PERFORMANCE CYCLING CONDITIONING

A NEWSLETTER DEDICATED TO IMPROVING CYCLISTS

Volume 15, Number 7

WHAT'S INSIDE?

Welcome to the 2nd Edition of the All Electronic Performance Conditioning Cycling- A newsletter dedicated to Improving the Cyclists

We hope you enjoyed our first issue. Of the many efficiencies this change provides we are most excited about the ability to instantly expand your knowledge through our new Chain-Links. When you see this link that means when you click you learn more. The link might be a past article from our world's largest conditioning library of over 500 articles. It may be a video clip showing you how to do an exercise properly or the research study or abstract behind a particular statement within an article.

Another benefit this change will provide is your ability to ask a question or gain more information from an author or the services s/he provides. Also you can contact us directly to make a comment, give us ideas on things you would like to see or answer a question. Give it a try at **condpress@aol.com**

These are just a few of the benefits our new format provides. Many more will come as we evolve into this exciting new medium. We hope you enjoy!

Ken Kontor, Publisher
Performance Conditioning Cycling

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

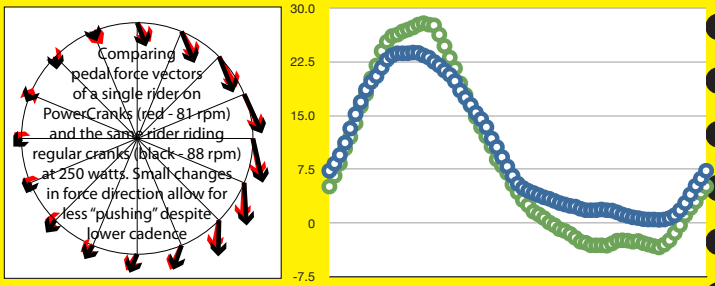
Of course it does. To say otherwise is like saying that cycling is the only sport in the world where the technique of the major component of the sport doesn't matter. But this myth persists. It persists simply because pedaling technique has been almost impossible to measure (requiring expensive pressure 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,

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[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

PERFORMANCE CYCLING CONDITIONING
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Conditioning Interview: The State of Cycling Coaching; a 10-Year Perspective

Sam Callan, Coaching Education Manager, USA Cycling Coaching Association

Sam's responsibilities include strategic plan development for coaching education and certification program for USA Cycling. Organize coaching online and "in person" clinics, seminars and conferences on a national scale including a major conference every 2 years. Edit, revise and develop coaching education manuals. Develop and maintain program budgets. Communicate with coaches; serve as editor-in-chief for the coaching newsletter. Organize resources and travel as needed to meet needs of high performance athletes. Assist with HPP development. Develop strategies with communications, IT, athletics and membership departments on projects. From 1997-1999 he was a Sport Science Research Assistant for the United States Olympic Committee.

Sam has completed many marathons and the 2000 Leadville mountain bike race.

Sam Callan is in his 10th year as USA Cycling coaching education manager. He took time out with us to reflect on his tenure and where he sees coaching going in the sport of cycling.


Sam Callan

BEG INT ADV MSR MTB **PC: Based on your experiences since you became involved with cycling coaching, how has the cycling coaching profession evolved?**

SC: Chris Carmichael started the coaching education program around 1993. The certification and coaching education part of coaching had been floundering for awhile after Chris left USA Cycling and with some other staff changes. When Steve Johnson gave it to me, he put me in charge of making cycling coaching a profession just like all others. In fact, the joke we used to have here was, "you should be able to make a living as a cycling coach, get married, buy a house and get divorced, just like every other profession". (Although we would prefer that the divorce part not happen!). His vision, which I'm fully on board with, is to professionalize what people are doing. About this time a few events really helped out. First, one has to consider the effect of Lance Armstrong. In 1999 he won the Tour de France. During the coverage, Chris Carmichael was on OLN (now Versus) discussing Lance's training. Through his efforts of promoting coaching and through his coaching business people started to come out of the woodwork and proclaimed, "Hey, I'm a cycling coach"! Even people outside of the cycling world had become aware of cycling coaches. The people who were already coaching cyclists were given a boost; those who thought about how much they would like to coach cyclists and make a living doing it, could do so.

USA Cycling already had a program to improve the education of coaches. We just needed to reach folks and show the importance of education and staying abreast of changes and innovations just as other professionals. Lawyers, doctors, accountants have to go to in-service training and continuing education. We modeled ourselves after those professions. As people start in coaching they may

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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not necessarily make a living at it but they certainly generate revenue from it. Then they start to see the value of having the educational background and gain the knowledge that they could use to improve their athletes and to set themselves apart from the person down the street.

PC: I would say as far as USA Cycling is concerned that education forms the epicenter and support services start to evolve from that center. In order to start making a living, support services should include things like group and liability insurance at a reasonable cost. How does USA Cycling provide these support services to allow cycling coaching to take the next step?

SC: There are several issues here. One is, and you hit on it, insurance. This is an underutilized part of our program. As part of their membership, coaches get access to professional liability insurance through USA Cycling. Some cycling coaches may be coaching athletes in other sports or are personal trainers who might need a broader (and more expensive) policy to cover all the activities. In such cases they may be getting their liability insurance from another entity that is more broadly based so that they have better coverage.

People think of insurance as if something happens it pays off. But, more importantly, if a coach is sued, the liability insurance pays for the defense against law suit. In the United States, we don't have a loser pays system so even if you win the case you still are handed a big bill to cover your defense costs.

USA Cycling offers access to a professional liability policy starting at $100 with an additional $50 if you include coverage for defense against child molestation accusations. USA Cycling recommends that anyone working with juniors add the molestation coverage.

This goes along with a lot of other things we have discussed as to what coaches do. It starts with setting up a business, which includes finding health insurance, how to market yourself and office work, such as sending out invoices and other things that coaches don't want to talk about. Coaches love to talk about the sexy things such as training athletes. When they sit around talking over a beer they talk lactate threshold, not how they do tax returns. But coaches who are making money either as a living or a substantial part of their living do a lot of this "back room" work. This is where a lot of coaching businesses fail. People may know their craft (coaching), but they may not have the business knowledge to run a coaching business.

In setting up a business, the coach must determine the form in which the business will operate. Is it a sole proprietorship, partnership, an LLC, incorporated? Whatever the form, each has its own ramifications for the individual with regard to tax liabilities, personal liabilities, etc. The business side of coaching is an area we have done attempted to address, but the attendance at these types of sessions hasn't been the best. We struggle with how to get information out to people in a format that's useful to them.

Another issue with coaching is basic health insurance. For those with a spouse/partner, they might be covered under the spouse/partner's insurance coverage, but many coaches do not have access to basic health insurance. As members of USA Cycling, coaches are eligible to purchase some basic health insurance coverage. (See member benefits on the USA Cycling website).

PC: Would USA Cycling ever consider a support staff or system to help coaches manage this type of support services? The support staff might offer accounting services or marketing or tax management on a pay fee basis to member coaches. This collective system might offer coaches a very cost effective means of handling these things and let the coach focus on what s/he loves to do and that is coach. Would this be viable?

SC: This is not something we have considered; I think it would be beyond the scope of what USA Cycling can offer.

PC: Let's talk about matching coaches with potential clients. What has USA Cycling done in regard to this?

SC: One of the early things we did was with a person who owned a website where that site would host coaches contact information. The coaches could build their own small site within the website. But this format was a little awkward and cumbersome to work with so it really never was a money maker for the website owner. Eventually, our IT department was able to develop a "find a coach" function on the USA Cycling website for athletes who are looking for a coach. A person seeking a coach can search by a variety of criteria and get contact information about a coach. Coaches can opt-in to be listed on the find a coach page.

Also, through the USA Cycling Communiqué that goes to all our members, we do print articles from coaches not only to promote individual coaches but coaching in general.

In the "**Find A Coach**" area of the USA Cycling website, USA Cycling has a description explaining the coaching certification system and the different levels of certification. Also, there is a document that "**Picking a Coach**". This has been revised recently to include information to parents of juniors. This helps the parents learn more on what to look for in a coach.

PC: Moving forward, what are the challenges the profession and association now face? One of the things I would like to see is that all professions have a common language. A doctor communicates with a doctor in a specific language, lawyer to lawyers and so on. In our realm, jump training can mean jumping off boxes such as plyometrics or jump training could mean the start of a sprint on the bike. Has this been considered for cycling?

SC: As far as terminology is concerned we have tended to stay away from it a bit. In our courses we are very consistent; however, if a coach wants to go out and develop his or her own terminology for the clientele they market to, we haven't gotten into that aspect. I do know that for being with coaching for 10 years that if I say something to a coach, what I say is fairly well understood by both of us and we communicate effectively when it comes to cycling terms. I know other sports are starting to address this issue and we struggle with it somewhat. My goal is to use the language within USA Cycling and coaches are expected to know this language so

that when they talk to our staff we are on the same page. Nevertheless, I expect a coach to talk with juniors the same way they might be talking to another coach.

Another challenge is that of credibility. This is true with other niche sports such as triathlon. It comes down to making a living. I see the look on people's faces when you tell them what you do. I think the perception is "Can you make a living do that"? The folks reading this all know that it is possible; I am not sure that everyone else does. Along those lines, we need to do a better job of informing bike racers on the advantages of hiring a coach.

Another challenge is matching up clients with coaches. Part of that is convincing cyclists to see the value of hiring a coach versus spending a bunch of money on a lighter component. In the long run the lighter component may mean only a few seconds of improvement; whereas, a good coach would yield a whole lot of improvement through improved training. Getting potential clients to understand the value of having a coach is something that coaches can accomplish through testimonials. We have gotten to the point where it's no longer shocking to learn of someone hiring a cycling coach.

Another barrier is that people think that hiring a coach is really expensive, when in fact it's not that expensive. There is a wide range of what people pay for coaching. There are some people who charge one to two thousand a month, but they are the exception. The last time we surveyed the issue it was around 150 to 200 dollars a month. For all the money that's involved in bike racing, investing in a coach isn't exactly chump change but certainly a sound investment to use that equipment more effectively. However, if a self-coached athlete computes the amount of time spent researching training methods, designing the training schedule (and revising the training schedule) along with data analysis, the athlete might find the time spent on those activities is actually pretty expensive. That is time the person could be working at a job or spending with family.

Another challenge we are just starting to address is ethics in coaching. Ethics can be anything from making sure the testimonials on the website are accurate all the way to the issue of being romantically involved with clients. Are coaches abusing their position of trust? Are they over stepping their bounds as a coach?

In our Level 3 manual introduction there is a Code of Conduct but it is only a set of recommendations and guidelines. These will go through another step of evolution before the manual is reprinted.

PC: Do you perceive some teeth behind ethics valuations?

SC: All members of USA Cycling (racers, coaches, officials, etc) agree to abide by the USA Cycling Code of Conduct. Our technical director is working on an adjudication process now. He is putting some teeth into the process where if a complaint is filed against a coach along the lines of a code violation, there will be a procedural method to follow up on this.

There are some issues that go beyond USA Cycling where some behaviors are potentially criminal. In this case parents and athletes should report these cases directly to authorities. To address the elephant in the room, cases of sexual misconduct with underaged athletes should be reported immediately to law enforcement. We, as USA Cycling, don't have the ability, resources or expertise to investigate such allegations. If a parent calls USA Cycling with a misconduct accusation our only reaction is to have that parent call the police immediately. Once a decision from the legal system is completed, USA Cycling can apply sanctions against that coach.

There needs to be communications between parents and juniors and coaches within the case of a multi-coach setting. Parents need to be on the lookout for changes in behavior and be assertive in asking questions of both the athlete and the coach or team personnel. When hiring a coach, the parents need to perform due diligence in checking out the coach.

USA Cycling requires a criminal background check to become and maintain a coaching license. We are mainly interested in felonies and sex crimes. However, the background check should not be seen as a "green light". Many perpetrators of sex crimes go undetected or acts go unreported so that they never show up on a criminal background check since a criminal complaint was never filed. The person (or group) hiring the coach must go beyond the background check and learn about the coach's background.

PC: Moving to an issue you discussed earlier, that of a cycling coach and a personal trainer. One of the big differences I see is the base of operation. By this I mean cycling coaches work out of their home whereas a personal trainer most often will work out of a gym, or other base of operation. With this base comes a certain level of comfort for the client to walk in and sit down in a formal setting. Is this difference in operation a challenge to a cycling coach and what can they do to address this issue?

SC: That is certainly a challenge. My sense is that most coaches are getting clients via word of mouth and then have contact via email/phone and then set up a face-to-face meeting (often at coffee shops, cycling is a coffee-centric sport after all!). Other than a velodrome, there is not often going to be a brick and mortar place where a cyclist is going to know where to go to get questions answered; at least not something that is easily recognizable as such.

PC: Final question, what is the relationship of USACCA and USA Cycling? Are their challenges and how is it moving forward?

SC: When we started the coaching association I think it was perceived that the coaching association would evolve into a bigger voice in the cycling world as a whole. However, because of the way USA Cycling has evolved that never occurred. So the USACCA is more of a loose confederation rather than a self-sustaining, independent association. Currently, there's no board representation on the USAC board. I don't see this changing in the near term because it would require redirecting of goals and objectives. We want to make one large organization for cycling and not little fiefdoms within it where everyone is staking out turf and creating turf wars. We've been there and we don't want to do that again. O

FROM THE SUMMIT

Coaching Quick Reference Guide

Common Injury Conditions for Cyclist-Neck Pain

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. Recently he worked with Team Quick Step at Tour of California!

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

Chain Link: Attend this year's Summit click **HERE!** October 13-17 2010

BEG
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ADV
MSR
MTB

For cyclists, neck pain complaints usually present at the base of the neck or base of the skull (suboccipital area). If the cyclist has symptoms that radiate into the arm(s) or lead to weakness it is very important to seek a qualified medical professional, as this may indicate disc pathology. This is a rule of thumb that every cycling coach needs to abide by.

Possible Causes of Neck Pain

- Posture: Poor posture on the bike is a major cause of neck pain. Holding the chin out and maintaining the neck in a "sag" position (base of skull near base of neck) is a common posture observed in cyclists. Riding in the drops places this stress on the neck normally, but when riding on the hoods, it is especially ineffective. This "sag" curve in the neck, over prolonged time in the saddle, leads to pain. This poor posture often extends to everyday life especially for those who work a desk job (sitting at a computer).
- Muscle Imbalances: These can include tight muscles in the chest and back of the neck (pectoralis minor/major, levator scapulae, suboccipital muscles) as well as weak muscles in the front of the neck (longus colli) and between the shoulder blades (rhomboid major/minor, middle trapezius: aka periscapular muscles), which provides much of the support of the neck. This muscle imbalance is shown in rounded shoulders and forward head posture.
- Disc or Joint Pathology: Most people over the age of 25 or 30 years old have some degree of arthritis. Many people will have disc issue as a result of sitting posture. If you think of the disc as a jelly donut and the vertebra as a shoe, then tilt of the head is similar to stepping on the back of a donut: it will push the jelly forward and bulge the donut. In the case of a disc, adverse pressure on one part of a disc will, in essence, shift the nucleus (of "jelly") the opposite way. As the nerves depart at the back/side of the vertebra, a disc bulge will put pressure on one aspect of the nerves of the neck, creating symptoms in the arm. The body will also tighten muscles in the area of the bulge as a protective response. This is how poor posture affects the neck.
- Improper Bike Fit: see below.

- Inadequate Training: Poor training can be related to muscle imbalance as well as poor endurance of the stabilizing muscles. Increasing mileage too fast does not allow the body to adapt to longer stress. Increasing saddle time progressively allows the postural muscles to adapt just like the gluteals and quads.

What to do

- Ice and anti-inflammatory medicine (Ibuprofen, not acetaminophen) are effective initially during acute phase (0-2 weeks).
- Ice or heat sub-acutely (i.e. after 2 weeks post-injury/ pain onset).
- Cervical pillow at night is something you might consider recommending to the cyclist. This offers support for the curve of the neck over an extended period of time and can relieve muscle tightness. These pillows can be a little pricy. One alternative would be to take a small bath towel and roll it up tight to about two to three inches in diameter and stick it inside the pillow so it fits right in the middle of the neck, which provides critical support where it's needed.

Bike fit strategies

- Shortening the stem length and/or raising the handlebars are strategies to avoid excessive forward reach. Excessive reach as the athlete rides pulls the shoulders forward and brings the neck into more extension. The coach will want to look at the position of the athlete's neck and shoulders when on the bike.
- Riding with hands on hoods is a strategy that allows the cyclists to be in a more "neck neutral" position. Riding down in the drops improves efficiency through a more aerodynamic posture, however, this forces the athlete to pull the head up even more resulting in more compression on the neck. A balance between riding the hoods and the drops in training will decrease the compression experienced.
- Level the saddle. When the saddle is tilted forward, the athlete has a higher tendency to push back from the bars: basically stopping the body from sliding forward on the saddle. This puts stress on the muscles around shoulder blades that go to the neck, especially the levator scapulae and trapezius, because the athlete is constantly putting on the "brakes" with the hands to avoid sliding forward. In addition, instruct the athlete to avoid locking the elbows. When s/he rides with locked elbows, all force is transmitted to the neck, and the shock absorption effect of the triceps is lost. When observing an athlete on the bike make sure there is some bend in the elbow, check their arm reach, and get them in the right position that they should normally ride in.

Training and exercise

- Build endurance on the bike by avoiding too many miles too early. Make sure you allow your athlete to adapt and avoid fatigue initiated strain.
- Unlock the elbows beyond a bike fit strategy and more for a technique improvement.
- Strengthen the longus colli muscles of the neck (see Figure 1). This muscle is a deep neck flexor. There is a 3-minute test to assess if the muscles are adequately strong. The athlete lies face up on a bed or table with the shoulders firmly supported on the bed, with the head over the end of the bed or table. The athlete should be able to hold their head in a chin tucked, straight neck (in line with body) position over the bed/table for three minutes. An athlete who is able to hold this position for three minutes has good longus colli strength. If unable to do so, then the longus colli is likely unable to counterbalance the postural stress of the cycling position and must be addressed with exercise.

- Strengthen the upper trapezius and periscapular (muscles between the shoulder blades). It is difficult to have bad posture if the shoulder blades are in good position. Stabilizing the athlete's shoulder blades will effectively stabilize their neck. This platform needs to be stable to ensure a pain-free neck.
- Stretch tight muscles by moving the neck front to back and side to side. The athlete should feel a good range of motion and they should feel a comfortable stretch in the muscles. Performing a corner stretch for the pectoral muscles can help reduce rounded shoulder posture as well.

Photo Credit: Long Photography

Chain Link: Contact the author at **bernard.condevaux@selectmedicalcorp.com**.
Chain Link: **Here** are a few stretches from cycling coach Jeb Stewart

Elite CYCLING Performance Digest

Knowing the Difference
True Anaemia v. Sports Anaemia and Performance on the Bike

Guy Thibault, Ph.D., Scientific advisor to the Canadian Cycling Association; Associate professor, Kinesiology Department, Université de Montréal

Should cyclists be afraid of sports anaemia? Let us examine the physiological role of iron in physical exercise.

Iron is the element of haemoglobin contained in the red blood cells, which are associated with the transport of oxygen from the lungs to as far as the cells via arterial circulation. Knowing that a key element of performance on the bike is the transport of oxygen to the muscle cells helps us to grasp the great importance of the body's reserves of iron.


Guy Thibault Ph.D.

Sources

While men generally consume the recommended intake of 8 mg of iron per day, the majority of women don't manage to achieve the 18 mg per day which they require (the need for iron in women is higher than in men because of the loss of blood associated with menstruation).

We find iron in food in both haem and non-haem forms (haem indicates 'coming from blood'). Haem iron is easily absorbed. We find it in animal foods. Non-haem iron, found above all in vegetable foods, but also in animal foods, is less easily absorbed by the digestive system.

Your nutritionist will confirm that the best sources of iron are offal (especially liver), beef and the dark meat of poultry, and some seafood, like oysters. Legumes (like lentils) are difficult to digest when you're not used to them, but they too are good sources of iron (non-haem, however). Potatoes, beet, spinach, broccoli and other green vegetables contain iron, but it is less well absorbed: these foods also contain what we call oxalates, which inhibit the absorption of iron.

Among cereal products, it's whole grains that are richest in iron. However, its absorption is inhibited by the fibres and phytates which they also contain. Vitamin C and meat improve the uptake of non-haem iron. This is why nutritionists recommend taking them at the same time as foods containing non-haem iron.

Studies carried out in Quebec show that athletes presenting with low iron reserves tend to eat very little meat. Note that another way of obtaining iron is to cook your food in a cast-iron pan: the iron molecules will incorporate themselves into the food during cooking.

True anaemia

Iron deficiency is one of the most common deficiencies. It can progress by stages to the most severe form, which we call 'iron deficiency anaemia'. First of all the level of ferritin-a precursor of iron-falls. Then the serum iron-a way of putting iron in reserve-falls in its turn. Consequently the number of red corpuscles, the level of

haemoglobin, and therefore the hematocrit (level of red cells in the blood) is reduced, with a consequent reduction in aerobic fitness. This progressive descent is explained by the fact that the bone marrow needs iron in order to produce new red cells. When reserves are insufficient, the synthesis of red cells is slowed down. This is why the level of ferritin and hematocrit are associated.

Iron deficiency anaemia is thus characterised by a weak quantity of haemoglobin due to insufficient iron reserves in the body. Symptoms associated with it are pallor, fatigue, a lack of vitality, and difficulty in maintaining body temperature when it's cold. It's estimated that close to 5% of women between 20 and 45 and that more than 15% are facing a type of iron deficiency where anaemia is not yet present. In this instance, the level of ferritin in the blood plasma is low. Note that physical exercise is not recommended for a pregnant woman suffering from anaemia.

Sports anaemia

We call 'sports anaemia' a condition which you often find among endurance athletes like marathon runners and cyclists. Their hematocrit (that is, their level of red cells in their blood) is below normal, but all the other indicators of their iron reserves show a normal level. In this case, they are note facing true anaemia. In fact, if their hematocrit is low, it's not because they lack haemoglobin. It's more like that they benefit from a large volume of plasma, thanks to their good physical condition. In fact, one of the first adaptations of aerobic training is the increase in plasma volume, which is accompanied by an improvement in circulatory function (the heart pumps the blood more easily if there is a large volume). Thus numerous cyclists (who do not take EPO or related substances) can have a hematocrit inferior to, and not superior to that of healthy sedentary people.

Performance

It has been clearly shown that a true anaemia seriously affects performance on the bike, along with all other so-called 'endurance' activities. This is logical: blood low in haemoglobin is less effective at transporting the oxygen which the muscles use in contracting. On the other hand, we don't know very clearly if the early forms of iron deficiency affect performance. Some studies suggest that an iron deficiency, even without being true anaemia, affects maximal oxygen uptake (VO_2max), endurance, and aerobic performance. But other studies have revealed no effect of the iron deficiency on VO_2max or on aerobic performance. This might not be so much the reduction in the quantity of haemoglobin but more the reduction in the concentration of ferritin (thus of body reserves of iron) which is correlated with a decrease in performance.

The following signs can be an indication of iron deficiency and should encourage you to see your doctor: abnormal fatigue, irritability, nervousness, training problems, and a lowering of physical performance. But beware: only a precise measurement of the blood parameters linked to iron will allow the accurate estimation of iron reserves.

Losses of iron

It would seem that nearly one in three cyclists will experience, sooner or later, an iron deficiency. This may be due to an insufficient intake of iron (frequent among vegetarians), but principally owing to insufficient absorption from the diet, a rise in rejection in faeces, and excretion through sweat. In addition, anaemia can be accompanied by a copper deficit, because the metabolism of iron and that of copper (which is often present in foods rich in iron) are strongly linked. Note, however, that the organism reacts to a lack of iron by sparing it.

Conclusion

Thus, contrary to popular belief, 'sports anaemia' is not true anaemia. And a deficiency of iron does not necessarily have any effect on performance on the bike. However, performance is affected when the hematocrit is low. Chronic fatigue can be the sign of anaemia; in this case, you should consult your doctor in order to find out your level of iron and haemoglobin. The prescription of an iron supplement requires medical supervision, since an excess of iron can significantly inhibit the absorption of zinc and copper, and can increase the danger of heart attacks in those at risk. ●

Chain Link: Contact Guy at **guy.thibault@mels.gouv.qc.ca**

Issues and Questions in Youth Cycling Development #6 - Youth Camps

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 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.

BEG INT

We just completed our fourth annual junior cycling training camp. We believe our experience in conducting our camps may be helpful to other junior coaches who may have be considering a cycling camp or may have considered sending their juniors to camp.

Originally, we restricted our cycling camp to our own team plus a few other juniors from local teams that raced us. For our first camp, we had less than twenty kids. We have been cautious about expansion to outside groups because we wanted to iron out the wrinkles and gain experience in running a successful camp. Some things will work and some things won't. It's best to use your own team as "guinea pigs" before opening up your camp to the world! Fortunately, we have been able to progress quickly and this year we had nearly fifty juniors attend. We have expanded our camp by increasing the total number of kids, the range of ages, and the number of days. The past two years, we opened our camp to other junior cycling teams and junior triathlon teams.


Kelli Rogan

Many coaches are aware of USA Cycling's regional junior development camps. In order to attend, juniors must meet be qualified based on performance, age, and category. USA CYCLING MISSION - To achieve sustained success in international cycling competition and to grow competitive cycling in America. Basically, USA Cycling junior development camps are for elite racers. Frazier Cycling's mission is a bit boarder, "Grow the sport by developing the next generation of serious cyclists. Groom junior cyclists with a focus on principles and values; good sportsmanship, attitude and teamwork. Promote a lifestyle of fitness and exercise to build a healthy environment for families." As a result, we target all junior cyclists, not just the elite ones.

Here are some things to consider if you decide to conduct a junior cycling camp:


Ralph Frazier

What are your camp objectives? What do you want to accomplish?
What ages, gender and skill level do you want to teach?

You'll need to decide the "level" of your participants. The same is true if you are looking for a camp where you can send your junior team members. For your first camp, we would not recommend opening up your registration to beginners, or juniors under the age 13. Younger kids require a lot of "non-cycling" related attention. For example, many will need their parents to attend. The younger kids and beginners require separate "lessons". Additionally, we recommend that the younger juniors and their parents have separate lodging. In recent years, we have been able to have 8 year olds attend our camps.

What do you want to teach?

Handling skills, climbing skills, conditioning and training, race strategies and tactics, team building, bike maintenance

How many days is your camp?

This is driven by the itinerary, the cost, the number of staffers, and the number of participants.

Location of Camp

If possible it should be a central location for the area you are targeting. Our camp locations tend to be in rural and remote areas. So check cell phone coverage (this is essential to keep communications with the other coaches and staff). Be aware of how far are the nearest bike shop, hospital, grocery store and Wal-Mart (you will always run out or forget something).

What accommodations are needed?

Unless this is a day camp lodging and meals are needed. State parks have lodges and kitchens (you must provide the meals). You can rent-a-camp or college dorm and have accommodations and meals provided. Our first camp was at a lake house owned by one of our coaches.

When should you schedule your camp?

Obviously, you will need to schedule your camp when the kids are not in school. We recommend summer break, but not during holidays. You need to announce the date several months ahead of the planned time. Some things to keep in mind when setting a date - check state and regional school calendars, planned USAC development camps and Jr Nationals dates.

What other activities? Entertainment?

You must include down-time. It doesn't really take a lot to entertain the juniors as long as they can be together. The younger cyclists tend to like more defined activities e.g. swimming, paddle boating, etc. The older juniors just like to "hang" but all ages enjoyed sports - ultimate frisbee, dodge ball, volleyball, football.

What related topics do you want to cover?

You can bring in guest speakers for:

Nutrition	Injury prevention
Bicycle maintenance	Race preparation
Sport psychology	

Itinerary

We have found that it is very important to start with a time trial. The time trial results are an excellent means to access the participants' strength and conditioning levels. This will help you divide the cyclists into groups for workouts and lessons during the camp. The number of groups may be limited by the number of staffers and coaches that you have on hand.
Before the time trial, we recommend a time trial clinic.

Here is a Sample Itinerary

- Check-in, unpacking
- Camp orientation and rules
- Time trial clinic and race
- Handling skills practice and assessment
- Hill climbing/descending clinic
- Race skills and assessment
- Criterium clinic and race
- Advanced race skills and assessment
- Road Race clinic and race
- Endurance ride
- Camp clean-up, packing
- Check-out

Plan well in advance of your camp. Check out race locations, map rides and traffic patterns.

Camp Sponsors

It is ok to get sponsors but don't have the sponsors subsidize the camp. The parents should pay for it because they will pay for other camps like church, soccer, scouts….it is ok to charge. Review other camp prices and set yours accordingly. Do not cheapen the value of our sport. Frazier Cycling is a business and profit from our camps pay our bills. Use the profit from your camp to pa y for team expenses.

Other Helpful Tips:

- It is a good idea to meet the local law enforcement and as a courtesy let them know when you will be there with your camp. This is especially important if your camp location is rural and junior road cycling teams are not the norm.
- You must be fully insured and all attendees must sign waivers as well as provide proof of insurance. And remember to take all waivers and insurance info with you in the support car in case of emergencies.
- Also important is to obtain permission from the owner ahead of time if you use private property for race staging, skills practices, etc. Be sure to have on hand a copy of your Certificate of Insurance if you are privately insured or your USAC coverage documents if your camp is permitted.
- Have a backup plan for rain - tents and trainers, indoor clinics, bike maintenance, etc.

Cycling camp is a great opportunity for juniors to learn more about cycling, but it is a great opportunity for enhancing your own coaching skills as a teacher, organizer, motivator, adviser, risk manager, and role model.

Got a Youth Development Question-

If there is a particular topic you'd like us to discuss or if you would like to share a junior coaching experience or ask a question, contact us at 770-513-8640 or **info@fraziercycling.com**. We will publish your requested information in the next issue as space allows.

Putting Research into Practice

Motivational Self Talk's Effects on Self-Confidence and Anxiety

Complied by MJ Engstrom, University at Albany,

The Research

Mechanisms underlying the self-talk-performance relationship: The effects of motivational self-talk on self-confidence and anxiety; Antonis Hatzigeorgiadis, Nikos Zourbanos, Sofia Mpoumpaki, & Yannis Theodorakis Psychology of Sport and Exercise:10, 186-192 (2009)

MJ Engstrom

CHAIN LINK: Mechanisms underlying the self-talk-performance relationship: The effects of motivational self-talk on self-confidence and anxiety

BEG INT ADV MSR MTB

The purpose of this study was to look at the relationship between motivational self-talk and self-confidence, anxiety and task performance in a group of young tennis players (mean age 13.47 years). In their summary of the literature, the authors note that past studies have linked self-talk with improved performance. There are two distinct types of self-talk: instructional and motivational. Previous experiments suggest that instructional self-talk (where emphasis is placed on HOW to perform the task) improves performance for a precision task; whereas motivational self-talk improves performance in a power task., such as weightlifting. This study was intended to further explore the mechanisms involved in the application and benefits of motivational self-talk in athletic performance

Subjects were 72 (36 males and 36 females) tennis players who had regional rankings for their age group and had experience at regional and national level competition in the country of Greece. The subject's forearm shots were evaluated (Broer-Miller Forearm Drive test). Additionally, the subjects took the Competitive State Anxiety Inventory-2 revised (CSAI-2R) to assess their self-confidence and anxiety levels. Following the establishment of baseline measurements, the subjects were told that their abilities were to be assessed over the course of 5 sessions and the results were to be made public. This was done to increase the participants' level of anxiety. The subjects were randomly divided into two equal groups of 36 that followed similar training regime. For the physical training part phase, the backhand was used so a training effect did not interfere with the experimental condition.

The experiment was conducted in 5 sessions. In the first session, the experimental group was introduced to the self-talk technique and told they were to use this as part of their training strategy. The control group spent the same amount of time on tactical aspects of the backhand shot. Sessions 2-4 all subjects performed 4 sets of eight swings where the ball was thrown in by an instructor. The experimental group was provided certain cue words and were both instructional (shoulder, low deep) and motivational (go, I can, strong). Participants were told they could repeat the words out loud or silently to themselves. Once a set was completed the subjects were asked to rate, on a scale of 1 to 10 whether they utilized the self-talk technique (1 = not at all, 10 = every time) during that series. In the final session, the participants repeated the same test (forehand stroke) as in the beginning of the experiment and, to increase the amount of stress, were reminded that this was an assessment of their ability that was to be made public. Awards would be given to those with the greatest improvement in their scores. After completion of the forearm test, the participants again took the CSAI-2R to measure their anxiety level. Both groups were asked to rate the extent to which they utilized self-talk, what words they used, and to what degree each word was used. Those in the control group were asked this question because there was no way to preclude those who had learned this technique in the past from using it.

The "vast majority" of those in the experimental group reported using self-talk. The results showed a significant increase in individual performance as well as self-confidence as compared with the control group. There was also a decrease in cognitive anxiety. The findings are interesting because tennis is a precision task and the self-talk cues utilized by the subjects were primarily of the motivational variety. As stated earlier, previous findings found motivational self-talk to improve performance in power tasks. These results suggest that motivational self-talk may have a more universal benefit than previously thought. There is still some question about what mechanisms are responsible for the improvement in performance when motivational self-task is used. Since the measurement (CSAI-2R test) was taken AFTER the final performance test in this experiment, it is impossible to tease out which comes first - better performance leading to greater confidence; or greater confidence influencing performance in a positive way.

Putting It Into Practice

The results of the study strongly suggest that use of motivational self-talk can significantly improve self confidence and performance while reducing anxiety. And, since the experiment was conducted over a short period of time, the findings also suggest that this self-talk technique can be learned and implemented relatively quickly.

Further research needs to be done to answer whether motivational self-talk indeed has a universal performance effect, as suggested by these findings. Additionally, the question of order - which comes first between performance and motivation - still is open for debate. R

Chain Link: contact MJ email her at **mengstrom@uamail.albany.edu**

Special REPORT - Stretching the Truth
What the Latest Research Says About Static Stretching

Ken Kontor, Publisher, Performance Conditioning Inc.

USA Cycling Continuing Education Unit (CEU) #43

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.

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CEU Value=.1 unit

BEG INT ADV

If you spend valuable practice time performing static stretching before practice be sure to read this report!

Recently I talked with a national director of coaching who revealed to me that in his younger days he spent 45 minutes a day on static stretching. In today's economy of time society this practice would equate to spending half of a practice session on one component, flexibility. This time consuming activity was designed to prevent injury and improve performance. But today the latest research has shown that not only is this type of activity before practice or a game as part of warm-up is a waste of time and probably does more harm then good. As a coach or serious athlete who takes conditioning seriously, we felt it important to reveal the truth about static stretching and why dynamic mobility training as part of a comprehensive warm-up activity will not only save valuable practice time but also improve performance.

What Research Says- Passive Static Stretching Reduces Strength

Here's an edited version of an abstract that concludes strength is reduced up to one hour after static stretching. For the complete research go to J Appl Physiol. 2000 Sep;89(3):1179-88.
The authors are: Fowles JR, Sale DG, MacDougall JD, Department of Kinesiology, McMaster University, Hamilton, Ontario, Canada L8S 4K1.

The purpose of this study was to assess strength performance after an acute bout of maximally tolerable passive stretch (PS(max)) in human subjects. Ten young adults (6 men and 4 women) underwent 30 min of cyclical PS(max) (13 stretches of 135 s each over 33 min) and a similar control period (Con) of no stretch of the ankle plantarflexors. Measures of isometric strength (maximal voluntary contraction), were assessed before (Pre), immediately after (Post), and at 5, 15, 30, 45, and 60 min after PS(max). Compared with Pre, maximal voluntary contraction was decreased at Post (28%) and at 5 (21%), 15 (13%), 30 (12%), 45 (10%), and 60 (9%) min after PS(max). Motor unit activation and electromyogram were significantly depressed after PS(max) but had recovered by 15 min. These data indicate that prolonged stretching of a single muscle decreases voluntary strength for up to 1 h after the stretch as a result of impaired activation and contractile force in the early phase of deficit and by impaired contractile force throughout the entire period of deficit.

What the Gymnasts Say- Strengthening and Dynamic Stretching Enhances Flexibility

Recognizably, as a group of athletes, the gymnast is most concerned with flexibility. The nature of the sport relies on the ability of the athlete to produce maximum degrees of flexibility within functional strength parameters. Here's an edited version of an article **"Enhancing Flexibility in Gymnastics"** that concludes that strengthening and dynamic not static stretching enhances flexibility more effectively. This article appears in the May 2000 issue of Technique, Vol. 20, No. 5. The authors are: Wm A. Sands, Ph.D., USA Gymnastics Director of Research and Development, Vice Chair Research - US Elite Coaches Association for Women's Gymnastics and Jeni R. McNeal, MS, CSCS, Department of Exercise and Sport Science, University of Utah

Most gymnastics coaches would agree that flexibility is an essential aspect of gymnastics training and performance. Flexibility is frequently included in talent identification and screening measures for gymnasts, divers, and dancers. In spite of a fairly universal recognition of the need for flexibility in gymnastics, surprisingly little research has been done on enhancing flexibility among elite performers. The simple answer to how one develops flexibility (i.e., range of motion) is to stretch. However, the problem of increasing flexibility to enhance gymnastics performance may be more complicated. Clearly, because the rules of assessment in gymnastics performance call for deductions when a gymnast cannot achieve a specific position, the role of flexibility training to achieve certain positions is important.

Some years ago, Dr. Gerald George provided a thought-provoking lecture regarding the expression of strength and flexibility, starting with these characteristics as separate and finally showing that they were conceptually very similar. That range of motion is dependent on both strength and flexibility is commonly understood, but how to train both qualities for the elite gymnast in particular, has not been well

researched. Interestingly, stretching activities of various types may be the single exercise activity in gymnastics that consumes the greatest percentage of conditioning time. In spite of this, our gymnasts are often viewed as being inflexible when evaluated by the National Coaching Staff and judges.

Training elite gymnasts with regard to flexibility proves problematic for at least two reasons. First, highly trained athletes are usually near their performance ceiling in many physical abilities (ceiling effect), and therefore are unable to show consistent improvement of large magnitude. Second, flexibility training has consisted almost exclusively of stretching exercises with little attention devoted to strengthening the prime movers in the extreme ranges of motion (one dimensional thinking). Perhaps only proprioceptive neuromuscular facilitation techniques (PNF) have found much of a following in elite gymnastics training. The research literature on flexibility has offered paradoxical results when compared to typical coaching understanding of flexibility. For example, Russell compared six methods of stretching and found that passive stretching approaches were superior to active stretching approaches in increasing hip flexion range of motion. Another study by Cornelius and Hayes showed that when using PNF techniques, multiple maximal contractions at the extreme range of motion were not better than a single contraction. Hutton showed that much of the current understanding of the neuromuscular activity during stretching (i.e., PNF) was poorly understood or simply incorrect. In a comparison of pelvic position and static versus PNF stretching techniques, Sullivan, et al., found that pelvic position was more important than the stretching technique in improving hamstring flexibility. Our current simple understanding of "flexibility" as the range of motion of a joint, or a related series of joints, may be misguided and betray a more complex mechanism.

The purpose of this investigation was to determine if a ballistic stretching/strengthening approach would improve already highly trained gymnasts' split leap leg positions. A simple split leap was chosen due to its fundamental nature and the fact that gymnasts rarely do a simple split leap in their typical routine training. The split leap served as a skill that all gymnasts had performed in the past, but suitably novel that improvement could still be possible. Through the cooperation of seven gymnasts at the Olympus School of Gymnastics and their head coach, we undertook a training study using Theraband(tm) elastic strips. The gymnasts were all Level 10 and Elite gymnasts currently training approximately 25-30 hours per week. The training lasted one month. The athletes were in the combination preparation stage of their yearly periodized program.

Following placement of the Theraband, the gymnast performed the following movements on both legs:

1. Kicks forward
2. Kicks sideward
3. Kicks rearward
4. Straddle jumps
5. Split jumps

The gymnasts began with 5 repetitions per set and 3 sets. The number of repetitions gradually increased to 15 repetitions per set for 3 sets. The increasing number of repetitions per set was spread over the four week training period. We were initially concerned about potential hip flexor or other groin injuries and chose to cautiously proceed. The exercises were performed at the end of practice approximately daily, with a few exceptions due to individual and program schedules. The athletes were encouraged to "kick" rather than "lift" their leg, maintain good form and alignment, and maximize their effort during the kick -- trying to kick as high as possible.

Discussion

The results of this study showed that split leap range of motion can be improved. Although no control group was used due to a perceived ethical problem of withholding a useful technique from teammates, it is clear that these gymnasts have been stretching diligently for several years with only modest improvement, if any. The lack of a control group (which would have tested but not participated in the Theraband stretching) results in an inability to state with certainty the cause of the enhanced split leap performances. However, the cause-effect relationship is strengthened by the temporal ordering of events and the novel nature of the split leap. Subjective observation showed that these athletes demonstrated dramatic improvement in split leaps, kicks, straddle jumps and similar skills. Perhaps the most obvious observation of improvement came on balance beam where the different shape-jumps demonstrated dramatic increases in leg height and amplitude. Although a three to four percent improvement in performance might be considered small, among elite athletes such an improvement is large. A 3.5 percent difference at the most recent World Gymnastics Championships was the difference between 1st and 20th place in the women's all-around. Further research needs to be performed with an adequate control group. A four week training period is rather short, therefore a longer training program is warranted and the gymnastics groups could be expanded to include less highly trained gymnasts.

What the Gymnasts Say- Static Stretching Reduces Power Production Flexibility

Still not convinced? The most important single athletic component to performance success is power production. Here's an edited version of an article **"Static Stretching Reduces Power Production in Gymnasts"** that concludes that static stretching reduces power production. This article appears in *Technique*,. The authors are: J. R. McNeal, Ph.D., Eastern Washington University and Wm A. Sands, Ph.D., USA Gymnastics Director of Research and Development, Vice Chair Research - US Elite Coaches Association for Women's Gymnastics.

Static stretching, consisting of holding muscles at lengthened positions for typically 15-45 seconds, has been recommended before participating in physical activity. Gymnasts historically have performed static stretches, such as splits, during the warm-up portion of training. Recently however, data has been presented from studies on adults which have shown that static stretching immediately prior to performing powerful activities reduces performance. The reported reductions in performance have persisted over an hour following static stretching! Athletes in some sports such as track and field no longer stretch in this manner because of the detrimental effects on movement speed. This effect of static stretching on power has not been studied in children, and in particular on gymnasts who often use static stretching as part of their training. Therefore, we conducted a study to investigate the effects of stretching the calf muscles on the ability to perform a drop jump (punch jump).

Fourteen female gymnasts, competitive levels 7-9, performed drop jumps onto a timing mat under two conditions. On one day the

gymnasts were stretched statically for 30 seconds on 3 different exercises (stair stretch, partner supine stretch, and pike stretch). These exercises were performed twice in a circuit fashion. The gymnasts then immediately performed 3 drop jumps. We evaluated the time on the ground for each gymnast, as well as the height she achieved in the jump.

On the second day, the gymnasts did not stretch, but performed the drop jumps after their usual warm-up activities (which did not include static stretching). The order of the conditions was randomly assigned. The results showed that the gymnasts jumped significantly lower following the stretching protocol (.246 m compared to .268 m). This difference in performance is equivalent to an average 8.2% loss in height. This reduction in performance could mean the difference between landing safely and under-rotating a tumbling skill. Time on the ground during the jump was not changed.

Research on adult subjects has shown that static stretching reduces strength performance by reducing muscle activation as well as compromising the muscle's ability to contract at the cellular level. Although we have been recommending the discontinuance of intense static stretching in favor of dynamic stretching as part of the warmup for gymnasts, coaches and athletes have seemed slow to accept this recommendation.

While static stretching is beneficial and important for a gymnast's flexibility development, this type of training should not be placed before activities in which the gymnast must be strong or powerful (i.e. - before or during gymnastics training). Based on the data presented here, coaches should re-evaluate their warmup practices and consider the effects of static stretching on their gymnasts' ability to produce powerful movements. As athletes in other sports have found, dynamic stretches such as leg kicks are probably a better choice for preparing gymnasts for training explosive movements. R

Acknowledgement: Special thank to Karen Block MS, LAT, CSCA from the University of Wisconsin athletic department for provide the research information for this report.

Chain Link: Should you consider a dynamic warm-up/stretching approach to pre-on-bike warm-up? **Here's some exercises for you to consider.**

Policy Change Effective 1/1/10

- The cost of mailing in the self-test will increase to $25.
- The cost of doing the self-test on-line will be $15. You can pay and then access the online self-test through your MYUSACYCLING account.
- Value of the self-test will return to 0.1 per self-test.

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.

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1. Based on the research study of passive stretching done by J.R. Fowles, D.G. Sale, J.D. MacDougall, prolonged stretching of a single muscle decreases voluntary strength for up to:
A. four hours after the stretch. It is a result of impaired activation, contractile force in the early deficit phase and by impaired contractile force throughout the entire deficit period.
B. 15 minutes after the stretch as a result of impaired activation, contractile force in the early deficit phase and by impaired contractile force throughout the entire deficit period.
C. one hour after the stretch as a result of impaired activation, contractile force in the early deficit phase and by impaired contractile force throughout the entire deficit period.
D. Does not impair contractile forces.

2. Training elite athletes with regard to flexibility can be a problem because:
A. Flexibility training has consisted almost exclusively of stretching exercises with little attention devoted to strengthening.
B. It is difficult to motivate elite athletes to do flexibility.
C. Flexibility training is only for antagonist muscles.
D. Elite athletes lack the time to do flexibility training in order for it to be effective.

3. Research done on six methods of stretching conclusively found that:
A. PNF stretching is superior.
B. Static stretching is superior.
C. Static and PNF stretching must be done in tandem.
D. There is no evidence that one form of stretching is superior to another.

4. A study combining ballistic strength work with stretching gymnasts and based on coaching observations resulted in:
A. Improvement in straddle jumps only.
B. Improvement in split leaps and kicks, but not straddle jumps.

C. No improvement.
D. Improvement in split leaps, kicks and straddle jumps.

5. Static stretching protocol typically consists of:
A. Holding muscles at lengthened positions for typically 60-90 seconds.
B. Holding muscles at lengthened positions for typically 10-30 seconds.
C. Holding muscles at lengthened positions for typically 15-45 seconds.
D. Holding muscles at lengthened positions until pain is felt.

6. What are the effects of static stretching on strength performance?
A. Reduces muscle activation as well as compromises the muscle's ability to contract at the cellular level.
B. Increases muscle activation as well as compromises the muscle's ability to contract at the cellular level.
C. Reduces muscle activation but does not compromise the muscle's ability to contract at the cellular level.
D. Increases strength and power.

7. Studies on adults show that static stretching immediately before performing powerful activities:
A. Reduces performance.
B. Improves performance.
C. Has no effect.
D. Creates a pattern of potential injury.

8. Design a flexibility routine for your cycling athletes prior to training or competition.

Answer Sheet and CEU Application Form

Question #1_____ Question #2_____ Question #3_____ Question #4_____ Question #5_____ Question #6_____
Question #7_____
Question #8 (please limit to 250 words) _____
_____
_____
_____

NOTE: This Answer Sheet is Valid for Volume 15 Number 7 ONLY!

1. Was the material ___new ___review?

2. Was the material: Presented clearly? ___(Y/N) Covered adequately? ___(Y/N)

3. Suggestions: _____
_____
_____

Please complete the section below (print neatly!)

Name: _____

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I attest that I have read the article(s) and answered the test questions for the above volume and issue number using knowledge gained through the article(s) provided in this issue. A passing grade of 70% or better is required for CEU to be awarded.

Signature _____ Date: _____

Please attach a check for $15 payable to USA Cycling or complete the information below for credit card payment (Visa or Mastercard only).

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PUBLISHING STATEMENT:

Performance Conditioning Cycling Newsletter (ISSN 1544-242x) is published seven times a year: August/September, October/November, December/January, February, March, April/May and June/July in cooperation with the USA Cycling Federation and the National Off-Road Bicycle Association, by Performance Conditioning, Inc., Ken Kontor CAE, C.S.C.S., publisher. Subscription price $29 per year, $26 for USCF and NORBA licensed riders in the United States. Canada add $5, other countries add $8. U.S. funds only for all transactions.

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Performance Conditioning Cycling Newsletter, P.O. Box 6819, Lincoln, NE 68506-0819.

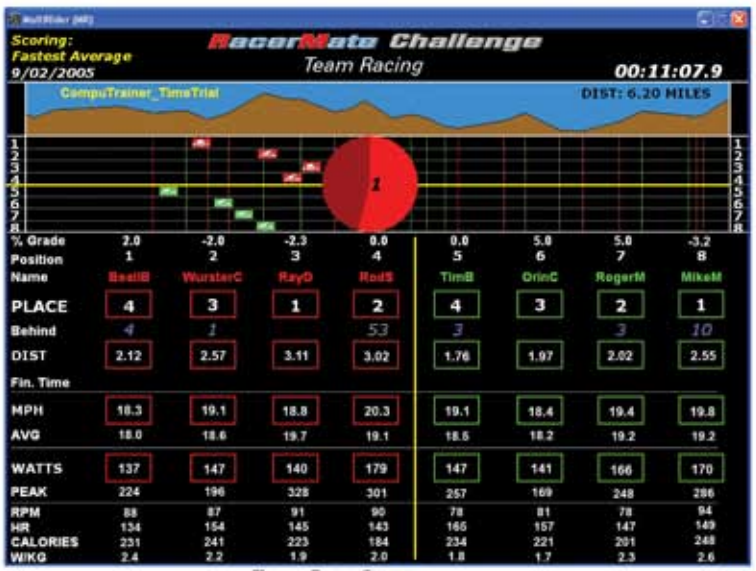
CompuTrainer
COACH'S SPECIAL

If you need a lab accurate, versatile, durable bicycle ergometer to test and train your athletes CompuTrainer meets the specification. This state-of-the-art electronic bicycle ergometer has been used with great success for over 20 years by hundreds of the top cycling and triathlon coaches in the U.S., Canada, England, Australia, and New Zealand.

Registered coaches can purchase a CompuTrainer Model Pro 3D (Lab Version) at a special price below dealer cost. A Deferred Payment Plan allows the cost to be spread over a year. Under this program the coach can also refer clients to RacerMate for purchases of CompuTrainers.

For information call 800-522-3610, Ext. 311 (Ray David), Ext. 338 (Kurt Hartmaier) or Ext. 307 (Chuck Wurster).

MultiRider 3.0
with TEAM Racing
...a profitable Investment Opportunity!



Team Race Screen

Connect up to 8 CompuTrainers to a single PC.
Great for group coaching, training and racing.

CompuTrainer®
by RacerMate

Bicycle Training Technology for World Class Performance

www.computrainer.com

"WHERE THE ROAD MEETS THE LAB"

The 3.0 edition of MultiRider Software adds a third screen for Team Racing. It simulates the authentic, dynamic feeling of riding in a pack and adds a new tactical element to indoor racing.

The MultiRider Ride Studio at Fast Splits Multisport in Newton, MA provides athletes with the luxury of group riding in a coached environment. The precision, predictability and commercial stability of the CompuTrainer platform allows coaches to focus on clear and distinct instruction, without the distraction of weather and the variation in outdoor terrain. In our 24-unit studio, four active coaches exclusively use CompuTrainer Lab equipment to make group workouts fun and individually-tailored across ability levels.

Dave Nerrow
Fast Splits Multisports

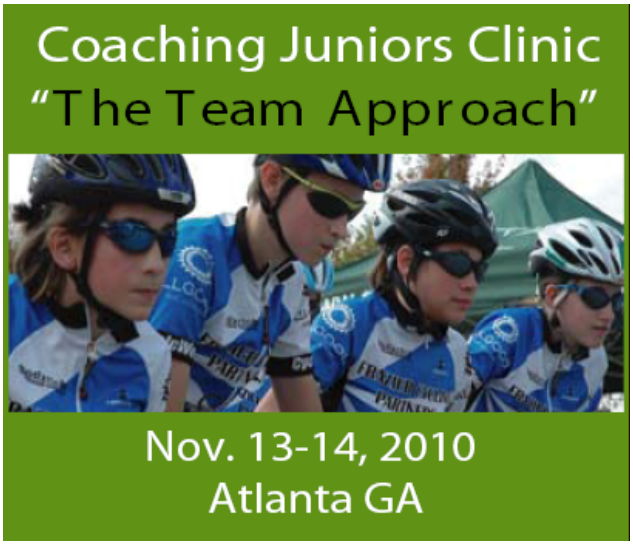
Cadence Performance Cycling Center • Philadelphia

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.



Frazier Cycling presents:
Coaching junior cyclists - the team approach

Coaches Ralph Frazier and Kelli Rogan share their expertise in how to develop and maintain a junior cycling program that uses team training to achieve five national championship titles. Topics include:

- Building a program, recruiting young athletes, working with parents and creating a continuing structure.
- Developing youth based on skills acquisition and physiological, psychological and social considerations.
- Creating a program based on the concept that juniors are not little adults and need to have fun incorporated in their training.
- Implementing the team approach to competitive cycling.

This clinic is worth 1.0 USAC CEU credit.
FOR INFO: **www.fraziercycling.com**, 770-513-8640