PERFORMANCE CYCLING CONDITIONING

A Newsletter Dedicated to Improving Cyclists

Volume 19, Number 6

USAC Coaching Summit Summary

We attended an interesting presentation at the USAC Coaching Summit held at the new conference center in Colorado Springs a year ago last October. For those who could not attend, I thought it would be of interest to provide some presentation highlights. This issue we will look at: Manuel F Forero, M.D. FACC, FACP, USA Cycling Coach Level 2

The Heart of the Ultra-endurance Athlete

Training /Racing Pro Calander Facts
(1mile = 1.61 kilometer)
*35,000 - 40,000km/yr
*90-100 competitive days 1d races (200-300km)
1wk races (150-200km)
3wk races (~200km)
*Grand Tour Races 90-100hr of competition
3,500-4,000 km total
*Training Peroids Rest (Nov. to Dec.)
Pre-competition (Dec. to mid-Feb.)
Competition (mid Feb. to Oct.)
*Exercise Intensity I (light) > ~70% Hrmax <FTP 200-250w
Zones: II (moderate) > 70-90% Hrmax ~FTP 350+/- 50w
III (intense) > 90% Hrmax < FTP 6-7.5w/KG+

7 Ways to Express Exercise Intensity

I. Energy Expenditure / Unit time
Kcal/min < > kJ/min1kcal = 4.186kJ
II. Absolute Exercise Level or Power Input
kg/m/min
P(w) = (kg/m/min)/6
III. Relative Metabolic Level
%VO2 max / %VO_2 r
IV. Exercise Relative to Lactate
absolue (i.e., 4mM)
relative (i.e., %LaT)
V. Exercise Relative to HR
%HR max / %HRr
VI. Multiple of Resting Metabolic Rate (RMR)
1 MET = 3.5ml/kg/min
VII. RPE (rate of preceived exertion) Borg Scale
6 > 20 light to hard

Energy Balance = E Intake - E Expenditure

(1kcal = 4.186 kJ)
Energy Stores: CHO (muscle/liver) >70kg 2,000 - 3,000 kcal
FAT (essential/storage) >70kg male: 100,000 kcal
>55kg female : 125,000 kcal
Pro-Cyclist (average GE/CE) pace 40k/hr: 21kcal/min up to 30kcal/min
Average Grand Tour: 6,000 to 9,000kcal/day/stage
GE = 60 X W/20,934 x VO_2 ~25% (caloric equivalent "kJ" of 1L O2)
Jeukendrup A., Craig N., Howley J. JSci Med Sport, 2000
CE = W/VO_2 (L/min) ~85watts/L/min (400 watts for 20 min)
Coyle E., et al Med Sci Sports Exerc. 1991 & 1992

Summary

The Hearts of Professional Cyclists deomonstrate the largest increase in both Cavity Size and Wall Thickness due to a combination of extreme volume and pressure overload. High endurance exercise enhance the Inotropic, Lusiotropic, and modulates the Chronotropic properties of the Heart.
Maximal Endurance Exercise
4-5 Fold increase > Cardiac Output
3-4 Fold increase > Heart Rate
2- Fold increase > Stroke Volume
3 Fold increase > A-VO_2: *Increase O2 Delivery
*Increase O2 Extraction

This is only a sample of this very important topic. I recommend coaches take the opportunity to obtain a copy of this and other presentations offered by the USA Cycling Coaches Association from the Summit available on DVD.
Click **HERE** to purchase the video and earn up to 30 CEUs.

Mark your calendar- the 2014 USA Cycling Coaching Summit, is to be held Oct. 31-Nov. 2 at the USA Cycling National Conference Center in Colorado Springs, Colo. This year's summit promises to bring a wealth of knowledge and education to all attendees. USA Cycling has brought together some of the leading experts in the areas of sport physiology and exercise science, team and individual coaching, nutrition, athletes with disabilities and bike fit, all with the goal of providing you with the best educational experience possible. The summit is designed to enhance an individuals coaching ability and understanding when working with athletes of all abilities.

Registration for the 2014 USA Cycling Coaching Summit is now available **HERE**. The deadline for registrations is October 17 at 11 p.m. (MDT) or until the Summit fills. No exceptions. You MUST have a USA Cycling account to register for the event!

When it comes to cycling performance does pedaling technique really matter?

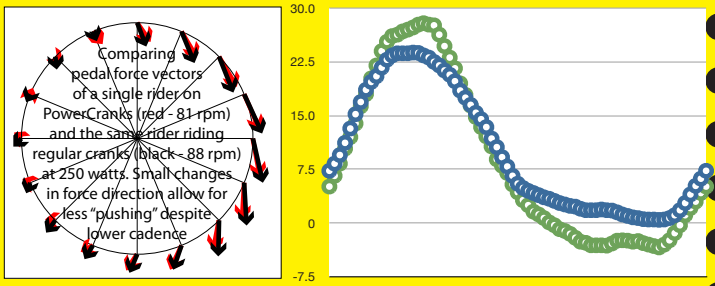
Of course it does. To say otherwise is like saying that cycling is the only sport in the world where the technique of the major component of the sport doesn't matter. But this myth persists. It persists simply because pedaling technique has been almost impossible to measure (requiring expensive pressure plate pedals generally available only in university research labs) and pedaling technique is almost impossible to change making it "impossible" to study. ***If something is hard to measure and even harder to change it is easy to conclude it doesn't matter.***

So, what is the optimum pedaling technique?

Now, there may be many different techniques possible and no one knows for sure exactly what is optimum but the one technique that many coaches talk about as being "optimum" is "pedaling in circles". But, what does "pedaling in circles" mean? It does not mean applying equal pressure around the entire circle, as is thought by many, as equal pressure around the circle is impossible because of the effects of gravity. What "pedaling in circles" really means is spreading the work out around more of the circle and doing no negative work on the upstroke — increasing the power at the top and bottom of the stroke and minimizing or eliminating the losses on the upstroke. Such a technique is exactly the technique Lance Armstrong has been trying to perfect since 1993, see: www.powercranks.com/Lance.html. There is now a tool (PowerCranks, Walnut Creek, CA - www.powercranks.com) that can teach this technique to your clients so you can concentrate on other things. Not a gimmick, a serious training tool actually used by the last three Olympic road race champions and many other Olympic, World, and National champions in a wide variety of cycling disciplines including track, cyclocross, mountain biking, and triathlon. You may not have heard about this use as it is a training tool and easily kept from others. Why would an athlete want to share an advantage with the competition?

What are the advantages of pedaling using this "full circle" pedaling technique?

1. It uses more muscle mass, increasing peak power potential.
2. It distributes the work around more of the pedal circle which means using more muscles, allowing any one muscle to be further away from its lactic threshold for any given power.
3. These changes together have the potential to greatly improve both pedaling efficiency[1], VO_2max[2] and sustainable power. Many studies support this approach.[3]



See the diagrams comparing actual pedaling forces changes seen in a single rider between regular cranks and PowerCranks. It is clear these are relatively small and subtle changes but these small changes in the direction of the applied force results in large changes in the resultant power to the wheel for any given muscular effort. **Note that when on PowerCranks the negative forces are completely eliminated and the forces across the top and bottom of the stroke are substantially larger over regular cranks. With these changes this rider is actually "pushing" less hard to generate the same power despite the fact he is riding at a lower cadence.** Can there be any doubt that as the rider changes their natural way of pedaling to this more efficient and powerful technique that performance will improve?

In the past (before PowerCranks) coaches and riders didn't have to worry too much about pedaling technique because it was pretty much impossible to know how a rider was actually pedaling (you needed pressure plate pedals, only available in the research lab) and, even if you got that information there were not any good tools to effectively change pedaling technique. Ignorance was bliss. But, this is about to change with the soon-to-be-released Metrigear Vector pedal (see: www.metrigear.com/products/). Soon, pedal force data will be affordable and available to everyone and your clients are going to be asking you for advice as to how to improve this aspect of their game. Better start planning how you are going to approach this now. Such changes do not come easily. You can set your clients on the 17 year path taken by Lance Armstrong or you can set them on the 6-9 month path allowed by integrating PowerCranks into their training. What are you going to choose? There is simply no more effective way than PowerCranks to effect this change.

In the near future, if you ignore this aspect of the cycling game we predict you will be seen by your ex-clients as "old fashioned" and "irrelevant". Prepare now. PowerCranks will help you teach this skill to your clients with maximum efficiency and if you become an associate, we can even help out your bottom line. Check us out,

www.powercranks.com • 888-733-2572

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POWERCRANKS

[1, 2, 3] studies that show cycling efficiency improvement, VO_2max improvement in trained cyclists, and many other studies related to pedaling technique (including those studies that many say "prove" that pedaling technique doesn't matter) are available here: www.powercranks.com/studies.html

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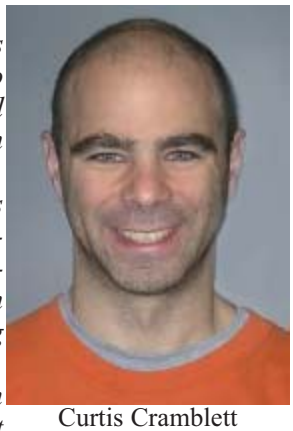
A Fitter Fit - Medicine of Cycling Bike Fit Consensus Statement

Curtis Cramblett, LPT, CFMT, Cycling Coach, CSCS, San Jose & Palo Alto, Chair, Medicine of Cycling Bike Fit Task Force
First Consensus Statement on Definitions and Key Concepts


Curtis Cramblett

Curtis is the founder of Revolutions in Fitness in Palo Alto, California. He has been practicing as a Licensed Physical Therapist (LPT) for over 20 years. He was also selected by the Garmin-Cervélo Professional Cycling Team for bike fitting and physical therapy services as well as many Olympians and professionals thru the years. He lectures internationally on bicycle fitting and musculoskeletal evaluation and treatment of the cyclist

Curtis has been an avid cyclist for more than 20 years and has spent thousands of hours on his bike. He is a nationally competitive mountain bike racer and races road bikes regionally. He has also ridden several multi-day long distance rides, including the 600-mile California AIDS Ride. Decades of experience with competitive cycling, extensive continuing education in manual and exercise therapy and an expert coaching certification have given him a unique perspective on the challenges and benefits of being an athlete, particularly a cyclist.

He is the chair of the Medicine of Cycling Bike Fit Task Force First Consensus Statement on Definitions and Key Concepts. The following interview details the development and use of this important document from a coaching prospective. The entire statement is chain linked ***HERE*** *.***- Ken Kontor**

PC: Let's start with definitions of the group that put this statement together. Many on the panel are identified as a Fit Educator. What are the qualifications to be one?

CC: A Fit Educator would be similar to a college instructor at a college. They are people who are out in the world teaching bike fitting. We did not want opinions, but those who teach and research around fitting on a daily basis. From there, we wanted the group to be diverse from different schools such as Trek, Serotta and Specialized. We brought together seven different schools of fitting. The process starts by identifying what we had in common and what we disagreed on.

PC: With so many different schools, what was your reaction to bringing together a consensus statement?

CC: I was impressed. I would say there was about 90% percent overlap in our opinions, which at this level of getting into the nitty gritty of it, but we agreed on most things in the broad overview. The statement was done by phone, which had its challenges. But it worked well which I attribute to the professionalism of the group. We did six phone

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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sessions and discussed the written consensus of the last meeting.

PC: Let's talk about the impact of this statement on the cycling coaching community. What is the take-away for the coach?

CC: This statement is written on a coaching level; this is not for the elite bike fitter because s/he should already be familiar with its findings. For the coach, this statement is designed to enlighten or reinforce their dealings with their clients' bike fitters. They might have a client returning from a fit with four shims in their shoes and knowing that two is the recommended number. This may indicate the need to seek outside medical assistance. So, the coach consulting this document may have their clients work with fitters to see that whatever is done falls within the guidelines of the consensus statement. The coach should be able to use these guidelines for their referral or if they are a fitter themselves. Finally, the beginner or intermediate fitter or even an educated athlete can learn a lot from these guidelines.

PC: Does this statement give the coach enough guidelines to attempt bike fitting, understand what they have to do to be a fitter, or when a client should get a fit?

CC: I will address the second part of the question. If a coach has a client who has stepped up to the plate and paid money for coaches services with specific goals in mind, the fitting process is just as important as the plan the coach writes for their client. It is the plan and the bicycle is the machine to do the plan. The best of both worlds would be the coach and the fitter, one and the same. The coach can be an amazing fitter. It is a matter of what the coach knows about fitting and what the client needs. If the client rides five to 10 hours a week and the need for such fit consideration as aerodynamic position on the bike is not a consideration, a coach with a class or two of fit instruction would be qualified to bike fit. If the client has skeletal-muscular issues such as herniated disks or is a competitive cyclist who is looking for the last bit of competitive advantage through proper fit, then you need someone who is more experienced as a fitter and or from the medical profession, but that can be the coach. I've seen PTs take a fitting class, but they are nowhere near qualified because they lack experience with our sport.

When should a coach fit? It depends on the client they have in front of them and does the coach's experience in fitting meet the athletes' needs? Extreme performance levels or pain increase the need for a more qualified fitter.

PC: Based on this answer, do I get a sense of a possible certification in bike fitting for coaches through either the USACA or Medicine for Cycling groups?

CC: I think so. Currently I am talking with the international bike fitting community around what that process might look like in the future. Right now there are about 10bike companies that do their own fitting class and at the end, you get a nice certificate to hang on a wall. Everybody has their own way of doing things. There is no global entity that recognizes these activities. We are looking at a national and international program that will certify organizations to teach bicycle fitting. Beyond that, you will be given the opportunity for continuing education to keep up with the certification, just like with the medical profession and even today's personal trainers. The Medicine of Cycling is in conversation with several organizations across the globe to get this done. For the first time, the Medicine of Cycling conference in August will be offering this type of CEUs(continuing education units) in bike fitting. There will be other great organizations offering CEUs for their accreditation programs as well.

PC: What do you see as the coach's role in a bike fitting session done by an outside professional?

CC: The more information the fitter and the coach have, the better that athlete will be served. Ideally the coach can discuss any of the cyclists' limiters with the fitter before the fit. Then after the fit is completed another communication happens where the fitter can pass back limiters that the cyclist posses in their flexibility, strength that might improve their health / fit position, looking at fitting for the aero position during a time trial, for example. The coach will have insight beyond what the athlete might have. A fitter evaluates an athlete on the table; if they see weak hamstrings or a weak core, they will bring these weaknesses into the bike fit process because the person has these skeletal-muscular challenges. Depending on the coach's skill set, some are qualified in designing strength and conditioning or flexibility programs. The coach determines what the proper level of flexibility or strength is and works with a fitter to better determine how bike fit plays a role. The athlete may not be able to touch their toes, so the cycling coach works on hamstring flexibility which helps the rider to be in a more beneficial aero position. It is good to have the cycling coach there to be part of this.

PC: In reading the statement, it appears that bike fit is a very dynamic, ever-changing process based on adaptation. The process itself has two components: on-bike – the fit itself and maybe shims to go along and off-bike – the skeletal-muscular system you described. What is the relationship of on- and off-bike fitting?

CC: The bicycle is the machine you must put your power through and the engine is the athlete. Hip flexibility, core strength and upper back stiffness are all things I find on the table frequently, show up on the bike and vise versa. A good cycling analyst will spend 20-30 minutes looking at the skeletal-muscular system off the bike with a questionnaire asking about injuries and goals. The off the bike sets the stage for what I do on the bike. The two important words to consider here are accommodating versus optimal.

In the consensus statement,* an accommodating fit is where all the goals of the athlete were not met, and optimal fit is where all the goals are met. If I saw a client on the table with tight hamstrings, weak core with neck and back discomforts, they may say to me, "I really want to get rid of the neck and back pain, be aerodynamic and win the master national championship." I would tell this individual that today we must do an accommodated fit to accomplish their most important goal (usually get rid of the neck and back pain). We must accommodate for that client's skeletal-muscular challenges. In one to six months, that person will walk back in after working with their coach or physio on corrective exercises. Then we will go after the optimal fit where the back and neck pain are gone and the client will be able to get into a effective aero-dynamic position. These are the tales on the table that tell us what we will do when we get on the bike. As Andy Pruitt says, "There needs to be a marriage between the bike and the body."

Today in the bike fit world, the practice is that you make the bike look like the body accommodating for the bodies inefficiencies. However, in this accommodating process, the client must know the methods they can do to have their bodies fit their bike. Start making the body fit the bike to be in balance, just as the bike is in balance. If you get the body balanced and stable, then you make the body look like and function like an efficient bike.

PC: As the process of the body to look like bike continues, when and how does the bike re-fit take place based on these changes?

CC: The bike fitter should say to the client, "When you feel these physical changes in your body, then it will be time for a re-fit." For instance, in about six to eight weeks, you will feel like you want to slide back on the saddle or that you are hanging out on the drops more than you ever have and your pain is still gone. The bike fit will start to feel different in an interesting way. When that starts to happen, depending on where we are in the accommodating process, I would like for them to consider something simple like a higher seat height and give them an idea of how high – usually one to two millimeters. If you make that change and it feels worse, then the client must take it back to where it was before and we need to chat. The best option is that the client has a sense of when to shift things. The second best option would be to have the client come in after one to four months because your body is changing and we should take another look. I would also communicate with the coach to check in with the client to see how, for example, the client's neck pain is being managed and let me know.

I empower the client to initiate the bike adjustments. The change usually takes one to three months on average, but if the accommodation is extreme on the bike based on the client's situation, I might check in once a week. If the issues are small, I might have the client check back in six months to a year just like you might do with a dental check-up. Each client is different and there are a lot of variables; it is a process over time. A lot of it is due to how fast the body changes. For the coach, it is the ability to sense the changes in the body, make the small changes and the fitter makes the bigger changes.

PC: Why should a coach go to the bike fit session as part of the Medicine for Cycling this August? (Note: see the agenda as part of this interview-ed.)

CC: I can say without question that we have the most diverse group of international fitters and fit educators from the most diverse group of schools of any conference, and I have been to many of them. Most of the pro teams are represented by these fitters who will be there. There is something for anyone who is interested in fitting. There is something for the medical professional, the coach, the bike shop fitter and even the athlete. The hope is to take the attendee to the next level through medically based fitting presented in a practical manner. Unlike most symposiums, this will have a hands-on experience with small group learning led by a group facilitator taking you through the process. Not only will we use basic static tools but we will also provide experience with the latest technology, such as Retul, Surface EMG, GebioMized pressure mapping, Dartfish just to name a few. Most fitters in the profession would not have access to these tools unless they had $15,000-$20,000 to spend. The attendee will be able to measure the performance of these technologies and determine if they are worth the expense. It IS a really great way to learn the latest in a small-group setting, hands on. Hope to see a lot of coaches there!

**** From the Consensus Statement:***

Neutral / Optimal Range Fit: The fitter and cyclist are able to find the ideal individualized position that best accomplishes all goals of the cyclist at the time of the fit. The bike is 'wedded' optimally to the cyclist and cycling event with no accommodations to the bike.

Accommodated Fit: The fitter compromises on one or more of the goals of an optimal fit to compensate for a physical limitation of the rider or the bike. Ideally, an accommodated fit is a transitional position while the fitter works with the cyclist to identify the deficiencies that require compensation, offer possible solutions, and possibly refer the cyclist to the appropriate professional for medical evaluation. Frequently other professionals, including coaches, physical therapists, and medical specialists need to be involved in this process.

Accommodations are frequently made when it is necessary to work with the limitations of a rider or a specific bike. In dealing with these limitations, the fitter should always start by moving a cyclist toward a neutral position to correct inefficient biomechanics. Many times, neutral fit eliminates enough stress on aggravated areas to make significant accommodations unnecessary. Accommodations are not optimal as some aspect of cycling is being compromised in order to address another issue. All accommodations can have short-term or long-term consequences on the cyclist's efficiency of biomechanics and handling of the bike. The

goal of the fitter is to remove accommodations over time as the cyclist has improvement in function, form, and flexibility. Interventions can include education, treatment, or any other modality that is within the scope of knowledge and practice of the fitter. O

Contact Curtis at **http://www.revolutionsinfitness.com**.
http://www.medicineofcycling.com
http://twitter.com/medofcycling

2014 Bike Fit
Schedule
Friday, August 22 - Sunday, August 24, 2014

FRIDAY - Bike Fit Presentations

7:15 AM	Registration	
7:50 AM	Welcome and Introduction	
8:00 AM	LECTURE: **James Hewitt**, Trek cycling team fitter, Sports physiologist, ex-pro racer	Anatomy of saddle positioning: From height to type and everything angle between
9:00 AM	LECTURE: **Clint Laird**, DPM, FACFAS, FAAPSM	Anatomy of the foot: Foot-pedal interface and resulting problems
10:00 AM	**Break**	
10:10 AM	LECTURE: **John Dennis**, Physiotherapist, Fitter for Garmin and Sky, Lead Instructor, Retul Australia	Anatomy of the knee: Common knee pain disorders and position on the bike
11:10 AM	LECTURE: **Michael Sylvester**, Lead educator for Bicycle Fitting Services, Master Yoga instructor	My Aching Neck: Fitting and Rehabilitation of upper quarter cycling dysfunctions
12:10 PM	Lunch (Interest groups announced for lunch discussion)	
1:30 PM	LECTURE: **Curtis Cramblett**, Physical Therapist, CSCS, CFMT, Cycling Coach, Professional Cycling Analyst for multiple tour teams, Chair of Med of Cycling Bike Fit Task force **Wade Hall**, Specialized master teacher, Co-Chair of Med of Cycling Bike Fit Task force	Fit the bike to the body? Or the body to the bike?Accomodation vs. Rehabilitation
2:30 PM	LECTURE: **Greg Rubidoux**, PT, Lead instructor of SICI	Fitting for a healthy and powerful lumbosacral spine: Red flags and fitting around a sore spot
3:30 PM	**Adjourn**	
4:00 PM	**Group Ride**	

SATURDAY
Bike Fit Best Practices and Hands-on Workshops -
Facilitated by small group facilitators:
Paraic McGlynn, Wade Hall, Jessica Greaux, and Curtis Cramblett, Happy Friedman

7:50 AM	Welcome and Introduction	
8:00 AM	Contact points management -	What are the best: saddles, pedals and bars. Seat, Hands, Feet
10:00 AM	**Break**	
10:10 AM	Managing the biggest pain culprit in cycling - the tender knee	Looking that the entire fit how do we help the knee!
12:10 PM	Lunch (Interest groups announced for lunch discussion)	
1:30 PM	Technology integration in bike fitting. Rotation through each station for 45 minutes.	GebioMized - Pressure Mapping Retul Products: Motion Capture, Muve - Fit bike, Stem, ** Other possibilities: Power Trainers for Fitting: Surface EMG, SICI fit bike, Dartfish motion capture
4:00 PM	Small Group Facilitated Cycling Analysis- Hands-on fitting experience 3 Participants volunteers: bring pedals / shoes / kit if interested	
6:00 PM	**Adjourn**	

Elite CYCLING Performance Digest

USACCA Coaching Education Opportunities
Don't Miss the USA Cycling Webinar Series

Webinars can play an integral part in a coaches education and provide valuable CEUs. USA Cycling is committed to consistently providing new and innovative educational opportunities for our coaches coming soon. Thank you for attending this past year.

Watch for Full Details: **https://www.usacycling.org/news/user/story.php?id=3158**

Webinar Registration

Registration for all webinars can be processed through your USA Cycling account. Simply log in, click on account" (below the welcome header) then click on "View Available Clinics/Webinars", then select the webinar you wish to participate in. All live webinars will take place at 4pm MTN time.

Upon registration, you will receive email confirmation with an additional registration link from our provider. You WILL need to register via the provider (**www.GoToTraining.com**) and download their software to access the webinar. Registration and payment instructions are below the list of webinars in the **WEBINAR FAQ** section.

Date	Time	Presenter	Title
24-Jul	4PM MST	Sean Wilson, PhD	Training and Racing in the Heat and Cold and Dealing with Air Pollution
7-Aug	4PM MST	Tyrone Holmes, PhD	I Just Got a Power Meter...Now What?
21-Aug	4PM MST	Carrie Cheadle	Regaining Confidence After a Crash: How to Mentally Recover and Get Back on the Bike
4-Sep	4PM MST	Sean Burke	Body Composition Testing: Validity, Reliability and Application
18-Sep	4PM MST	Ryan Kohler	Longitudinal Assessment of Glycogen Status in Elite Athletes
2-Oct	4PM MST	Sean Wilson, PhD	Medical Exercise Physiology
16-Oct	4PM MST	Menachem Brodie	Strength Training
30-Oct	4PM MST	Larry Meyer, PhD	Funcitional Deficits and Effects on Cycling Performance
13-Nov	4PM MST	TBD	TBD

Please retain the follow-up email from each webinar for continuing education units for coaching certification. All participants will receive two (2) CEUs per webinar.

Webinar Recordings

Recordings of webinars will be made available via our website shortly after the live viewing. *If you sign up for the live webinar and do not attend, you will still be responsible for purchasing the recorded version, if you choose to watch it*. USA Cycling does not provide refunds for missed webinars.

More Opportunites!

Regional Talent ID Camps

Interested in getting a young cyclist (between ages 14 to 22) on the USA Cycling's radar? Then encourage them to attend one of USA Cycling's Regional Talent ID Camps. These camps recognize athletes who at an early age show signs of potential future success in cycling. Athletes receive instruction from USA Cycling's finest coaches and are provided with the necessary framework to improve athletes skill set. In some cases, the Regional Talent ID Camp assists in selecting riders for international competition and/or a national development camp. For more information click **HERE**.

2014 Level 1 Clinic

Are you ready to take your coaching to the highest level of coaching certification? Great! In order to do so, a coach must be a Level 2 coach, in good standing for 5 consecutive years and attend the Level 1 Clinic; or be a Level 2 coach for 3 consecutive years, accumulate 200 CEUs following completion of the Level 2 Clinic and attend a Level 1 Clinic. After either qualification is achieved, the coach must pass the Level 1 test. **Level 1 Clinic**

Level 2 Clinic

The Level 2 Clinic schedule will be posted on USA Cycling's **website**. Be sure to watch for it!

2012 USA Cycling Coaching Summit now available on DVD

With over 12 hours of cutting-edge and time-tested cycling knowledge from the world's leading authorities, this video series features an array of comprehensive presentations touching on every faucet of cycling coaching and training. Whether you coach elites, amateurs or para-cyclists, or are an athlete yourself, this powerful video series is an indispensable resource. Click **HERE** to purchase the video and earn up to 30 CEUs. ●

SENIOR MOMENTS- INSIGHT INTO COACHING THE MASTER ATHLETE

Presented by: Marilyn Trout, USA Cycling Certified Elite Coach

Marilyn has coached since 1983. She received the Canadian Coaching Excellence Award (coached cyclist to gold medal at Paralympic Games) in 1988 and was Ontario Coach of the Year in 1990. Marilyn was a Junior Development Club Coach from 1987- 1992 and Canadian National Team Coach for their 1990 European Project. She is Na- tional Coaching Certification Program – Level 3 (Canada). Marilyn has raced since 1978 was a member of the Canadian National Team from 1980-1988.

Marilyn Trout

The following is the results of a survey response conducted and received by the Sage Project. It is intended to offer cycling coach a better understanding of the issues and challenges involved with working with master athletes. We hope you find this in- formation helpful.

Shifting Gears-Transitioning from Competition to Coaching

with Canadian Olympic Coach Denise Kelly

Denise Kelly was the Canadian Olympic Women's Cycling Coach for the 2012 London Games and is preparing the Team for Rio in 2016. She is a personal coach to Provincial, Canada Games, National and International Champions and those aspiring to greatness on the bike. Denise and Marilyn Trout were training partners and members of the Canadian National Team during the 1980s and indeed have many stories to share of their adventures.

Presented by:

the Sage Project

The last time I stepped on a podium was in 1991 at the Pan American Championships in Cuba. Our team time trial team won the bronze medal. I knew that once I stepped off that podium, my cycling career would take a new and exciting turn. Stepping down from a sport is one of the hardest things an athlete can do. Fortunately, I was ready for it. I had fulfilled my potential and beyond in the road cycling world and was ready for a new challenge. In 1984, I experienced a flash of insight, a gut feeling, the proverbial light bulb going off that I had found a sport that was mine. Cycling was in my blood from that time forward and I knew that it would never leave - just change forms. While I was still an elite athlete, I had begun my coaching certification process. I was 'coaching' a couple local athletes when I had the chance to be back home for short periods of time during the last couple years of competition. This was fulfilling in a way I had not envisioned as it brought me back to the root of the sport. I knew that I would probably coach after I stopped competing and thought that it would be with elite female athletes either on or close to making the National Team. That was what I knew best. I had raced in four World Championships, the Tour de France twice, prestigious World Cups (winning one and coming third overall in Tour de l'Aude) and the Commonwealth and Pan Am Games. It seemed a logical step. Many years later, I am constantly amazed by where my sport had brought me and now, the places my coaching has taken me.

Even though I was ready to stop competing, I was still very interested in how my former team-mates were doing

and getting news from that world. I was coaching several athletes at the time, one of whom was going to the Junior World Championships with the National Team. By staying involved in a peripheral way in the sport, it assisted my transition from athlete to…'someone else'. I loved being able to help athletes reach their goals and to learn from them how to become a better coach. Once I realized that my passion for my sport could be as fulfilling for me off the bike as it was on, I was hooked on making coaching more a part of my life.

In 1997, I was the manger for Team Ontario at the Canada Summer Games in Brandon, Manitoba. My daughter was four years old and it was a good time for me to branch out. I coached a local women's team prior to that and some individual athletes. It was in 2001 as a coach at the Canada Summer Games in London, Ontario that the bug really bit. My daughter was older so I could take more time to coach. And this is where the surprise came in the roster of athletes I coached began with a few elite women and then some local men and eventually grew to where I am now which is coaching athletes across the range of abilities, levels, experiences and disciplines both male and female. As I continue along this path, I have come to expect the unexpected.

My experience of having been an elite athlete is invaluable to me as a coach. I am a very experiential learner and hence a teacher. While completing the diploma program with the National Coaching Institute Ontario (Level 4), I also learned from the experiences of the coaches and instructors around me. I believe that the athlete never really leaves the person. That sentiment was reiterated when I was given the opportunity to coach the Junior National Team at the World Road Cycling Championships in Belgium. The moment we stepped on European soil, it was as if I had been there yesterday not fifteen years ago. My blood was stirred with many cycling memories from my racing career and hopefully the athletes benefited from my sharing of those experiences. "Just one more story, guys, really!"

But the stories I now talk about most with other people have changed for me immensely. They used to be about my achievements and adventures and have been replaced by those of the athletes I coach. It is simply amazing to me to watch these phenomenal athletes race whether it is never looking back in a race where another rider is following by 10 seconds and to win the race by over a minute the next lap or to watch someone come back from a disappointing finish one day and completely blow the field apart the next day to take the National Championships or to witness someone crack the 40 kph barrier in a time trial for the first time or to see someone take a risk and go solo only to be caught on the line…my heart is in my throat. Seen from an ever-changing perspective, the ups and downs of this sport continue to be a part of my life. Cycling and coaching now course through my veins side by side.●

If you would like to be a part of this endeavor through your involvement with The SageProject survey or a future SageRiders workshop in your area, please feel free to contact me at **Marilyn@TheSageProject.org**.

Chain Link: to learn more click **HERE** for last issue's article.

CONDITIONING PROFILE - A LOOK AT THE 2014 USA CYCLING SOUTHEAST REGIONAL TALENT ID CAMP

Rusty Miller, Camp Director

USA Cycling Regional camps play a critical role in creating a pipeline of young talent identification in the sport. Here's the inside story from one outstanding camp director. ***- Ken Kontor, publisher***

PC: How did you become a camp director?

RM: I started as a junior cyclist at 16 years of age at the very first USA Cycling regional camp which was held in 1993 in Greensboro, North Carolina. I attended the camp again the next year hosted by David Mayer-Oaks, who was a national team coach at the time. He wanted a way to identify cyclists beyond just race results. I eventually became a professional cyclist at age 24 in 2000. At that point, regional camps invited back alumni riders to serve as coaches, so I have worked at this camp most summers since then. A year ago, the long-time director Richard Dunn stepped down and asked me to lead it.

PC: What are your expectations? What do the campers expect, and how do they coincide?

RM: The camps have a dual mandate. The first is to identify talent by means other than race results, because they speak for themselves. A kid wins a race, so we know that kid was the fastest that day at the race. One of the points of the talent ID camps is to find ways to identify riders who might not be winning races, but may have the potential to do so. We have gone through a lot of iterations of how we can identify that talent on a national level through camp experiences. We did three tests at the first camp in 1993. They were an exercise ramp to exhaustion on an ergometer, 30-second sprint test on an ergometer and a vertical jump test just like basketball players. Measuring the results and applying it to race potential was a "best guess" by the coaches. It turned out that we needed to refine that approach. Beginning about 2006, USA Cycling started developing an algorithm to estimate power based on a climb of known gradient, distance, vertical gain and time. When you can include the weight of the rider, the weight of the bicycle plus everything on it, you can put those numbers into an algorithm and come up with an accurate estimate of power output during the climb. Now we do tests supplemented with hard data from power meters. This provides us the data to fine tune the

algorithm. At each camp, the riders are faced with a short climbing test designed to last about five minutes and assess the anaerobic qualities of the rider. The next climb test lasts about 20 minutes and assesses the riders' aerobic qualities. Protocol for the 5- and 20- minute tests is simple: It's about an 8% grade, and you go until you get to the finish line.

The second mandate is education. We can break this down into components that include skills that are taught on the bike and ideas that are taught in the classroom. We have two morning sessions dedicated to on-bike skills. For example, today we worked on sprinting in a straight line, then sprinting with a rider to the left and finally straight line sprinting with a rider on the left and right. We gave the riders an eight-inch path to sprint on down the road. Every evening, we have a series of field games. We get together wearing sneakers and helmets to teach the riders bumping skills so that they can quickly become comfortable riding in close quarters with other cyclists. In the classroom component, coaches deliver lectures in areas of their expertise ranging from nutrition to race tactics to practical travel considerations such as going to Europe for a race. We also have guest speakers; last night George Hincapie talked about his riding experience in Belgium as a junior cyclist.

PC: Your schedule (note: see accompanying table) has a yoga and focus training session. What is that about?

RM: I have found that the rider's ability to focus and self-direct is a good indicator of racing success. I have also found that teaching meditation is a powerful way to cultivate focus. Some people are a little skittish about the word "mediation," so we call it "focus training." Yoga is a natural fit because it teaches adds proprioception to the equation.

PC: Beyond the five- and 20-minute test, what is the Flat Repeat test you do on Thursday?

RM: This is a vestige of our regional camp format we used before the power testing we now do. In our camps, we always came up with a camp GC General Classification based on all the weeks' time trials – riders are competitive and love to see ranking. We use the Flat Repeats to level the playing field from the early tests done on an incline. In tours, the norm is climbing mixed with flat time trials. We replicate that with tests done on a mountain and tests done on the flats. I should mention that for a number of years, our camps were based entirely on individual time trial tests, which are easily quantifiable. We noticed that after a few years that riders want to race bikes, and the camp experience did not include this. Since then, we have included the Greenville's Local World Championship Race as part of our camp program. This gives the riders the opportunity to race against an unfamiliar set of racers under the observation of our coaching staff. We find that this calms the riders down a lot. Before, they faced only doing time trial tests and some perceive themselves as poor time trialists; so we gave them the opportunity to show us what they can do in a mass-start situation.

PC: Any other thing about the camp itself?

RM: We want to create an experience that makes the kids want to come back. Typically athletes who are 15 or 16 tend to return. They create friendships, expect to do their best on the tests, pay respectful attention to their coaches and have an atmosphere that everyone enjoys. This is important to me.

PC: Let's talk about the riders expectations. They are nervous and do not know what to expect. How do you deal with this?

RM: I cannot say what those internal expectations are before they get here. As the camp progresses after their first full day, some riders are happy with the results, others are not. From that point on, the expectation is that they are here to learn. We make it clear that the athlete is more than the sum of their test results; it is up to the athlete on how much they want to learn. In the evenings, for example, after the classroom session, we have an open door policy. If the athlete wants to seek out help for anything, any topic under the cycling sun, we are there for them.

PC: What is the coach's role, or should be their role in the camp process?

RM: We hope that coaches see the value in having their riders gain perspective from many other coaches for an entire week. It also provides their athletes the opportunity to enter the USA Cycling national development pathway. From each regional camp, the results go to the national team staff and these coaches invite certain riders to an October national camp based on the power results.

PC: If you are a coach, how would you prepare a rider for the camp?

RM: I would encourage coaches to teach their athletes pacing for a five- and 20-minute effort. Even though we advise riders to practice, it is extremely difficult for a racing 16-year-old to not overshoot his wattage mark in the first couple of minutes of the test. It takes a lot of repetition for riders to learn not to go too hard in the first one or two minutes. Coaches and athletes can work with their power meters and their perceived exertion to explain that a rider should not be in a pain mode until the third or fourth minute of a 20-minute test.

PC: Let's look at this preparation from a periodization coaching standpoint. The five- and 20-minute all-important tests are done on the Monday upon arrival at camp. Is there special preparation that you might recommend?

RM: We encourage campers to come in fresh so they are ready for the first full day of testing, but also with enough hours on their legs to withstand what they do at camp. Our longest day on the bike is 80 to 85 miles on Thursday, 60 miles on Monday and 65 to 70 miles on Tuesday. I would not recommend designing an annual periodization plan just to peak for this camp. Bike racers should

plan to peak for bike races.

PC: I need to ask the blooming question. Development rate and time sequencing happen based on the hormones and other highly individualized factors that create early and late development scenarios. Do you take this into account at your camp? Do you use this to encourage athletes who might be late bloomers?

RM: What we do is encourage. Period. That's it. A rider who is fourteen has no idea how far they can go in cycling. I believe it's the case that the United States has never had a 15- or 16-year-old champion who made it to the world tour. I like to point out a case study of a camper who came to us about six years ago when he was 15. He came from the flatlands of Florida and in camp GC, he finished dead last. He was not discouraged and he loved his bike. He kept riding for another year, came back and finished in the middle of the group. He came back the following year and won our camp. Two years later, he was national champion in the Collegiate Team Time Trial Championship. I do not let any of my riders forget this case study. We also point to camp alumni who have become professional riders; those include Craig Lewis, Chris Butler and Andrew Talansky. I ask riders to think about what they love about the cycling experience beyond achieving a result. I make them focus on the process of being a cyclist ahead of the results. Without the enjoyment, the results will be transitory.

PC: How do you work with parents?

RM: We are on-call to answer their questions, before, during and after camp. Kids these days are tethered to their cell phones, so they are in touch with their folks. Parents trust us once they learn we have a high camper-to-coach ratio and that their kids will not have much time for mischief. O

More Information Please! Contact Rusty at coach_rusty@msn.com

From Frazier Cycling: Youth Cycling #32
Common Mistakes Made by Junior Road Cyclists, their Parents, and their Coaches – Part 2

Ralph Frazier and Kelli Rogan- Frazier Cycling

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 15 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 serious 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 Frazier Cycling Juniors team holds 6 national championship titles.

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In our last column, Coach Kelli and I listed common mistakes made by junior road cyclists, their parents, and their coaches. We brought them to your attention so that you may be aware of them and perhaps avoid them. As a review, we shared our experiences and we made some recommendations with regard to the following:

- Upgrading too quickly
- The obsession to match allowable maximum chaingear
- Unrealistic expectations
- Parents trumping the junior's coach

Net Link Click HERE for entire article.

In this column, we'll cover the last four items on our list:

- Not training, just racing
- Underestimating fear
- "Not Sunday School"
- The importance of emphasizing the team over the individual

Not Training, Just Racing

A problem we see with many youth racers is that they don't train, they just race. We agree that racing is a very good way for juniors to gain experience, but dedicating time to skill competency and conditioning outside of competition is crucial to success in cycling. We believe that even the youngest of juniors should have a training routine to develop the habit of training. We've had

plenty of juniors who get by on very little training and they have success in racing. Typically, the races are short for the youngest racers, so endurance and fitness aren't as critical as for the older juniors. However, over time, their approach fails to produce good results. When aging up to the next group, "not training, just racing" doesn't work out very well for these juniors. In our program, we prescribe endurance training even for the youngest juniors. We've encountered plenty of parents and coaches who disagree with our methods and they believe that youths should only ride short and fast; however, the data supports our program.

Additionally, there are many juniors who train by only doing group rides. They don't dedicate any time to skills competency. Ignoring the dedication to developing cycling skills and relying on races as "on-the-job" training is not just reckless, it's inadequate. The more time spent developing skills competency, the more successful and safe the racer.

Kelli Rogan

Ralph Frazier

Underestimating Fear

We catch ourselves guilty of this one. Underestimating a junior whose fears will impact performances. The ability for a junior to feel comfortable riding in a pack, cornering at speed, going downhill fast should not be underestimated. Sometimes we as coaches get totally wrapped up in raising our juniors' sprint power and/or functional threshold power (FTP) and we put too little emphasis on building their racing confidence. The inability to handle their bikes in tricky situations such as maneuvering in a large, tight group on narrow roads through speedy twisting turns can easily negate and physical fitness and superior power advantages.

"Not Sunday School"

There's an unwritten "rite of passage" that occurs for anyone who enters competitive cycling. It's an initiation to the club, which is the brotherhood and sisterhood of egocentric cyclists. This happens as well to juniors who race category. Comments from the field such as, "Sketchy junior!", " Hold your line!" , "Why don't you pull?", "Go to the back!" , "You're going to cause a crash – stupid junior!", and other less flattering and, certainly, less civil phrases are directed toward "newbie" juniors. Tactics such as bumping elbows, pushing, handlebar slams, and sometimes just a glaring stare are used to intimidate youths to distract them from concentration on the race. These racing tactics are commonly use to inflict a scold or criticism. It's often difficult for a youngster to ignore these adults because most youths are taught to respect the authority. The world of bicycle racing is not the same as the world with which they are familiar. Of course, the knee-jerk reactions to such treatment may be to argue, retaliate, or to complain to the officials, but we have learned that those approaches aren't the best actions for long term acceptance. We don't want our juniors to disrespect or retaliate; we teach and train them to ignore such remarks and actions. Furthermore, we conduct "toughness" practices that our juniors are not rattled and become immune to "the treatment". This behavior is transferred to their races. As a result in the long term, our juniors earn respect from their racing elders.

Besides dealing with intimidating language and/or actions, junior cyclists must face the matter of "unfairness" in racing. "Unfairness" rises up from various situations in bicycle racing. Juniors' races may or may not be segregated according to age or gender field, but rarely by ability; hence, the field often contains a mix of experience and ability (Category 4/5 to Category 1). Juniors and parents often complain, "It's not fair!" "Your team is too big – it's not fair!" Your junior is too experienced – it's not fair!" We've even been told, "Your junior is too big for his age – it's not fair!" The mistake here is that juniors, parents, (and perhaps some coaches) are somehow under the impression that bicycle racing is "fair". We don't know where that impression originated. It is naïve to believe that bicycle racing is fair. The truth is that bicycle racing like "real life" is not always fair. With that acceptance, we instill our kids with the saying, "Bicycle racing isn't fair, so don't complain. Learn to deal with it. Learn how to succeed when faced with the obstacle of "unfairness". We tell our kids, "To be tough in the face of unfairness. It's okay to be tough. It's not okay to whine. It's not Sunday School!"

The ability to deal with challenges doesn't depend on fairness. If bicycle racing was fair, then juniors would be permitted to use adult gearing in Category races. If bicycle racing was fair, there wouldn't be any age group restrictions on aero equipment. There wouldn't be any teams. Every race would be a time trial and we would have power, size, age, gender, intelligence, skill competency, and such categories. Everyone in the category would have the same equipment so the race would be fair. Ridiculous! These differences are the things that make bicycle racing challenging and real. Being stronger, smarter, equipment preferences, rules, and all the unique characteristics make the sport interesting and unique for individuals.

Underestimating the Importance of Emphasizing the Team Over the Individual

We coach an entire team, so emphasizing the team over the individual may seem important in our situation, but it may not seem to apply for those who are coaching individuals, especially individuals who may be unattached. To the contrary, it may be more important to those who don't have a team. There are at least two important reasons that all juniors, parents, and coaches should not underestimate the important of team emphasis over the individual.

First, whether or not your junior races for a team, he or she will certainly race against individuals who belong to a team. The individuals who belong to a team and race as a team will have huge strategy and tactical advantages over an individual. Team

racing elevates the power of each team member to be able to influence the outcome of a race. Unattached individuals should understand how the team may function in a race such that the individual may be able to anticipate and/or mitigate actions that a team can dictate.

A team that emphasizes its whole over the individual makes the task of anticipation and decision making for the opposition very difficult.

Second, a cyclist's career is dependent on team racing; hence, it is very important for your junior to learn how to flourish on a team and within the team environment. It is important to educate of your athlete and his/her parents about being the model for an ideal cyclist, that is, the qualities that are important to teams like the ability for an individual to sacrifice for the success of the team. These qualities are necessary for the development of young cyclists to easily transition to future team/teams, whether collegiate, professional, or local club.

Just as we stated in our last column, through your experience, you may have other mistakes that you have found to be common to add to this list. For us, we have found that it is impossible to always avoid these common mistakes. Sometimes they seem to be camouflaged by unique circumstances, but at least when they become apparent and we are better prepared to handle them.

For more information contact us about our "Coaching Juniors - The Team Approach" Clinic and manual. **www.fraziercycling.com**, 770-513-8640.

Coaching Quick Reference Guide Common Injury Conditions for Cyclist - Hamstring and ITB Tendonitis

Bernard Condevaux, PT, CSCS,

CEU #72 USA Cycling Continuing Education Unit (CEU)

Instructions: Effective January 1, 2012 USA Cycling will no longer accept mailed in self-tests including past tests. If the self-test is not online, it is not eligible. Self-tests must be taken online through your MYUSACYCLING account (see COACHING LINKS). Each successful self-test will earn 1.0 CEU. The fee for the self-test is $15. You must answer 6 of 8 correctly. You make take the re-test as many times as necessary to pass for one fee.

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Tendinitis (or tendinosis) is inflammation of a tendon. "Itis" is from Greek, and the suffix means inflammation, so arthritis is inflammation of the joint. Common areas of tendinitis include the hamstring at the back of the knee and the ITB at the outside of the knee. The possible causes for this condition include post-traumatic tissue changes. For example, in a crash, the cyclist might land on the outside of the knee and develop scar tissue in the area which would affect how the IT band moves and glides. Another potential cause is muscle imbalance and instabilities. Weak glutes, tight glutes and/or hamstrings and weak quads are all contributors to these imbalances and instabilities. A third potential cause is bike fit and poor pedaling mechanics.

What To Do

There are several strategies that can be utilized once tendonitis is suspected. The old RICE (rest-ice-compression-elevation) is a tried and true treatment that is still beneficial. A more proactive strategy might be to do massage, either self-massage or have it done professionally. You must be careful to avoid adding too much trauma to the system, so deep massage techniques might not be optimal initially. Techniques that go across the tendon (typically cross friction) are preferable. It will hurt at first but if done properly and with the right amount of pressure, the pain starts to go away, and will actually feel numb within five to six minutes. The idea is to stimulate the tendons while avoiding the muscles, because tendons have less blood flow than muscle; when inflamed, this blood flow is limited even more. This technique increases the blood flow to the tendon (by actually creating a local micro-trauma) to accelerate the healing process. Think about it: if taking medications, how do they get to the affected areas? Through the bloodstream. Limited blood flow means the medication isn't getting to the affected area.

Another area that should be addressed early in the process is bike fit. If you are putting your hamstrings on stretch and overloading them, this typically indicates the saddle is likely positioned too high. A recommendation might be to move the saddle forward and/or down. A road cyclist should have about 25 to 35 degrees of knee extension at bottom dead center (BDC). If you are not at that angle, you may be putting too much stress and stretch on the hamstring tendons on a repeated basis, thus increasing the likelihood of inflammation. The tibia (lower leg bone) rotates outward when the knee extends and inward when the knee bends, increasing the tension on the IT band. This tension is reduced at 25 to 35 degrees of knee flexion, thus decreasing potential ITB friction.

If ITB friction or inflammation is present, the preferable modification with cleat alignment is to rotate to a neutral or slight

externally rotated position because the IT band wants to turn the tibia outward. You should also look at the amount of float present with the pedal; many cyclists have too much. If this is the case, the athlete is not getting into the ideal position, requiring the ITB to try and stabilize the knee more than it should.

You may want to consider a wider bottom bracket with ITB problems. Many aero bikes have a narrow BB and this affects the effective hip and knee angle by pulling the knee inward, tilting the kneecap inward and putting the ITB on stretch, which often leads to overuse and inflammation. The final consideration is orthotics for the cycling shoes. Hyper-pronating puts the ITB in a stretched position by effectively inwardly rotating the tibia and knee. Orthotics support the forefoot and prevent the hyperpronation, keeping the foot in its biomechanically ideal position. One note about cycling-specific orthotics: Regular orthotics (like those used in running) have correction at the forefoot and rearfoot. Cycling orthotics are forefoot only, as the heel is not on the pedal (so the old running inserts are not the answer!).

Training and Exercise Strategies

I recommend incorporating single-leg intervals into training because cyclists are usually stronger on one side of the body than the other. Single-leg intervals improve pedaling efficiency and smooth out the pedal stroke. Strengthening exercises performed on one side independent of the other delivers more balanced strength bilaterally and allows muscles to work effectively, improving efficiency and performance, as well as preventing injury. For example, if doing a leg press, the stronger leg often does more work, effectively maintaining the imbalance. If doing single leg squats, the volume/intensity is equal on each side.

Stretching the hamstrings and calf muscles is also recommended. A word of caution—you must be extra diligent and not stretch to the point of pain with already inflamed tissue. Stretching into pain in essence keeps the tissue inflamed and delays healing. You should go into a light stretch and hold for 30 seconds, repeating for 3-4 repetitions, 3-4 times daily. The athlete needs to be consistent because flexibility takes time. Calf stretches are important because if you have tight gastrocnemius muscles and tight Achilles tendon, you create the same forces that hyper-pronation creates, feeding into hamstring and ITB issues (see the how-to section for stretching ideas).

Another consideration is strengthening the glutes. The athlete will not use the hamstring as much if they have strong glutes. Hamstrings and glutes both act as hip extensors, which is the power behind the down stroke of the pedal stroke. Therefore, a strong glute decreases stress on the hamstring by requiring less force from it. The ITB originates from the glutes (attached), so with a strong glute you have a stable anchor from which the ITB can do its work. This stable origin prevents the ITB from having to do more than it is supposed to do. Also, because the ITB originates from the gluteus maximus, improving flexibility at the glute effectively improves ITB flexibility.

Lastly, another training strategy to consider is increasing cadence by lowering the gears. A mistake commonly made in training is to jump into the big gears too early. It may also prove beneficial to limit heel drop during the down stroke (which has same effect as changing saddle height).

Hopefully these strategies will help keep your riders pain free. O

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

How-to—Exercise Techniques

Yoga-Style Hamstring Stretch: From a forward lunge position (Figure 1), go to a dig low (Figure 2), groin stretch (Figure 3), finish coming up and stretch the hamstrings (Figure 4). Repeat to the other side.

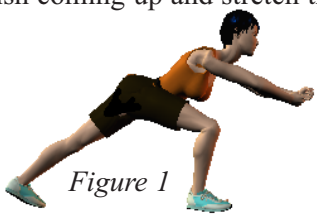

Figure 1

Figure 2

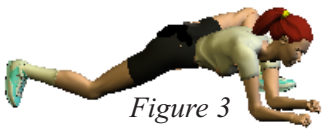

Figure 3

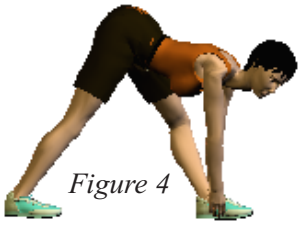

Figure 4

Hamstring Stretch: Athlete lies flat on their back. A folded towel is placed under the buttocks/lower back. A cord is then placed around one of the ankles. With the leg straight, the athlete pulls the cord and brings the foot toward the athlete's face. Repeat with the opposite leg.

Calf Stretch: Heels are over the edge of a step. The athlete allows gravity to lower the hell and stretches the calf muscle.

1. Common areas of tendinitis in cycling include:
A. ITB at the outside of the hip.
B. ITB at the inside of the knee.
C. Hamstring at the glute.
D. Hamstring at the back of the knee.

2. Common causes of tendinitis in cycling include:
A. Weak calves, tight glutes and/or hamstrings and weak quads that contribute to imbalances and instabilities.
B. Weak glutes, tight glutes and/or hamstrings and tight quads that contribute to imbalances and instabilities.
C. Weak glutes, tight glutes and/or hamstrings and weak quads that contribute to imbalances and instabilities.
D. Weak glutes, tight glutes and/or hamstrings and weak core that contribute to imbalances and instabilities.

3. In treating tendinitis it is ideal to:
A. Stimulate the tendons while avoiding the muscles, because tendons have less blood flow than muscle.
B. Stimulate the muscles while avoiding the tendons, because tendons have less blood flow than muscle.
C. Isolate the tendons while stimulating the muscles, because tendons have more blood flow than muscle.
D. Stimulate the tendons and the muscles, because tendons and muscles have equal blood flow.

4. If ITB friction or inflammation is present, the preferable modification with cleat alignment is to:
A. Rotate to a neutral or slight externally rotated position because the IT band wants to turn the tibia outward. Also look at the amount of float present with the pedal; many cyclists have too much.
B. Rotate to a neutral or slight externally rotated position because the IT band wants to turn the tibia outward. Also look at the amount of float present with the pedal; many cyclists have too little.
C. Rotate to a neutral or slight internally rotated position because the IT band wants to turn the tibia outward. Also look at the amount of float present with the pedal; many cyclists have too much.
D. Rotate to an internally or slight externally rotated position because the IT band wants to turn the tibia outward. Also look at the amount of float present with the pedal; many cyclists have too little.

5. Important prevention strategies in training is to:
A. Calf stretches and strengthening the glutes.
B. Calf stretches and strengthening the quads.
C. Quad stretches and strengthening the calf.
D. Glute stretches and strengthening the calf.

6. In the downward pedal motion power is most effectively produced when:
A. Hamstrings and glutes both act as hip flexors.
B. Hamstrings and core both act as hip extensors.
C. Hamstrings and quads both act as hip flexors.
D. Hamstrings and glutes both act as hip extensors.

7. In performing a yoga-style hamstring stretch:
A. From a forward lunge position, go to a dig low, calf stretch, finish coming up and stretch the hamstrings.
B. From a forward lunge position, go to a dig low, groin stretch, finish coming up and stretch the quads.
C. From a forward lunge position, go to a dig low, groin stretch, finish coming up and stretch the hamstrings.
D. From a reverse lunge position, go to a dig low, groin stretch, finish coming up and stretch the hamstrings.

8. Describe your favorite glute strengthening exercise.

Moving? Subscription Question(s)? Write: Performance Conditioning Cycling,
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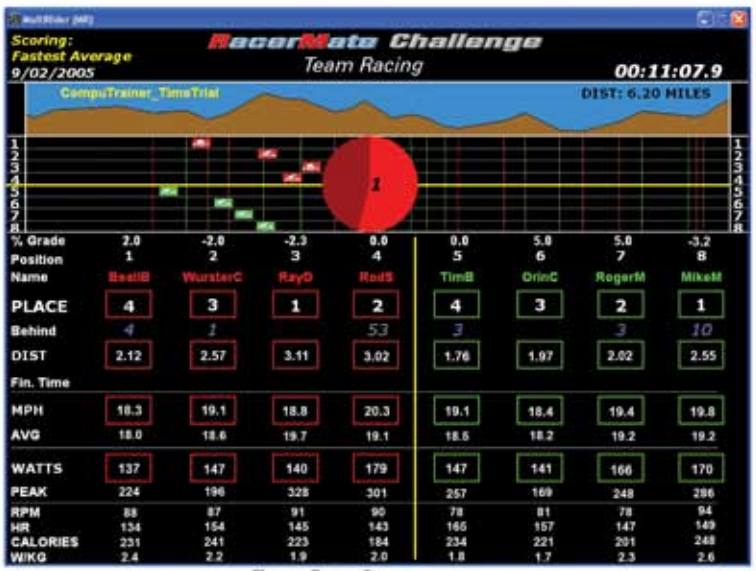

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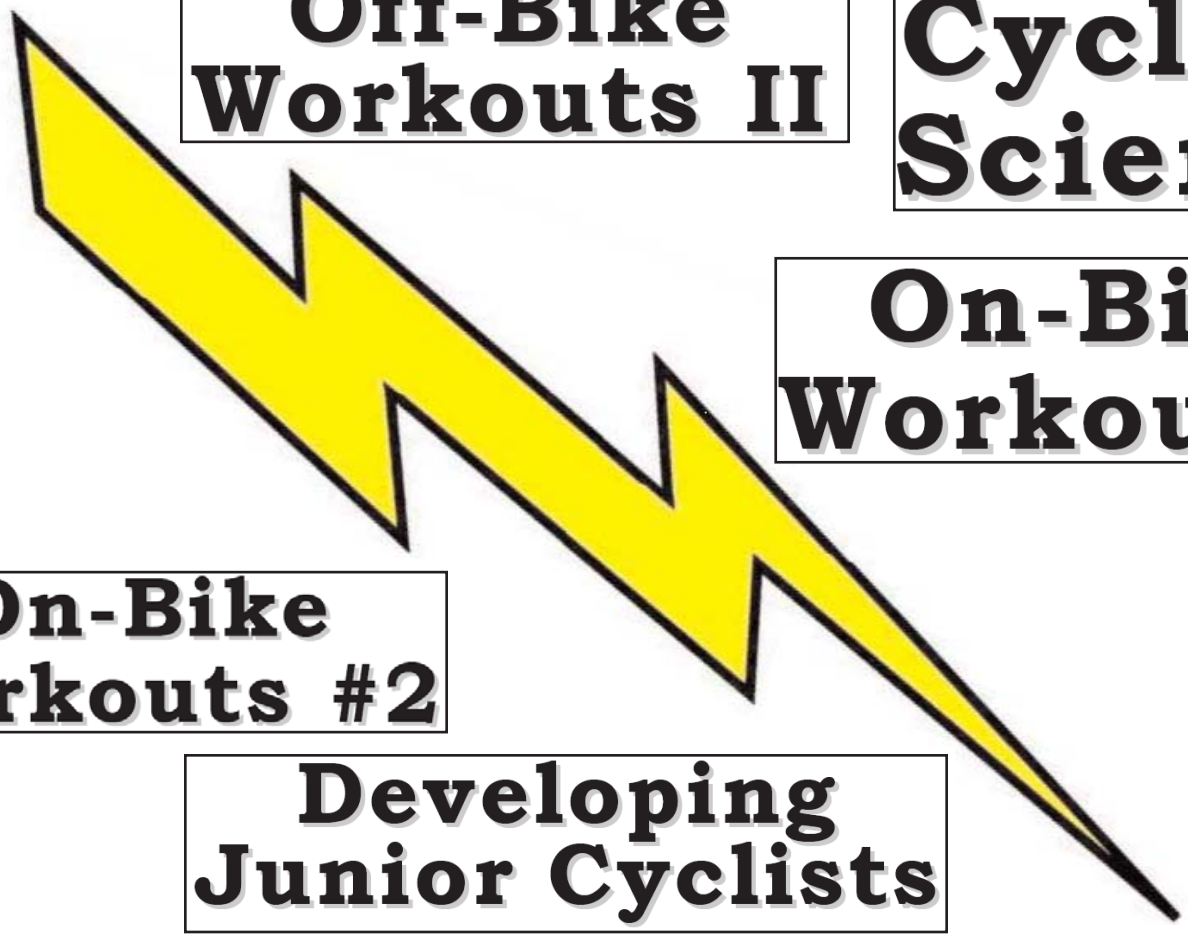

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If you are not currently a USA Cycling certified coach but would like to become one, you can find the answer to many of your questions on the USA Cycling website (**www.usacycling.org**) in the Coaching Program area. The entry level (USAC Level 3) 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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For more information or to register online, visit our website at **www.cme.ucsf.edu**. You may also call the Office of Continuing Medical Education at (415) 476-4251 or email info@ocme.ucsf.edu.

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Non MD/AHP	$349	$399
USA Cycling Coach	$349	$399
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OPTIONAL ACTIVITY REGISTRATION

$200	**Medical Emergencies in Cycling Hands-on Pre-Course** August 22, 8:00 am – 3:00 pm; Limited to 20 attendees
$499	**Bike Fit University and Hands-on Workshop** August 22-23, 8:00 am – 3:30 pm
No Charge	**Group Bicycle Ride** August 23, from 4:00 pm; Limited to 75 attendees
$40	**Dinner at Marigold Café** August 23, 6:00 - 9:00 pm; Limited to 85 attendees