at 250 watts comparing regular cranks to PowerCranks. On regular cranks he is riding at 88 rpm and on the PowerCranks he is riding at 81 rpm.



Note that there are zero negative forces on the upstroke when riding PowerCranks. Removing this inefficiency allows the rider to push much less on the downstroke to maintain the same power. Here he is required to push less despite riding at a 10% slower cadence. Think what he could do with his power if he just pushed as hard as he is capable!

This rider reverts back to a more standard pedaling style on regular cranks because he hasn't been on the Power- Cranks long enough to fully retrain his unconscious pedalincoordination. He reverts because he hasn't fully retrained his unconscious coordination and his cranks allow him to do so. It is possible to retrain the nervous system to pedal in the PowerCranks fashion, but it takes time and effort to do so and it is almost impossible to do so using regular cranks. This graph helps explain the 10% improvement in cycling efficiency documented by Luttrell* that came after equivalent training with PowerCranks compared to regular cranks.

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Eliminate the negative

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*MD Luttrell and JA Potteiger, Effects of Short-Term Training Using PowerCranks on Cardiovascular Fitness and Cycling Efficiency, The Journal of Strength and Conditioning Research: Vol 17, No. 4, pp 785-791

PERFORMANCE CYCLING CONDITIONING
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COACHING BUSINE$$
Breaking Down the Cost Barrier

Joe Friel, Training Bible Coaching

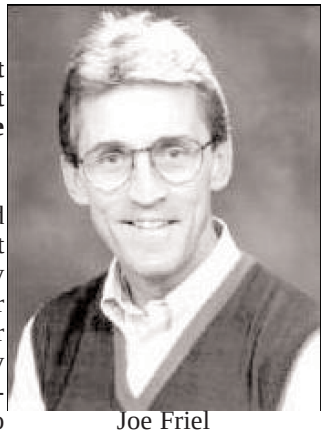
*In a recent Spokesmail, USACCA Director of Coaching Sam Callan commented on a recent membership survey. One of the most common reasons respondents gave for not hiring a coach is the cost involved (this seems to be independent of the current economic situation). This interview will address this topic with one of the most successful coaches in the cycling business. We hope this information can help you to eliminate the cost barrier for hiring a cycling coach.**-Ken Kontor, Performance Conditioning Cycling***

BEG INT XTP MSR MTB **PC: Please give a general overview. How can a coach command a fair price?**

JF: I have been dealing with this issue for over 23 years. When I first started coaching it was for free and it was a way a lot of coaches got started back then. I started charging a small fee just to get people to leave me alone because I had another job as my primary income source. Interestingly, this caused more people to ask for my coaching services and I increased my fees because of it. By the early 1990s I was able to quit my day job and devote all my time to coaching.

I have met many coaches through the years who got into the coaching business the same way I did-as a hobby. Unfortunately, some never got beyond seeing it as a hobby and it did not last very long. I encourage coaches to approach coaching as if they were a lawyer, physician or accountant. They should charge a fee commensurate with the services they provide with their knowledge, experience and expertise. In the last few years, I have seen coaches take this approach and charge fees that are more realistic than they were ten years ago.

There still exists a problem with coaches who downplay their experience, skills and knowledge. I try to motivate the coaches I know to charge a higher fee and see what happens. They discover that the majority of people will pay the higher fee. However, many in this current economic situation cannot afford coaches so this requires coaches to become more creative. I think that the coaches who have done a good job before the economy turned south should be fine as long as they continue to provide excellent services. In my opinion, providing good service is the key. There are always people who are willing to pay for excellent service. If the coach provides mediocre service, they will never be able to charge fees that are commensurate with their experience, skills and knowledge. The important thing is to establish what type of services will be provided for the fees charged.


Joe Friel

PC: What is considered "excellent service" and how is it provided? Is it best to provide it as a total package or offered more à la carte?

JF: In our business, we established five levels of service. We know that some people cannot afford high-quality level services. Right now our lower price services are doing better than our higher levels. If I were a coach on my own and had only me to attract customers, I would do anything I could to drum up business. This means I would offer any service anybody would want. I would customize and design

See COACHING BUSINE$$, page 12

Symbols to Success
Articles preceded by

BGN indicates author believes content is for beginning-level athletes with training age of 0 to 2 years.

INT indicates author believes content is for sport (intermediate)-level athletes with training age of 2 to 4 years.

XTP indicates author believes content is for expert-level athletes with training age of over 4 years.

MSR indicates author believes content is for master-level athletes over 30 years of age.

MTB indicates author believes content is for mountain biking.
NOTE: Training age year is continuous year-round conditioning.

R following articles indicates the content has been reviewed by the editorial board.

O following articles indicates the content is the sole opinion of the author.

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Creating and Nurturing a Youth Cycling Pipeline Part 3: Youth Programming

Ralph Frazier and Kelli Rogan

Frazier Cycling's Atlanta-based Junior Development Program was developed by Ralph Frazier and Kelli Rogan. Ralph has over 35 years of cycling experience as an endurance and marathon racer and a coach. Kelli has 10 years experience of coaching juniors and masters as well as an impressive track and race racing career. Frazier Cycling has a mission to develop the next generation of cyclists with an appreciation for the sport, life-long physical fitness, sportsmanship, teamwork and commitment. As the southeast's largest junior development program, they have been recognized by USA Cycling News as "an excellent model for other junior development initiatives"…focusing on "character as much as athletic ability." The 2008 Frazier Cycling Juniors team holds 9 state championships and 9 national medals, including 2 national championship titles.

Kelli Rogan

Ralph Frazier

BEGIN This is our third article in the series Creating and nurturing a Youth Cycling Pipeline. The topic is Youth Programming: How to write a youth program and evolve it from individual to team concepts. The Frazier Cycling Youth Cycling Team is, of course, made up of individuals; however, only a very few of a youth cyclist's training rides and workouts are individually based - by enlarge the rides, workouts, and practices are based on a group training program. To many readers and coaches, this may seem contrary to what is considered to be the best training for an individual. Many individuals may not be satisfied with a training program unless it is tailored for them. Indeed, you may hear claims of the "cookie cutter" training program will not work because it is not personalized to accommodate the differences among individual's physiology. This is likely true. Many adult cyclists, elite and non-elite, would be unhappy with a pure group training program. But when you are coaching youths and juniors, you are not dealing with little adults. When creating a training program for youths and juniors, you must keep this fact in mind. The obvious objective of a training program is to address the needs and wants of the individual. I suppose the suggestion that creating a training program that targets a group may be contradictory to that objective; but there are important considerations that must be taken into account when training youths and juniors.

In our previous articles, Starting a Program and Youth Development, we emphasized the importance of competency improvement, physical development, and social considerations for youth cyclists. These three ingredients must be given the highest regard when creating a training program for youths. We have found that all team members share a connection and they thrive on peer associations. It is our observation that having a peer age group and having fun are crucial for most youth cyclists to progress in this sport. As a result, creating a successful training program must address these elements. As a result, a training program must incorporate the social needs of the youth cyclist. Of course the obvious objectives must be addressed, too. Youth cyclists are not little adults, so while the training program must be challenging, it must promote continued interest, yield positive results (measurable improvements and successful outcomes), provides fun with a peer group.

Here are a few considerations when creating a training program for youths:

1. The training program must correlate with growth, maturity, and physical adaptations of the youth cyclist.
2. The training program must incorporate a high concentration of competency and skill learning.
3. The training program must accommodate fun and friendships.
4. The training program must address year round fitness.
5. The training plan must include specificity for developing cycling muscles. Training that increases the ability for the muscles to adapt to changes in speed, cadence, and power over long periods of time - endurance training is paramount for this type of development.
6. The training program must provide ample rest and recovery must be incorporated - active recovery can include skill and balance training.
7. The training program must provide increases in intensity throughout the competitive season. Age and training years dictate the amount and rate of adding intensity to the youth cyclist's routine (refer to item #1).
8. The training program must consider the youth cyclist's family situation.
9. The training program must consider the youth cyclist's school situation.
10. The training program must provide a gradual increase in volume from beginning of the competitive season until the start of school. The school year dictates training volume as much as season goals.
11. The training program must consider the youth cyclist's other activities.

Goals Setting

The first priority for existing team members is goal setting. At a weekly practice before the beginning of our new competitive season, we ask each youth cyclist to list three goals for the upcoming year and for at least two goals for the next three years. We encourage the kids to involve their parents. It is important to involve their parents because these goals easily become a family commitment. Be sure that the parents are aware that they must be involved with helping set their child's season goals.

For existing team members, we have historical references along with the necessary assessment data for each individual in advance of establishing the upcoming seasons' goals. The kids are very familiar with the process, their abilities and they have become proficient at goal setting.

Goal setting:
2 - 3 years: Long term perspective
Season: Short term leading to the long term

Examples of Season Goals

16-year-old boy	15-year-old girl	11-year-old boy
1. Category 2	**1.** 21-22mph 3.2 mile ITT	**1.** 9-minute 3.2-mile ITT
2. Top 10 @ Nationals	**2.** Help Brittney @ Nationals	**2.** Help the team in a race
3. 27 mph 3.2-mile ITT	**3.** Improve bike handling skills	**3.** Go to Nationals

Primarily, we concentrate on the season goals. The season goals define the individual's current needs and the appropriate training program. The long term goals help define the individual's future and possibly our training program's future growth.

Age Group	Beginner	Weekly training workouts	Intermediate	Weekly training workouts	Advanced	Weekly training workouts
10-12	Level 1	2 – 3	Level 1 & 2	3 – 5	Level 2	4 – 6
13-14	Level 1 & 2	2 – 3	Level 2	4 – 6	Level 2 & 3	5 – 8
15-16	Level 1 & 2	2 – 3	Level 2 & 3	4 – 6	Level 2 & 3	6 – 9
17-18	Level 1 & 2	2 – 3	Level 2 & 3	4 – 6	Level 3	6 – 9

The Foundation of the Training Program

The foundation of the training programs are based on season goals, long term goals, competency scores, and testing results. Using the season goals from each individual junior along with the considerations listed at the beginning of this article, we have found that grouping team members with similar attributes such as physical capabilities, competency, and social requirements has been a successful method for implementing our training program. For most of the rides and most of the time during practices, we will group kids with similar attributes. However for the best results, we have found that routinely regrouping kids with different attributes produces a number of benefits. We call this method of grouping: blending.

Benefits of blending:
- Promotes team role models and leadership
- Leads to team unity
- Experienced riders to demonstrate teamwork and cooperation
- Natural transfer of discipline, work ethic, knowledge, and example
- Establishes teamwork and discipline

After six years of coaching youth cyclists, collecting their goals, measuring their physical development, and assessing competency, we have created three training program options:
- Primary Program Option - minimal practices and rides for competitive training - typically ages 10 - 12
- Intermediate Program Option - practices and rides for serious competitive training - typically ages 13 - 14, initial National Team members
- Advanced Program Option - practices and rides for ultimate competitive training - veteran National Team and ages 15 - 18

These training programs were created as a result of individual goal evaluation and adopting the considerations listed at the beginning of this article. The content of these programs has changed over time, but the basic concept has remained intact. Programming continuously evolves based on the collection of individual's inputs and results. All of these elements influence changes to our group training programs.

Although growth and maturity vary among individuals, we observed there are three distinct categories for each Age Group: Beginners, Intermediate, and Advanced. We described these categories in Series 2, Youth Development:

The typical number of training years for:
- Beginner is less than 2.
- Intermediate is 2 to 3 years.
- Advanced is more than 3 years.

Youth Development is directly influences how a training plan should be organized for the youth cyclist. Competency and physical development are extremely important elements that guide the training program. But just as important are the youth's goals. Regardless of how the youth scores compared to peers for age and gender with regards to competency and physical development, the youth's personal goals and personality goals can dictate the pace of the program. A driven individual with lesser competency and physical development will require a more demanding program than a lesser motivated individual who may exhibit high competency and mature development.

Here is an example of the number of weekly training workouts for each Age Group/Category.

Periodic monitoring of each youth's competency and physical progress (such as power testing or individual time trials) is necessary to acquire feedback that the training program is succeeding. At the same time, period monitoring of each youth's goals is just as important. These ingredients help coaches to make proper adjustments to the training.

Group Training Program Assignment

After obtaining the youth's goals (with the parents' approval), we agree to the type of group training program:

Generally, we set up a training plan for the team that covers two months. During the two month period, we assess changes/progress with the individuals' competency, physical development, goals, etc. We make necessary adjustments based on these changes for the individuals and the entire group.

Here is a chart (on page 4) that shows an example of individual training rides, practices, and testing (individual time trials - ITT). You will notice considerable overlaps and some differences among the team members. The overlapping practices do not necessarily indicate these individuals are in the same groups during the practices; however, it does not preclude these individuals from blending within groups on various occasions.

By looking at this chart, you may not be able to discern the training program for each individual. There are many cross over workouts, rides, and practices between training programs for age groups and training years. Primary Program members, Intermediate Program members, and Advance Training Program members frequently attended the same rides, practices, and workouts. An obvious reason for this overlap is to provide the appropriate training, but a secondary reason is to disguise any hierarchy that may be perceived by the youth cyclist or parents.

New Members - Goal setting and programming

To this point, I have discussed how we create and assign group training program for existing members. The process is slightly different for new members, but ultimately new members fold in with the existing team members.

Whenever a new youth joins our team, goal setting is not initially performed. Prior to goal setting, we conduct competency and physical development assessments. Additionally, we evaluate the interest level of the new member.

Often with new members, our coaches make suggestions to the youth cyclist and parents with regards to goals. Most times new members are unfamiliar with the sport and what are reasonable goals. As coaches, the new members and parents rely on our expertise in this area to get started. We will assign the new members to various groups until they are acclimated. Normally, these new members will be started in the Primary Program, but occasionally, we will agree to start them at the Intermediate level. After a few weeks with the team, the kids and parents readily pick up the details and they will develop an understanding of where they fit and then we ask for their goals with the same process that is used by existing members. **O**

More Information Please!

Contact the authors about their "Coaching Juniors - The Team Approach" clinic and manual. www.fraziercycling.com, 770-513-8640.

	Mon.	Tue.		Wed.[1]		Thu.		Fri.	Sat.			Sun.		
Name	Hill Repeats	LT-20	Laps	LT-20	6:30	LT-20	Gary's	LT-18	FB 50	11:30	3:30	FB 50	30 Miler	3:30
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Youth 2	R				R					R	R		O	R
Youth 3	O		O		R					R	R	R		R
Youth 4	O		O		R					R	R	R		R
Youth 5	R				R					R	R		O	R
Youth 6	R	R	R	O	R[4]	R	R	O	R	R		R		
Youth 7	R		R	R	R[4]		R	R	R	R		R		
Youth 8	R	R	R	O	R[4]	R	R	O	R	R		R		
Youth 9	R		R	R	R[4]		R	R	R	R		R		
Youth 10	R				R					R	R	R[3]		R
Youth 11	R		R	O	R[4]			O		R	R	R		R
Youth 12	R		R		R[4]			O		R	R	R		R
Youth 13	R		O		R[4]			O	R	R		O		
Youth 14	R		O		R[4]			O	O	R	R	O		
Youth 15	R		R	R	R[4]		O	R	R	R		R		
Youth 16	R		R	R	R[4]		R	R	R	R		O		R
Youth 17	R	R	R	O	R[4]	R	R	O	R	R		R		
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Youth 28	R		R	O	R[4]		O	O	R	R	O			
Youth 29	R		R	O	R[4]		O	O	R	R		R		
Youth 30	R				R					R	R	R[3]		R
Youth 31	R[2]		R[2]		R[2]		R[2]		R	R	R	O		O

R = Required
O = Optional

[1]WEDNESDAY 5/27, 6/17: 3.2 -mile ITT - **Everyone is required to attend. Parking: 2399 Lawrenceville Highway, Lawrenceville, GA**

[2]Ride or practice alone

[3]or 30-miler on Sunday

[4]or motor pacing

Elite
CYCLING
Performance Digest

FROM THE SUMMIT

Coaching Quick Reference Guide

Common Injury Conditions for Cyclist
Achilles Tendonitis

Bernard Condevaux, PT, CSCS, Select Physical Therapy, Colorado Springs/Denver


Bernard Condevaux

Bernard has been directly involved in cycling since 1992, providing medical coverage at local road and mountain bike races through BRAC and the Avalanche Off-Road series. He also provided coverage at the Cyclocross State and National Championships in Golden, CO in 1992. Bernard worked his first Mountain Bike World Championship in Métabief, France with the New Zealand national team and then worked in staging at the 1994 Tour DuPont. At the 1994 MTB Worlds, he worked for the French national team as a team liaison, assistant trainer and translator.

In 1995, Bernard created a junior development program and traveled around the country speaking to juniors and their parents about training, nutrition, goal-setting and establishing a training schedule. He began a two-year stint as soigneur for Team Dirt at the Redlands Classic in 1995 and later that year joined USA Cycling for the TB Worlds at Kirchzarten, Germany. He has worked with USAC at every MTB Worlds since. In 2003, Bernard was a member of the USAC Pan Am Games team in the Dominican Republic and the 2007 Pan Am Games in Rio de Janeiro. He was a staff member at the 2004 and 2006 Cyclocross World Championships. He has also worked with the U-23 national team since 2004 and was PT/soigneur for the MTB team at the 2004 Olympics in Athens and all cycling disciplines at the 2008 Olympics in Beijing.

The following is some of the information presented at the 2008 USA Cycling Coaching Summit last October. ***[Ed.]***

The rupture of the Achilles tendon is considered a traumatic, horrible injury. Therefore, it is important to avoid any problems with this area, including tendonitis. There are several causes of Achilles tendonitis and the most common is repetitively overstretching the tendon. Another cause is cold weather riding. The rule of thumb I use is that if the temperature is less than 60 degrees Fahrenheit, the area should be covered. If you have a history of problems, the minimum should increase to 70 degrees. It is important to thoroughly warm up this large tendon because it will tighten when it is cold and/or not properly warmed up. This can lead to potential tendonitis/tendinosis due to the tissue's decreased ability to respond to the stress of cycling. Other causes include poor pedaling mechanics and bike fit issues.

Ice and anti-inflammatory drugs are recommended when treating Achilles tendonitis on an acute basis with one exception-cortisone via injection. This intervention strategy should be avoided at all costs because cortisone weakens the tendon, in a manner similar to unwinding the strands of a rope. With the extreme forces cycling places on this tendon, the cortisone-a cortico-steroid-increases the potential to further weaken the tendon and could lead to a rupture.

Taping is an easy thing to do. Someone who has an irritated or inflamed Achilles tendon will often stand with the tendon visibly bowed to the inside (convex medially). A very simple taping technique that pulls the tendon laterally (to the outside) can correct this situation. I have had people do this simple taping technique and ride immediately without pain. It is a technique described by Brain Mulligan, a Physiotherapist from New Zealand. There are also kinesiotape techniques that can be utilized if access to a trained clinician is available.

Bike Fit Strategies

There are several strategies that a coach can use to help alleviate the problem. The first would be to adjust the saddle height either higher or lower, depending on what is observed during pedaling. Look to see if your athlete is dropping their heels. If they ride with dropped heels, they are in essence raising their seat height (unless it was fit for that pedaling style). Pedaling heels up essentially lowers the saddle unless the fit took that into account. There may be a leg length difference (LLD) in which the athlete has one side longer than the other. On the long side, the athlete is going to drop the heel more, while riding more heel up on the short side. This creates an imbalance as the body tries to self-correct this postural stress. The intervention strategies for LLD or hyperpronation (flat arch) are shims or orthotics to support the arch and/or balance the LLD. A strategy for Achilles pain without a LLD is moving the cleat back (or moving the foot forward on the pedal), thus decreasing the effective lever arm at the ankle.

See ACHILLES TENDONITIS, page 6

Biochemistry and its Application to Cycling Training

Brian Adams, (CAT 1 RACER) PT, MS, OCS, CSCS

USA Cycling Continuing Education Unit (CEU) #37

This program is designed to augment the clinics and seminars offered by USA Cycling and other organizations such as American College of Sports Medicine (ACSM) or National Strength and Conditioning Association (NSCA). Each test in Performance Conditioning for Cycling is eligible for 0.1 CEU in category. A maximum of 0.5 CEU from PCC self-tests can be accumulated in a calendar year toward re-certification.

Instructions: Photocopy the answer sheet and CEU Application Form. Read the article and choose the answer that best answers the question. In order to pass you must answer 6 of 8 questions correctly. A candidate will be allowed one "retry" submitting answers a second time. Complete the CEU answer sheet and application form and return with a check for $15.00, made payable to USA Cycling, to cover the cost of processing.

CEU Value=.1 unit

Overview of Sports Biochemistry

BEG INT XTP MSR MTB

A whole is the sum of its parts. Often times one has to understand many individual components to fully comprehend the whole. If we take the human body, and more specifically the body of an athlete, and reduce it down to its smallest components, we come up with one topic: biochemistry. Every action, every movement, every thought of every second of every day can be boiled down to the chemistry of life. And it is this chemistry that we are constantly trying to influence, coerce and even manipulate through our daily training program, rest cycles and eating habits.

The Basics

Biochemistry is a very broad and very complicated topic. The goal of this article is to simply introduce the reader to some of the most important and prominent components of biochemistry, and their role in the athletic body. This overview article will touch on these topics. It is by no means comprehensive, yet each of these topics will be covered in more depth in subsequent articles. It is a secondary goal of this article to motivate the reader to look into topics which may be new or foreign to their current understanding.

The three most crucial biochemistry topics to discuss for endurance athletes are the energy pathways, blood composition and muscular activities. All of these play an important role in the success of the athlete, and are three of the most open to manipulation and adaptation.

In general, body responds to the stress that is placed upon it. When an athlete trains for long distance competition, their body realizes the stress and demands, and responds accordingly. Their body develops increased blood networks to deliver oxygen-rich blood faster, develops energy pathways to utilize stored fat for energy, and learns to use specific oxidative muscle fibers more efficiently. When a power athlete trains for short duration, high power events, their body develops the capacity to produce an enormous amount of power in a short amount of time, which requires short burst energy stored within the muscle. Their muscles are capable of functioning with high levels of lactic acid and a diminished oxygen supply throughout their event. Both of these types of athletes are trained and conditioned for their specific event. But these differences and adaptations all begin to take shape on a biochemical level. The daily routines, the training times and intensities; their diet and nutritional demands; sleep cycles. All of these "global" things are used to address the simplest mechanisms, the basic structures…the biochemistry of athletics.

Energy Pathways

When talking about endurance, power and recovery in athletics, a basic knowledge base of energy pathways is crucial. What happens during the transition between aerobic and anaerobic work? And how does our body cope with these changes? Where does the energy come from?

The basic principle in energy production is a process known as glycolysis (glycolytic pathway), which basically means "sugar splitting". It is the process of taking one 6-carbon glucose molecule and splitting it into a pair of 3-carbon pyruvate molecules. This process takes place within every living cell and produces part of the necessary adenosine tri-phosphate (ATP) for the cell to function. (The ATP is essentially the energy "currency" in biochemistry, the more of it you have, the more energy that is available for your cells to utilize.) This is an anaerobic

■ Achilles Tendonitis

continued from Page 5

Training and Exercise Strategies

As previously stated, the coach may need to address decreasing the athlete's heel drop on the down stroke (stretching the tendon). The next recommendation is to limit the number of hills the athlete rides for training. When a cyclist climbs, they typically will slide back in the saddle and create more leverage, increasing the torque/ load and stressing the Achilles tendon more. I have already stressed the importance of dressing properly in cold weather and to completely warm-up no matter what the temperature is. The final thing to do is stretch after training because tissue stretches better when warm. I am a big proponent of a thorough stretch after the work out. The athlete can do some light stretching right after warm up to improve ride performance, but this does not have the same effectiveness as post-ride stretching.

Achilles tendonitis is something that can be avoided by the coach working closely with the athlete. If the coach has some doubt about what to do, it is always a good idea to consult a physical therapist to ensure that the intervention method makes sense. It is better to have a third set of eyes beyond the athlete and the coach. If you deal with the situation early and do not wait, you will save a lot of anxiety and headaches down the road. The rule of thumb is: don't tough it out-take care of it. ●

Photo Credit: Long Photography

Contact the author at
bernard.condevaux@selectmedicalcorp.com.

process, which means that it takes place without the presence of oxygen.

For power athletes, this may be the energy pathway of choice, in conjunction with another short-term energy pathway, the phospho-creatine pathway. When needed, this 2 part molecule is split in half to provide a bit of energy, with a long enough duration to throw a shot-put or javelin. It is used and refreshed, kind of like a short-burst turbo, with a time period anywhere between 5-20 seconds, depending on the athlete, and is normally used in conjunction with the glycolytic pathway for sustained energy.

Although these are quite capable energy pathways, they are relatively inefficient and in rather short supply. But if certain criteria are met, then there is a better way to create energy via the ATP molecules: the oxidative phosphorylation pathway. This is the process that takes place within the mitochondrion of the cell, which is affectionately known as the "cellular powerhouse" because of all the ATP it can produce. But there is a catch: this is an aerobic process, meaning that there has to be an adequate amount of oxygen within the cell for the process to continue.

So why is oxygen so important? Technically, the role of oxygen is to act as a hydrogen ion acceptor, which is a waste product, or cellular "exhaust" in energy production. Oxygen binds with hydrogen to make water, which is easily utilized or expelled from the tissue. If hydrogen accumulates in the cell or the blood, it alters the pH of the tissue, making it more acidic. When the tissue becomes more acidic, it can no longer function normally, and begins to falter or shut down.

If the level of cellular oxygen falls below an athlete's necessary level (every athlete is different), say during a bout of heavy exercise when the demand for energy is high, problems occur. First, the process of oxidative phosphorylation begins to shut down, dramatically decreasing the energy production of the cell, 4 ATP anaerobic vs. 32 ATP via oxidative phosphorylation! Secondly, the pooling of pyruvic acid increases…which brings forth the dreaded lactic acid!

Lactic acid has actually developed a bad rap. Yes, it is associated with the burning sensation in muscles, and is a benchmark molecule that says your muscles are working harder than the energy systems can keep up with. But in reality, lactic acid is our friend. Allow me to explain. Without the conversion of pyruvic acid to lactic acid, glycolysis would quickly grind to a halt, and then the muscles would go into complete failure and seize up. At least with this process of converting one acid into another, the muscles can continue to function, even if it is under some duress and quite painful!

So how exactly happens to lactic acid in the tissue? Some lactic acid can undergo a local conversion right there in the tissue, in which it is converted back to pyruvate. But under heavy accumulation, lactic acid is shuttled away from the cells and tissue and into the blood, with the final destination being within the liver. Once there, it undergoes a complicated process called the Cori cycle to convert the lactic acid back into glucose. Then this glucose is either converted to glycogen and stored in the liver, or readmitted into the blood to balance the blood-glucose levels.

Now all of these processes are regulated and controlled by enzymes as well as chemoreceptors and higher brain centers. And a good training plan plays a vital role in your ability to utilize the energy pathways to their fullest. At different work loads, heart rates and cadences, an athlete taps into these pathways throughout different types of training. Most coaches will talk about lactate threshold and integrate that threshold into a specific training program, often utilizing a heart rate monitor in conjunction with a power tap or specific cadence/speed/gear ratios. By using a completely custom training program, the athlete is able to not just train specifically for their needs, but also train more efficiently by removing more variables.

One thing that also comes into play with an athletes lactate threshold is also their lactate tolerance. This can be mental as well as physical. Can they endure the pain that the lactate creates? And can their tissues still function, still create energy, and still create power to complete the task at hand? All of these thresholds and tolerances are negotiable. They can be manipulated. The can be pushed to a higher level. Not just by training harder, but by training smarter.

Blood

The blood is the superhighway that connects all of our physiological systems together, and is how all of the necessary nutrients are delivered in a timely manner.

At the biochemical level, there are a few key ingredients that are worth mentioning. First, the red blood cells (RBC's), also called erythrocytes. At their core is a ferrous (iron) based molecule called hemoglobin, which is the oxygen carrying component of the RBC. So it is obvious that "healthy blood" that helps to deliver oxygen starts on a biochemical level, with the components that help to build RBC's. Essential nutrients include folate, zinc, Vitamins B6 and B12, and Vitamin C. Not that by taking these nutrients in mass quantities will give an athlete an added advantage (termed an "Ergogenic aide"), rather it keeps an athlete from reaching a nutritionally depleted state.

Along with blood is the pathway in which it is transported: the vascular system. One of the most important and distinguishing points is the concept of neovascularization. When an endurance cyclist trains, his body realizes that there is constant stimulus to the brain saying "hey, there is a large demand for blood flow to the lower extremities!" The body responds by building a more vast network of arteries, veins and the very small capillaries. The great part about neovascularization is that you never really loose these new vessels. So each year after year, with training upon training, this cyclist's legs will be inundated with a massive network of highly efficient vessels.

Endocrine

The endocrine system, put simply, is the controlled release of hormones and enzymes that dictate or influence just about every chemical reaction in the body. The release of hormones is usually stimulus-response, or is prompted by some neural input. An example of stimulus would be an increase of sugar in the blood after a meal, resulting in the release of insulin to facilitate diffusion of sugar into the necessary tissues.

Other hormones and enzymes act in response to a certain "circadian rhythm", which is the normal 24 hr cycle that the body goes through. This includes sleep cycles, the prompting of eating, drinking, etc. At the start of the day, when we awake to an alarm or the sun shining in our windows, there is a response from higher brain centers to begin releasing these "factors" that increase our heart rate, breathing rate, level of arousal, and even our level of hunger. Our body begins to anticipate breakfast, or that first cup of coffee, and prepares the mouth, stomach, even the blood for this influx of nutrients. This response will even take place whether we wake up or not. Sleep in a few hours extra, and you will notice a significant difference in the "normal morning response" that you may be used to. These are the same rhythms that are so deeply affected when an athlete has to travel to another time zone, especially when traveling trans-continental. The dreaded "jet-lag" is truly nothing more than a disrupted circadian rhythm.

So let's take this topic a bit farther. If a pro cyclist typically races at 3pm in the afternoon, eventually their body becomes used to having to put out large efforts, mobilize energy pathways, and prepare itself for competition at this time. But imagine if this same cyclist only trains at 7am in the morning, and typically naps from 2-3pm on a daily basis. Well, this manipulation of his circadian rhythm would be enough to dimin-

ish his potential results, racing during a time of day in which his body is preparing to sleep and rebuild. This is anther reason why, in cycling, nocturnal (evening) races can be so hard on the body. Over weeks, months and years of preparation, the body just isn't used to going hard at night. Which brings us to the point that based on circadian rhythms, it makes sense for an athlete to prepare themselves for their optimal race condition. For this example, training from 3-6pm, during the most probably time for racing, and then eating and to bed earlier than what would seem like an optimal schedule.

In conjunction with this cycle would be the simple concept of training order: training your body, fueling it with optimal nutrients for regeneration (amino acids, carbohydrates, water) and then allowing it to rebuild. This order works so well because the body typically rebuilds during sleep, at which point there is a significantly larger amount of growth hormone and other anabolic (building) factors released, facilitating tissue repair and growth. So the optimal schedule would be for an athlete to train during their most probable race times, eat an optimal meal directly after, and then indulge in a brief nap or rest period to allow for growth and adaptation.

Neuro-muscular

Our nerves connect us with the world. They provide feedback and provide the pathways for our brain to have control over every action in the body. And more importantly in athletics, nerves connect the athlete's mind to their body and their brain to their muscles.

The basic concept in muscle firing starts in the brain. In an athlete, there is a well choreographed firing and relaxation of different muscles and muscle fibers. This firing controls balance, movement, power…everything that goes into athletic competition. Once the brain decides what muscles it wants to fire, it sends an impulse that travels though the central nervous system (brain to the spinal cord) and then out the peripheral nervous system. The impulse then flows down the nerve until it reaches the neuro-muscular junction (aka motor endplate). It is here that the electrical impulse turns chemical, releasing the neurotransmitter acetylcholine. This causes a chain of events that in a flash will produce a graded contraction within the muscle fiber/bundle. But the importance of this electro-chemical reaction is that there are so many sequential steps that can be influenced or affected by a change in the cellular chemistry, the pH, the oxygen levels, or simply the supply of ATP.

This is a very sensitive process, as it is with most biochemical processes. Even a 1% loss in hydration can affect biochemical performance. Or on a hot day, when an athlete is doing their best to avoid dehydration, drinking plain cool water may actually be of detriment. Of all the sweat they are producing, there is a considerable amount of micronutrients such as sodium, calcium, magnesium, nitrogen, and iron. If sweat and water loss is viewed simply as plain water, then over the time of the event or training the athlete is loosing a vital balance of nutrients, which biochemicaly spells disaster. That is why, as of late, the market for sports drinks boasting specific osmolarities (concentration of nutrients) within their drink mixes. A concentration higher than that of the body (hypertonic) could actually draw fluid out of the tissues, causing more dehydration. A concentration the same as that of the body (isotonic) should prove to be ideal…yet given the concept of osmosis, where fluid moves from a source of low concentration to higher concentration, this may decrease absorption. The trend has changed now to that of drink mixes of a bit lower concentration (hypotonic) in solution for optimal absorption of adequate nutrients. But as with all products and marketing, it is always best to go to the literature and research to see what is actually being supported.

Training

For the above topics, and in regards to training, there are many theories for many different sports and athletes. But without exception, the best plan is to start with a qualified coach and utilize a program that incorporates periodization training, and while paying close attention to heart rate and power output. It will be very important to match the type of competition with the type of training for the athlete. Almost of more importance is recognizing the specific deficits that the athlete has, like difficulty performing at their lactate threshold, or producing adequate peak power.

For cyclist, there can be as many physiological deficits as there are events. A track sprinter may have difficulty with his aerobic conditioning; a 24 hour endurance racer may have weakness with their peak power output. A developing road racer may have difficulties with sustaining high speeds/power. Each of these can be attributed to a physiological or biochemical deficiency. A track racer who normally functions in short burst efforts may need to ride multiple hours at a lower heart rate to stimulate the beta oxidation/electron transport pathways to utilize more fat for energy. The endurance racer who rides consistent and moderate tempo may need to integrate more short distance max tempo or sprint/climb efforts into their daily workouts. And to work on high speed and endurance power, the developing rider may choose to add an hour of motor-pacing (riding in the draft of a motor scooter or car in a controlled environment) at race pace to the end of a normal training ride.

For more obvious example, if we look at the training and racing style of multi-time Tour de France winner Lance Armstrong, and compare this to his style from five years ago, two things stand out: 1) he has fashioned himself into a very powerful climber with a almost abnormally high cadence, and 2) he has turned one of his weaknesses, the individual time trial, into one of his most notable strengths. By realizing his physiological limitations with the help of some very gifted trainers, coaches and scientists, Lance (and company) found a way of boosting the amount of watts he could produce while maintaining the same heart rate. He accomplished this by utilizing his almost trade mark cadence to rely on his aerobic power rather than anaerobic power, thus tapping into a more vast energy supply.

In a practical demonstration, the amount of power (watts) it takes to lift a 400 weight 1 foot off the ground is the same whether you lift it all at once (1 x 400) or one pound 400 times (400 x 1). But it is obvious that the balance between the number of repetitions and the weight of each repetition is important. Pedaling cadence is essentially repetition on a bike. If Lance were to climb at the same speed while pedaling at 50 rpm rather than 100 rpm, he would essentially be forced into utilizing his limited anaerobic energy pathways, limiting the duration of his efforts. He has proven that this is a physiologically (and biochemically) a favorable riding style for the type of racing he focuses on…but this style of riding did not (and does not!) happen over night. Listen to the stories Lance tells, and you will see that he has spent many hours racing and training to develop this technique, and to allow his body to grow with it.

By realizing the effects that specific training has on specific biochemical processes, it is possible to focus training programs in order to optimize an athlete's conditioning. Although training a weakness is probably the most difficult thing to do mentally and physically for an athlete, by understanding what they are trying to accomplish they are often times more willing to endure the discomfort during training for the ultimate gain. And with the watchful eye and helping hand of a skilled trainer or coach, the successful results. **O**

Instructions: Read the article and choose the answer that best answers the question.
In order to receive .1 CEU you must answer

6 of 8 questions correctly. A candidate will be allowed one "retry" submitting answers a second time.

1. What are the three crucial biochemistry topics to discuss or address for the endurance cyclist?
A. Energy pathways, pedal mechanics and muscular activities
B. Energy pathways, blood composition and muscular activities
C. Energy pathways, lung response and muscular activities
D. Energy elimination, blood composition and neuromuscular activities

2. The basic principle in energy production is a process known as glycolysis. This process takes place within every living cell and produces part of the necessary adenosine tri-phosphate (ATP) for the cell to function. What happens in this process on the molecular level?
A. It takes one 6-carbon glucose molecule and splits it into a pair of 3-carbon pyruvate molecules.
B. It takes one 4-carbon glucose molecule and splits it into a pair of 2-carbon pyruvate molecules.
C. It takes one 6-nitrogen glucose molecule and splits it into a pair of 3-nitrogen pyruvate molecules.
D. It takes one 12-carbon glucose molecule and splits it into a pair of 6-carbon pyruvate molecules.

3. What is oxygen's role within the mitochondrion of the cell?
A. To act as a nitrogen acceptor
B. To act as a hydrogen inhibitor
C. To act as a nitrogen inhibitor
D. To act as a hydrogen ion acceptor

4. What happens to lactic acid that cannot be converted to pyruvate at the cellular level?
A. It is shuttled away from the cells and tissue to the blood; the final destination is within the kidneys and then converted back into glucose.
B. It is shuttled away from the cells and tissue to the blood; the final destination is within the liver and then converted back into fat.
C. It is shuttled away from the cells and tissue to the blood; the final destination is within the liver and then converted back into glucose.
D. It is shuttled away from the cells and tissue to the blood; the final destination is within the liver and then converted back into water.

5. What is the function of the endocrine system?
A. The uncontrolled release of hormones and enzymes that dictate or influence most chemical reactions in the body
B. The controlled release of hormones and glucose that dictate or influence most chemical reactions in the body
C. The controlled release of glucose and enzymes that dictate or influence most chemical reactions in the body
D. The controlled release of hormones and enzymes that dictate or influence most chemical reactions in the body

6. The importance of this electrochemical reaction is that there are many sequential steps that can be influenced or affected by a change in the cellular chemistry. These include:
A. The pH, oxygen levels and supply of ATP
B. The pH, glucose levels and supply of ATP
C. The pH, lactic acid levels and supply of ATP
D. The pH, hydrogen levels and supply of ATP

7. The term osmolarities refers to:
A. Concentration of water
B. Concentration of nutrients
C. Concentration of lactic acid
D. Concentration of oxygen

8. How would you focus a training program to accommodate a specific biochemical process in order to optimize an athlete's conditioning?

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Cautious Consideration with Hip Flexor Training

Lisa Bartels, DPT, Omaha Sports Center, Omaha, NE

Lisa Bartels

Lisa was a member of the University of Nebraska volleyball team from 1995-1997. She was introduced to the science of Postural Restoration as a patient under the care of Ron Hruska. She had suffered from long-standing injuries sustained during her collegiate volleyball career and found success with the treatment techniques she learned at the Hruska Clinic and later received from the Postural Restoration Institute. Lisa returned to practice physical therapy at the Hruska Clinic Restorative Physical Therapy Services in Lincoln, Nebraska after completing her Doctorate of Physical Therapy from the University of Nebraska Medical Center in Omaha. Lisa is a member of the American Physical Therapy Association.

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Many cycling conditioning professionals emphasize strengthening of the hip flexors, as part of their training programs, to enhance the explosive propulsion of the legs forward in activities such as defensive digging and jumping. But what about the role hip flexors play in resting position and alignment of the pelvis and lumbar spine? Hip flexors are one of several muscular groups that function as primary stabilizers of the trunk. In other words, they help to control posture and produce torque about the trunk for movement. If the hip flexors become overly short and tight secondary to sport demands and/or overtraining, they can assist in pulling the pelvis into an anterior tilt and the lower spine into hyperextension.

Anterior pelvic tilt is a very common postural discord issue in competitive athletes. The reason for this is because the hip flexors are generally already very strong in athletes simply because of functional gait. Functional gait whether it be sprinting upright or reciprocally pushing and pulling bike pedals, demands forward motion in the sagittal plane, and the hip flexor group has powerful leverage to generate forward motion in the sagittal plane. Unfortunately, if an athlete remains in an anterior pelvic tilt position, neuromuscular adaptation occurs and the muscles around the spine and pelvis begin to function erroneously and various pain patterns can begin to emerge. To understand this concept a brief and general description of the anatomy and function of the hip flexors is needed.

The primary hip flexors are the psoas, iliacus, tensor fascia latae (TFL), and rectus femoris. All of these muscles run in front of, or anterior to the hip joint and attach distally on the femur or thigh. It is easy to visualize the mechanical advantage these muscles possess to flex the hip by rotating the femur up in a fixed pelvis, in other words knee towards chest movement. All of these muscles with the exception of the psoas attach proximally on the pelvis. The psoas has attachments along the last or 12th thoracic vertebrae and all five lumbar vertebrae including all intervertebral discs (Figure 1). The pelvis will therefore rotate anteriorly if the legs are fixed to the ground during hip flexor contraction. Anterior tilt of the pelvis equates with increased extension or lordosis at the lumbar spine because of the pull of the psoas on the spine and the force couple between the hip flexors and the back extensors.

Maintaining balanced movement and a neutral position of the pelvis is dependent upon synergistic muscle activity. For example, when the hip flexors engage, muscles must be co-contracting in an opposite direction to neutralize or oppose the anterior pelvic tilt potential of the hip flexor muscles. In an acquired position of anterior pelvic tilt, this synergistic muscle activity will be lost because the length tension relationships of paired lumbopelvic musculature are now altered. Lumbo-pelvic musculature such as the hamstrings, glutes, and adductors lose their optimal mechanical advantage to oppose anterior pelvic tilt, and the hip flexors become more and more utilized, not only for sagittal plane motion, but for hip rotation as well. For

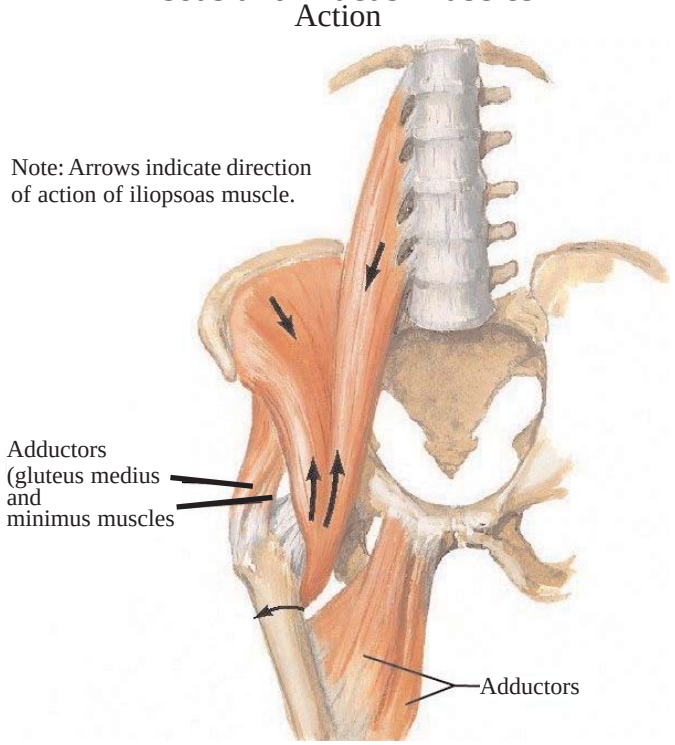

Figure 1

example, the TFL has the mechanical advantage to assist with hip internal rotation and hip abduction. The gluteus medius also functions in this capacity. But if anterior pelvic tilt is acquired, the altered position of the gluteus medius makes it ineffective to generate effective force and the TFL continues functioning unopposed. This can dramatically alter the force couples around the hips and knees. Another example is the psoas, which in addition to producing hip flexion torque also has the mechanical advantage to assist with hip external rotation. The gluteus maximus also functions as a hip external rotator, but it can't effectively oppose the psoas when the pelvis is in anterior pelvic tilt.

There is a relatively simple solution to preventing overuse and adaptive shortening of the hip flexors in cyclists. Incorporate training strategies that facilitate posterior pelvic rotation into workouts when these athletes are not on their bikes. When they are cycling emphasizing pushing down on the pedal, rather then pulling up does help to control activity in the hip flexors. Hamstrings, hip adductors, and glutes are all muscles that produce muscular torque about the pelvis in the direction of posterior rotation; therefore they inhibit the hip flexors. Figures 2, 3, and 4 are just some of the activities the Postural Restoration Institute™ uses with athletes to facilitate posterior pelvic rotation. Some of these can easily be implemented prior and post bike training. Figures 5 and 6 are stretching techniques that can be utilized after inhibition techniques, so when the stretch is being applied, the muscle is relatively relaxed and will more easily lengthen.

In conclusion, hip flexor training does not necessarily need to be avoided, but it is beneficial to understand the negative influence this muscle group can have on the resting position of the pelvis and spine. Athletes will be less prone to injury if training activities that inhibit the hip flexors are integrated into their workouts. O

More Information Please! Contact Lisa at lbartels@lovemyback.com

Acknowledgement Figure 1: *Taken from Netter F. The Netter Presenter, 2009 Elsevier Inc.*

Figure 2

1. Stand away from a wall.
2. Squat down until your knees are maximally bent.
3. Reach forward with your hands as you attempt to maintain your bodyweight through your heels not your toes. Your back should be rounded and relaxed.
4. Keeping your hands reaching forward and your back rounded, slowly begin to raise your bottom up by straightening your knees as you push through your heels.
5. Continue to stand up as your back stays maximally rounded. Once you are upright, your knees should still be slightly bent.
6. Relax and repeat 4 more times.

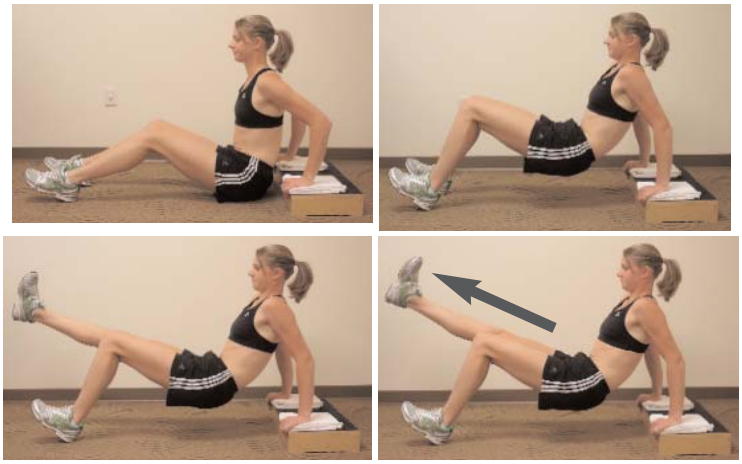

Figure 3

1. Place both of your palms on a 3-4 inch block and place your feet directly in front of you.
2. Pull your shoulder blades down and together.
3. Dig both of your heels into the floor and push down with your arms lifting your hips off the floor. You should feel the muscles on the back of your thighs and shoulder blades engage.
4. Once your hips are in the air, round your back by tucking your bottom up.
5. Continue to dig both of your heels into the floor as you move your hips slightly forward or away from the block.
6. Keeping your hips forward and your shoulders pulled together, pick your right foot off the floor. You should feel the back of your left thigh engage.
7. Hold this position while you take 4-5 deep breaths in through your nose and out through your mouth.
8. Relax and repeat 4 more times.

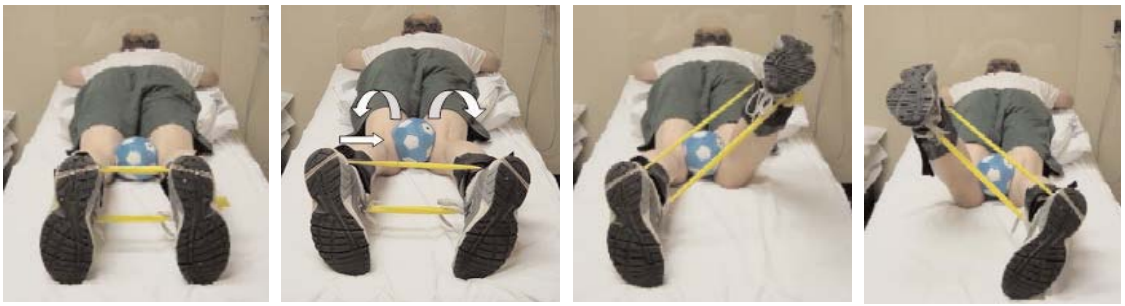

Figure 4

1. Place 3 to 5lb ankle weights on each ankle. Place a band around ankles, below the ankle weights.
2. Lie on your stomach with pillows placed underneath you.
3. Place a 5-inch ball between your knees and squeeze.
4. Pull back your right ankle towards the outside of your right hip. Your left leg should remain on the mat. You should feel your right outside hip engage.
5. Hold this position while you take 4-5 deep breaths in through your nose and out through your mouth.
6. Slowly lower your right leg as you simultaneously pull back your ankle towards your left outside hip. You should feel your left outside hip engage.
7. Hold this position while you take 4-5 deep breaths in through your nose and out through your mouth.
8. Continue this sequence until you have completed 5 reps on each leg holding each position for 4-5 breaths in and out.

Figure 5

1. Kneel on a pillow with your right knee.
2. Bend your left knee and hip and place your foot out in front of you.
3. Rotate your right ankle out so that your right heel is towards the outside of your right hip.
4. Place your hands on your hips and perform a posterior pelvic tilt by tucking your bottom in.
5. Maintaining a pelvic tilt, glide forward with your hips until you feel a stretch in the front of your right thigh.
6. Hold this position while you take 4-5 deep breaths in through your nose and out through your mouth.
7. Relax and repeat 4 more times.

Figure 6

1. Lie on your back on an elevated surface with your left knee bent to your chest (hands grasped behind thigh) and right knee bent with your foot resting on the table.
2. Keeping a firm grip on your left thigh, lower your right leg over the elevated surface.
3. Press your right thigh into the table and bring your right heel back towards you by bending your knee. You should feel a stretch on the front of your right thigh.
4. Hold this position while you take 4-5 deep breaths in through your nose and out through your mouth.
5. Relax and repeat 4 more times.

■ Coaching Busine$$

continued from Page 1

it to fit the client's needs and then negotiate a price for that level of service. It could be simply talking to an athlete once a week with a cell phone consultation all the way up to attending races and acting as their assistant by coaching at the races, and everything in between.

PC: What is the correlation of pricing and results? Do you do the tried-and-true program, retest and then reprogram if there is a marked improvement?

JF: This is a touchy question, but it has some merit. The important point here is to be selective to whom you offer this because their goals may not be obtainable. I see this often as people come to me with expectations well beyond where they are at a specific point in time. What they usually want would take three to five years and they want it done in three to five months. This relates back to the need for coaches to be creative. Can you offer it as one of your options, agree on the goal, guarantee its achievement and base a fee on it? If you can, then I say go for it, but the fee should be high because of the risk involved. Testing becomes critical with this approach. This is something I have done with all my clients for the past 12 years when they come visit me for three days. We do this every off-season so that we have baselines established and things are set up exactly as they should be in terms of their body fat, metabolic system, skills, etc. Everything that the athletes can build on when they get home is clearly defined.

PC: If you give good service I suspect clients recommend you to others. How to you establish and nurture good word of mouth?

JF: Reputation is the key to being successful in any profession. I tell our coaches that they must establish something about themselves that is unique; you cannot just be another coach with a license. There are many ways to do this. I have books published and am available whenever a group provides me an opportunity to speak. I have tried my best to be visible since the early 1980s and it has paid off for me- there is no trouble with my fees. Five or six of my coaches wrote books themselves because of my contacts. This has established them to be unique and given them a greater value than a coach who has never done anything exceptional. It has also improved their coaching reputations, which allows them to charge higher fees.

This is not the only way. Other ways include coaching an athlete who is successful in races at various levels. Another way is to provide services beyond comparison.

PC: You mentioned that you have other coaches in your group. There is a mentoring process to develop other coaches within your system. This can be a double-edged sword. This mentoring and educational process has the potential for an individual coach to strike out on their own and take clients with them. What is your experience in this area?

JF: I have had coaches go on and do quite well. One example is an individual I worked with as an athlete in the 80s. By the early 90s, she decided to become a coach and came into my organization where I mentored her. After ten years she went out on her own and became extremely successful. However, I never have seen it take away any business from my coaches or group. I believe there are more athletes out there than coaches who can provide services. I had a call yesterday from an athlete where we do not have a coach and I sent this person to a coach who I knew would do a good job who is not one of ours. I never have seen it as a threat when someone leaves the organization.

PC: What is your opinion on coaching "coupons" (buy one get one free, for example) and other promotion gimmicks to gain business?

JF: I owned a running and biking retail store back in the 80s when I first started coaching people. My clients were store customers. I learned never to have sales in my store because then the same people always shop for the cheapest price and you would never make a living off those customers; you could not count on them. As a result, I always charged full price but provided excellent service. Our staff not only sold running shoes and bikes, but also taught athletes how to use them. I could have offered a great price at the risk of having a cheap salaried staff who knew little about the merchandise. Customers would not return because they could go to another store with an even better price. To this day I believe in service over price. When the current economic downturn started I raised my fee because I work with only a few clients and they know my service is second to none. Consequently, I had to turn people away when I announced an opening. There are always people who will pay a high fee as long as it is something of value to them. I offer value by service, not by price. You will not survive on price, but you will thrive on service. O

More Information Please!

Joe is the author of Cyclist's Training Bible, Cycling Past 50, The Triathlete's Training Bible and The Mountain Biker's Training Bible. These books can be ordered by calling 1 (800) 578-4636. Joe can be reached at jfriel@trainingbible.com or by logging onto www.trainingbible.com.

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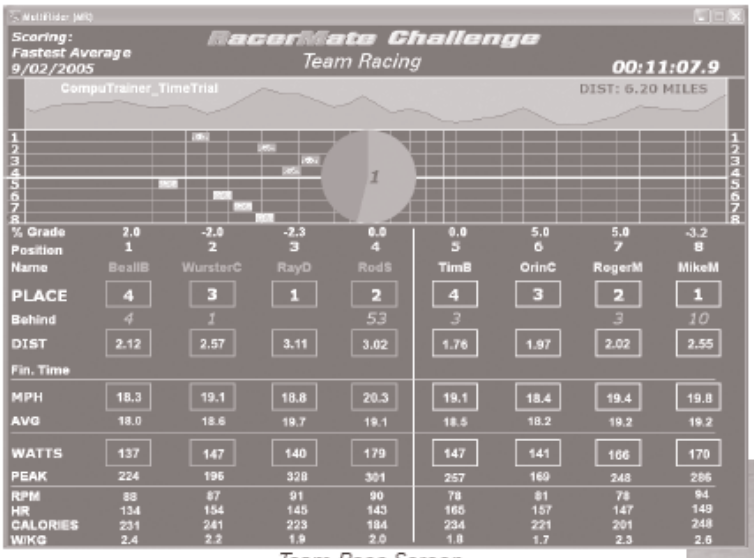

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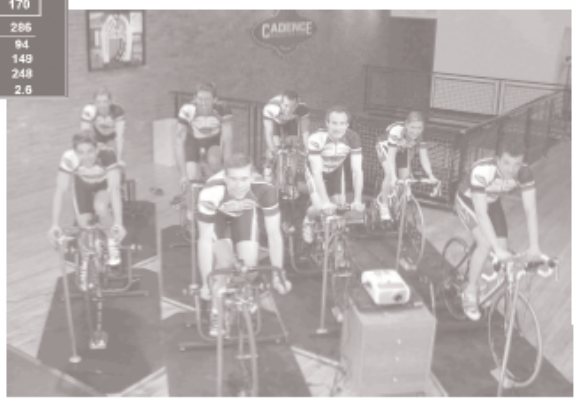

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From the USAC Coaching Education Department

If you are not currently a USA Cycling certified coach but would like to become one, you can find the answer to many of your questions on the USA Cycling website (www.usacycling.org) in the Coaching Program area. The entry level (USAC Level 3) is a home study course that includes the newly developed Introduction to Coaching Cyclists.

USA Cycling offers further certification and educational opportunities. The next level of certification is level 2. The level 2 certification clinics are held several times a year throughout the country. Information on the agenda and schedule can be found at the above referenced website. In addition to the certification clinics, USA Cycling offers a Power Based Training Clinic.

A recent addition to the USA Cycling Education program is webinars. These web-based seminars take advantage of computer and internet technology. The webinars cover a variety of topics. Information on the webinars can be found on the Coaching Program page of the USA Cycling website. Webinars are open to anyone. Some webinars are free; most webinars have a fee.

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