

ENDURANCE NEWS

eo
May 2006
Issue 050

The Newsletter For Endurance Athletes
An E-CAPS / Hammer Nutrition Publication

Published continuously since 1992

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Dear Client :



Welcome to our 1st issue!

Welcome to the first issue of Endurance News! It is my sincere hope that you will find the information enclosed in this and future issues to be thought provoking, informative, educational and helpful in your ongoing pursuit of optimum performance and health. Our objective is to provide you a valuable resource to help you achieve these goals.

Endurance News will feature insightful articles on diet, nutrition, training and other topics of interest to serious endurance - written by myself as well as professional and elite amateur athletes, and other experts in the area of nutrition and exercise. In addition, we will

include articles highlighting new and existing E-CAPS products and how to get the maximum benefits from them.

In reading this and future issues, please remember that the views expressed in this publication will always be biased in favor of eating a healthy diet, hard training that emphasizes quality over quantity, and prudent supplementation to improve health and performance. But above all we at Endurance News believe there are no short cuts, and success can only come from hard work. So enjoy the reading and happy training!

Welcome to our 50th issue!

I wrote the above almost thirteen years ago, in July of 1993. That first

(see Welcome on page 2)

WSJ : Wrong on vitamins

Courtesy of: Neil E. Levin, CCN, DANLA - Certified Clinical Nutritionist - Diplomate in Advanced Nutritional Laboratory Assessment (reprinted with permission)

"The Case Against Vitamins, an article by the Wall Street Journal which originally ran on March 20, 2006 and is being widely reprinted, should be thrown out of court," says Neil Levin, a Chicago-area Certified Clinical Nutritionist. "The danger here is that a reporter who is neither a nutritionist nor a doctor may dissuade people from utilizing products which can help them maintain their health. And that is harmful."

There is an understandable tendency for the media to embrace controversial stories in an environment where a sin-

gle study is touted as negating all other studies, even though rogue studies are usually deeply flawed. The "several studies" cited in this report have been seriously criticized by experts without their rebuttals resulting in any real effort to set the record straight, Levin points out.

Provocative reports get wide coverage, but not the subsequent, legitimate criticism of the studies. This leads to public confusion about supplements and fuels a growing mistrust of the reliability of media reports on all nutrition topics. Levin says that dietary supplements are singled out as being harmful or useless, or both at once, when these accusations are often not supported by

(see WSJ on page 3)

(Welcome from page 1)

issue of Endurance News was a whopping four pages, and I wrote every word of it. Today, with over 20,000 issues mailed per quarter, Endurance News has become one of the highest-circulation printed endurance publications in the United States. I reprinted the first intro because it shows that although we have enjoyed tremendous growth, we have also remained true to our roots. That's saying something.

In the past 13 years we have had some success shifting the accepted wisdom in three key areas. We started the practice of fueling with complex carbohydrates instead of simple sugar, we demonstrated the importance of protein supplementation (both during and after exercise), and we increased awareness of the undesirability of artificial ingredients.

It's great to see some nutrition companies following our lead on the complex carbs and artificial ingredients issues. Unfortunately, most are simply talking the talk. You'll still find their products laden with "ose" sugars (fructose, high fructose corn syrup, sucrose, glucose, etc.), artificial sweeteners such as aspartame and sucralose, and artificial colors such as Red #40 and Yellow #5. If you use products containing any of the above ingredients, I hope you will contact the manufacturer and ask them to explain why they include them. Next, ask them to stop. These ingredients enhance neither performance nor health, and they can be harmful even in small amounts.

We will continue to market "health food for healthy athletes" instead of junk food disguised as sports drinks, bars, and gels. I hope that you select your sports fuels as carefully as you do your daily food.

Other challenges remain. One dangerous misinformation monster out there that we will continue to vigorously oppose is the inane "replace what you lose" theory of endurance fueling. You've undoubtedly read numerous articles written by degreed experts citing research about how you can lose up to two liters of fluid, two to three grams of sodium, and as much as 900 calories in an hour of intense hot-weather exercise. The experts will advise that you

come as close as you can to matching these amounts with your intake, but rarely will they put their necks on the line by suggesting hard numbers.

Anyone who has tried the "replace what you lose" method knows that it is complete rubbish. Let me say this straight up: caloric, fluid, and sodium expenditure is irrelevant to refueling.

The only sane fueling strategy is what we call the "replace only as much as you can assimilate" or "refuel in cooperation with your body" theory. It's based on the physiological fact that your body can only process finite amounts of nutrients in a given period of time, and those numbers are way less than expenditures. Further, we're glad to give you real numbers for you to use as starting points or guidelines. For instance, a 165-pound athlete can consider 280 calories, 28 ounces of fluids, and 400-600 mg of sodium as theoretical hourly maximums. Some of you might assimilate slightly more than these amounts, and many will find lower magic numbers. Of course, a 190-pounder will have proportionately higher numbers than a 110-pound athlete, but that issue aside, the amounts won't vary much more than 10-20%.

Research and almost two decades of real world experience with thousands of successful athletes back up our position. For the details, please consult our highly regarded fueling manual, *The Endurance Athlete's Guide to Success*. We also have many articles on fueling capacity. Two that I recommend you read thoroughly and refer to often are, "Replacing What You Lose or What You Can Assimilate" and "Fuel Replacement Variation - Less is Better than More." You'll find these in the Vital Information link of the GETTING STARTED section of our website.

Finally, I'd like to make a point regarding the business side of the "replace what you can assimilate" fueling theory. We have had several people discount what we say as nothing more than a sneaky sales pitch. However, if that were the case, it would hardly seem smart to tell athletes to limit their consumption of our products.

We are shouting the "replace (with healthy products) what you can assim-

ilate" message from the rooftop because to tell you anything else would be misleading and detrimental to your health and athletic performance. As long as your fueling strategy makes you feel good, race well, and does not cause GI problems, hyponatremia, etc., we'll be happy. Use what you need, but no more. We want to increase our sales by adding satisfied, knowledgeable consumers, not by soaking the ones we have.

Whether this is your first issue of Endurance News or your 50th, you can count on us to tell it like it is and to continue to provide the finest, healthiest fuels available. As I wrote in 1993, and still say in some form nearly every day: eat healthy food, work hard, and supplement appropriately.

Enjoy the read and happy training!

Brian

Endurance News Staff

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Our Mission

The objective of Endurance News is to provide you, the serious endurance athlete, with a valuable resource that you will find to be informative, educational, thought provoking and helpful in your ongoing pursuit of optimum performance and health.

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Back issues of Endurance News are available online at:
www.e-caps.com

Legal disclaimer: The contents of Endurance News are not intended to provide medical advice to individuals. For medical advice, please consult a licensed health care specialist.

The FDA has evaluated none of the statements in this newsletter.

(WSJ from page 1)

good data.

"This WSJ article singled out beta-carotene as promoting cancer, mentioning a study on Finnish smokers. Yet that study's data was recently re-analyzed, with researchers looking instead at total antioxidant intake. They discovered that low antioxidant intake was the real culprit in that original cancer study, not beta-carotene supplementation," Levin said.

The article reported that antioxidants may "promote some cancer and interfere with treatments." The peer-reviewed journal CA from the American Cancer Society published (online) Levin's analysis documenting dozens of studies proving that specific vitamins and antioxidants actually enhanced medical cancer therapies.

Many negative studies state that their results are not applicable to populations other than the ones studied, yet get wide press coverage positioned as being universally definitive. And evidence that the researchers and the WSJ admit is "inconclusive" is still publicized as an argument against taking Vitamin E, which Levin stresses is a safe and effective nutritional supplement.

"The Vitamin E controversy should have been cleared up after the American Journal of Clinical Nutrition did a far more thorough review than the handful of studies used in the Annals of Internal Medicine review article," Levin says. "Annals has, to its credit, published dozens of critical comments from physicians and scientists, including mine. The vastly more authoritative AJCN report, 'Vitamins E and C Are Safe Across A Broad Range Of Intakes', determined that the Annals data indicated problems only in doses over 2,000 IU; not the 400 IU widely reported. The Food and Nutrition Board of the Institute of Medicine has set the safe, upper tolerable intake level for vitamin E at 1,500 IU daily. Research shows that Vitamin E may be useful for people suffering from Parkinson's, macular degeneration, cataracts, cancer and mercury toxicity. The substantial body of evidence supporting supplements may not sell papers the way controversial studies do, but it is weighty."

Reports that 'B-Vitamins don't lower risk for heart attacks' miss the point entirely, according to Levin. Vitamins do lower levels of homocysteine, an inflammatory substance, and reduce the number of non-fatal strokes. Homocysteine as a theoretical cause of heart disease is being challenged, but

the B-Vitamins performed exactly as predicted.

The well-respected Lewin Group has published reports showing that proper use of supplementation can save billions of dollars in health care costs while reducing pain and suffering. There are FDA-approved health claims for vitamins and minerals supported by solid scientific claims. The total body of evidence supports benefits of dietary supplementation. The risk of being hurt by a vitamin is so low as to be unquantifiable, far less than the risk from contracting a food borne illness or from taking a pharmaceutical or OTC product like acetaminophen. "That's the real truth about vitamins," Levin concludes.

Neil Levin, CCN, DANLA, is nutrition education manager at Bloomingdale, Illinois based NOW Foods, Inc. and in that capacity works to dispel inaccurate health information.

Clothing Blowout!

We still have some (but not very much!) 2004 and 2005 clothing that we'd really like to move. Below is a list of styles and sizes that are available with the very lowest prices you'll see. Once it's gone....it's gone so act fast!



Cycling Clothing

Womens Short Sleeve Jersey	\$34.95	\$20.00	s
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Tri Clothing

Womens Tri Short (black)	\$34.95	\$20.00	s, xl
Womens Tri Shimmel w/pocket	\$34.95	\$10.00	l
Mens Tri Top w/pocket	\$39.95	\$20.00	s
Mens Tri Singlet	\$29.95	\$5.00	s, m

2004 Style

Womens Tri Short	\$47.00	\$5.00	xl
Womens Tri Shimmel w/pocket	\$47.00	\$5.00	xl

Chromemate And Boron : An important change

If you have used our Chromemate and/or Boron products over the years, you may have recently noticed a different appearance of the capsule contents. Don't be alarmed; the product is perfectly fine. In fact, it's improved!

We've added 12 mg of EES (Enzyme Enhancement System), a proprietary blend of amylase and phytase, to each capsule, causing the color to change from white to a grayish-green. These enzymes will increase the bioavailability of the nutrients, ensuring that you absorb and assimilate the maximal amount.

More good news: even with this new, improved formulation, the price hasn't changed. A 100-capsule bottle of Chromemate still retails for \$9.95, and a 90-capsule bottle of Boron for \$14.95.



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one month supply for \$99.95**

Phytomax : Inventory update

Those of you who use Phytomax may have noticed that it has been out of stock for several weeks now. We expect new supplies sometime in June. Here's the story:

Hydrilla verticillata, the rooted aquatic herb from which we formulate Phytomax, is harvested by special permit from National Park Service lands near the Florida/Georgia border. Because it comes from protected waters free of commercial or recreational vehicle traffic, the water it grows in does not have the contaminants and heavy metals often found in algae harvested elsewhere and used for other green products. The purity of the water it grows in and the rooted nature of the plant make it a preferred source for concentrated phytonutrients, live enzymes, and organic minerals.

What makes this product unique, however, also is causing the current shortage. The National Park Service allows harvesting only during certain times of the year and when weather conditions are right. Last season's hurricane activity, plus an unusually cold

winter, have delayed the spring harvest from the usual March or April to late May or early June.

However, production runs quickly after harvest, and we hope to be fully stocked again by mid-June. In the meantime you can book back orders via our website, if you wish.

We appreciate your patience and we will have Phytomax back in stock as soon as possible.



More Is Better : Hammer Gel 26-serving jug

When it comes to Hammer Gel, more really is better, especially in regards to saving money! We all know how convenient the single serving pouches are (except for that empty wrapper to deal with), but maybe you don't realize how much you can save by buying in bulk. Here's what we mean: a single-serving pouch of Hammer Gel costs \$1.15; the price drops to \$1.08 per pouch when you buy a dozen for \$12.95. However, a 26-serving jug of Hammer Gel goes for \$18.95, or a cost per serving of 72 cents. When you buy three or more jugs of Hammer Gel, the cost per jug drops to \$15.95, which yields a per-serving price of a mere 62 cents! **SIXTY-TWO CENTS FOR THE BEST GEL IN THE WORLD!** What are you waiting for? Get on the phone or web right now and buy a few of your favorite flavors.

If you're concerned about the shelf life of Hammer Gel, fret not, because we're talking a two-year shelf life, and you always get fresh product. If you're not using three jugs in two years, either you're not training enough or you're not fueling properly, so get with the program. Inexpensive, top-grade fuel in nine great flavors is waiting your call or online order.

Seriously, if you're a Hammer Gel fan (and who isn't?), and if you want to save money (and who doesn't?), buy the 26-serving jugs. Sure, it's fine to keep a stash of single-serving pouches for an extra reserve in your pocket or samples for your buddies, but for your routine fueling, Hammer Gel by the jug is the way to go.



Introspection And The Bike : Are you coachable?

Jonathan Siegel, CSCS

You are ready to achieve your next level on the bike. You've been preparing your foundation. You have a killer training plan, you read the right books and you keep up with the latest performance tips on the relevant web sites. But still your cycling performance isn't up to snuff. Your hand is on your wallet and you are poised to plunk down the bucks to make this season the best ever. But wait! Is hiring a coach really your ticket to success?

Great question! But first, consider taking a good look at the extent to which you utilize the wealth of knowledge, great advice and cutting edge guidance you've already collected by means of your own experience, what you've studied and read, heard from a coach or trusted peer, or by any other means.

Let's start by shaking up a basic premise. Knowledge is not power. If it were, you'd already be as fast as you want, have as much money as you want and have the life of your dreams. We all have an abundance of knowledge, but what we don't seem to have is the understanding of how to apply that knowledge to our lives. If we did, we would achieve anything we wanted, when we wanted it, including grabbing all the top three finishes we could get our hands on. For example, you may know that completing VO2 Max and Lactate Threshold intervals, eating well and getting enough sleep are some of the keys to being fast on the bike, but do you intentionally and consistently apply the knowledge of those practices to your actual training, eating and sleeping? If you don't, what stops you from applying your knowledge?

Try on for a moment the perspective that as a human being, you are nothing if not completely reasonable. So reasonable, in fact, that your reasons may actually prevent you from intentionally and consistently applying what you know. That is, if you are not completing VO2 Max intervals, you have a very good reason. Couple your excellent reason with the knowledge that you know (in this case, all about the benefits of VO2 Max intervals) and what you end up with is a bomb-proof conviction that "I'm doing it right".

You probably know what this looks like. You may get defensive if someone asks you a question or disagrees with you. You have no interest in being told what to do, in your sport, or in any other area of your life. You don't have any weaknesses, though you sometimes find yourself a victim of your circumstances. If you get defensive when people offer alternatives or disagree, if you don't actively invite and appreciate feedback, if you don't ask peers, team members, managers and others around you to offer their perspective or advice, or you don't challenge your own perspective, you are probably not in the habit of being coachable.

Are you coachable as an athlete? Or do you find yourself interpreting suggestions as criticism and dismissing the ideas of others? Are you acting in compliance with what you know? Or do you stifle that knowledge with equal measures of valid reason? Do you listen to your coach, pay attention, and do exactly what they ask you to do? Or are there times when you let circumstances or feelings rule and your coach's words go in one ear and out the other? Do you know better? "Hey, I don't need extra recovery time from the extra two hours spent Sunday on the bike. Really, they were only long slow miles..." What is missing here? Coachability.

Consider your relationship to your training plan. Do you relate to your training plan as a haphazard series of suggested "to dos" vaguely related to your sport? Or do you relate to your training plan as an intentional map of actions built on a foundation of knowledge - specifically, the knowledge of what it takes to generate your next level. Complete the actions on the map, find your way to success. Acting in compliance your training plan is your access to power, an important step on the ladder of success. You build a training plan and you follow it religiously. If your plan says you are going to do six LT intervals of six minutes, by golly, you are going to do it! Don't want to? Have a valid reason not to? Well, acknowledge your valid reason for not taking the action on your plan (that you were up late last night because you chose to watch the Matrix for the sixth time) and get on with your LT intervals anyway. Acting in compliance with your plan is your access to power, and you are going to stick to it.

So, you know what you know. And you now know that your access to power is being in action consistent with your knowledge. And you've made coachability your habit. But you may also know that there are things about yourself, your training and your sport that you don't know. This can be a very powerful thing to know. Because again, being coachable is about being in action on what you know, getting into a conversation, trying on new perspectives, taking the next level. So now you are ready to try on working with a coach.

If a coach is providing your training plan and you don't know the goal of a certain workout or training phase, ask. After all, you hired your coach to help you get to what you don't know. You are counting on your coach's experience with other athletes in the sport to give them a perspective and knowledge that you don't have. You depend on your coach to recognize your patterns of training and ways of being and to provide you with plans of action based on this new knowledge that will challenge your current ways of being in your life and in your sport. Even if you think your coach doesn't fit the above description, it's important to get on the same page. Maybe there are times when you feel strongly about a workout or rest day. When you create a dialog with your coach about those situations, you are being coachable.

We are all coachable some of the time and un-coachable some of the time. Many of us are un-coachable before our morning coffee. Some of us are un-coachable most of the time, and are a joy to work and live with, I am sure! No matter, you can go from being un-coachable to being coachable in an instant. It's a choice you always have, in every moment of your life. Solicit input and advice from others. Consider and occasionally use the ideas you get...even the ones from your coach, or (gasp) significant other. Your key to power is not knowing, but coachability: acting in compliance with your knowledge, regardless of the source and in spite of your reasons.

Jonathan Siegel, CSCS is a USA Cycling certified expert coach. His finest moment of coachability came after flailing in deep powder. If you have a comment or a training question, you can email: Jonathan@JDSportcoaching.com.

Fueling Strategies : How to fuel successfully

Steve Born

Replace What You Lose or What You Can Assimilate?

(Hint: Less is better than more!)

Perhaps the biggest challenge we at Hammer Nutrition face is convincing athletes that the “replace what you lose” theory of endurance fueling is completely ineffective and one that needs to be eliminated if better results are to be achieved. What we’re talking about are the “experts” and organizations recommending that athletes need to consume what they lose during exercise in equal to near-equal amounts. They drum up statistics such as “you lose up to two grams of sodium per hour, burn up to 900 calories hourly, and sweat up to two liters an hour” to defend their position. Even worse is that, in many instances, they don’t give any numeric guidelines, just vague statements like “drink as much as you can”. Sadly, far too many athletes fuel their bodies exactly this way - based on the recommendations of what one elite athlete may be using and/or saying - with only poorer-than-expected results or a DNF to show for their efforts.

What these “experts” don’t take into account when making these “replace what you lose” recommendations is that how much you’re losing - fluids, calories, and sodium - is totally secondary to what you can effectively replace. In other words, what you are burning/losing is not what you should be focusing on, but rather what the body can reasonably assimilate during any given period of time. Two statements by Dr. Bill represent our position on what proper fueling is all about:

“To suggest that fluids, sodium, and fuel-induced glycogen replenishment can happen at the same rate as it is spent during exercise is simply not true. Endurance exercise beyond 1-2 hours is a deficit spending entity, with proportionate return or replenishment always in arrears. The endurance exercise outcome is to postpone fatigue, not to replace all the fuel, fluids, and electrolytes lost during the event. It can’t be done, though many of us have tried.”

“The human body has so many survival safeguards by which it regulates

living one more minute, that when we try too hard to fulfill all its needs we interfere, doing more harm than good.”

What this means is that the body cannot be replenished at the same rate that it becomes depleted. Yes, the body needs your assistance in replenishing what it loses but that donation must be in amounts that cooperate with normal body mechanisms, not in amounts that override these crucial mechanisms.



Hammer Nutrition endurance fuels

Here’s an important fact to keep in mind (paraphrasing Dr. Bill) - At an easy aerobic pace, the rate of metabolism increases from a sedentary state to a range of 1200-2000%. As a result, the body goes into “survival mode” where blood volume is routed to work out working muscles, fluids are used for evaporative cooling mechanisms, and oxygen is routed to the brain, heart, and other internal organisms. Interestingly, it is NOT focused on calorie, fluid, and electrolyte replacement, as some of the “experts” advise.

In other words, the body already “knows” it is unable to immediately replenish calories, fluids, and electrolytes at the same rate it uses/loses them, and it deals with this issue by releasing specific hormones that compensate for all but about 20-30%, which can be replenished orally. That’s why we don’t recommend trying to replace hourly losses of calories, fluids, and electrolytes with equal amounts, but instead recommend a smaller replenishment donation, one that cooperates with normal body mechanisms.

Some Common Fuel-Related Characteristics of Poorer-Than-Desired Performances

- Fluid intake is nearly always over 30 ounces/hour

- Body weight at finish is hyper-hydrated with weight gain above 1-2%
- Body weight at finish is dehydrated with weight loss over 3%

NOTE: Weight loss or gain of over 2% leads to hyponatremia problems

- Excess calorie consumption, especially from simple sugar fuels, which raise osmolality in the gut, forcing the body to pull electrolytes out of an already electrolyte-depleted system, causing stomach shut down.

- Excess sodium from diet and/or during exercise intake.

NOTE: Not only are high sodium diets bad for your health, but those who consume high

amounts of sodium in the diet are guaranteed greater sodium loss rates and require greater sodium intake during exercise. Sodium, as you know, drives thirst and thirst drives drinking until excess results... not a good scenario.

Our Basic Recommendations

- Fluids - 20-26 ounces hourly
- Sodium chloride - 300-600 mg hourly (3-6 Endurolytes)
- Calories - 240-300 calories hourly

There are many individual variations that you will need to consider (age, weight, training/racing stress, fitness, acclimatization levels, weather conditions) to determine what works best for you. However, these are the amounts - the “gauges” if you will - that are a good starting point for you, amounts we feel will serve you the best in your workouts and races.

The bottom line is that if you hope to achieve better results in your workouts and races, and if you want to greatly decrease the opportunity for a whole host of maladies from occurring, you need to ditch the “replace what you lose” concept and adopt the “fuel in cooperation with your body” concept.

Nate's Corner : Race appropriate to the conditions



Note: I've resurrected this "Tip of the Week" from the archives as I felt it was particularly appropriate for this time of year. In addition, the Powerman Alabama race that Nate refers to happened recently (though the one Nate discusses is from a couple years ago).

We train hard and we want to race hard. Races are the ultimate challenges of our fitness, right? But it is impossible and, sometimes, downright silly to approach every race (of similar distances) identically.

Race topography - is the race flat or hilly? - weather conditions - is it windy or calm, raining or sunny? - and climate - is it hot and humid, hot and dry, warm, cool or cold? - all dictate how we should race a particular race.

For example, many athletes raced in the Powerman Alabama duathlon this past weekend. It was hot and humid, and the course was hilly and challenging. That is a sure recipe for slower than normal race times and a lot of sweat/mineral loss. My guess is that a lot of athletes cramped up and even more completed the second run way off the mark of their opening run.

We are lucky in that the majority of races we do start early in the morning, before the heat of the day reaches its peak. But we have to prepare for the worst as we prepare to do our best. For many of us, racing in Alabama would

mean hotter and more humid temps than we are accustomed to in March. If the body is still in "winter mode", then it is not going to be efficient in a summer-like setting.

We need to realize there is more to racing well than just training well. We need to realize that until we are accustomed to the conditions of a race venue (variables outlined above), we have to be a little more conservative than usual. When it is hot and humid, you need to set realistic goals. You will not be setting a PR or racing flat out from the gun. You need to build into the race, take in slightly more fluids and supplements to counteract the negative effects of the climate and weather, and focus on finishing strong rather than necessarily starting strong.

If it is cold, then you need to give yourself more time to warm up and get into a rhythm. And you need to realize that the body is going to be sending blood to the internal organs that would normally be allocated to the working muscles, hence robbing your muscles of oxygen and slowing you down. If you ignore this, you get into trouble early. If you prepare for this, by gradually building into the race, you run a much better chance of experiencing better results.

Rarely do we hit a race that is "perfect" in how it is set up - completely plays to our strength(s), moderate temps, no wind, overcast, etc. There is always some set of variables we need to address directly: recognize they exist and plan how we are going to overcome them. If we go in flying

blindly, then we're asking for disaster and poor performance. In this case, ignorance is not bliss.

Racing hard is always the goal. But the definition of "racing hard" is malleable and constantly changing, based on what every given race throws at us. Even the same race year after year is going to throw differing venues at us. One year could be warm and sunny while the next it could be raining and cold. In this case, each race is approached differently.

Training gets you to the line ready to race well. But it is what you do after the gun goes off that dictates just how successful your race will ultimately be. As you lay out your race-day plan, be sure to take all variables and stimuli into account. This is how you will ensure your greatest successes.

Nate Llerandi is a former national champion class swimmer/world class triathlete. He has been coaching since 1990 and creates programs for athletes of all sports and ability levels. You can contact him at natellerandi@yahoo.com

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2006 Highline Hammer : We're Full!

We had such an enormous response for the 5th Annual Highline Hammer that not only are we full but we have a waiting list! It looks to be another stellar time of riding and relaxation (not to mention the awesome food). We'll have plenty of pictures and a complete recap in the fall issue of Endurance News so stay tuned.



2005 Highline Hammer Crew

Fish Oil : Its benefits defended

Bill Misner, Ph.D.

Steve's Note: This is an abbreviated version of the article. The full text from the studies along with references can be found in the Endurance Library section of www.e-caps.com

I am disturbed that a recent [March 25, 2006] "methodology-questionable" paper published in BMJ (British Medical Journal) created concern and doubts regarding the proven dietary health-enhancing effect from intake of essential (often deficient) omega-3 fatty acids. With Omega-3 fatty acid deficiency, the increased risk of inflammation, cardiovascular heart disease, atherosclerosis, high blood pressure, heart arrhythmias, stroke, post exercise muscle recovery, and cancer increases dramatically. Only 2-9 grams per day of Omega-3 fatty acid is required to help prevent all of the above diseases. In my view, the value of consuming adequate Omega-3 fatty acids regenerates two important fatty acid metabolites, Docosahexaenoic Acid (DHA) and Eicosapentaenoic Acid (EPA) is of primary importance for health and health as it supports endurance performance.

Essential Fatty Acid Requirement

Udo Erasmus is a scientist many consider the expert in dietary fatty acid metabolism resulting in optimal health. Erasmus writes in his published science text books that the human body is not capable of making two fatty acids (Omega-6 & Omega-3) and therefore for optimal health to reoccur, a daily dose of 9-18 grams Omega-6 and 2-9 grams Omega-3 should be consumed daily.

Omega Fatty Acid Deficiency

Of the 70 diets I computer analyzed between 1996-2006, not one athlete or sedentary subject fulfilled their requirement for Omega-3 fatty acids, while all were consuming above their requirement for Omega-6 fatty acids. Omega-6 fatty acids, taken the same time as Omega-3's, will inhibit absorption of each other. If taken apart from Omega-6's, Omega-3 absorption rate will not be inhibited. We acted on this research several years back when we ceased manufacturing our premiere blend of

Omega-6 and Omega-3 oils in favor of the North Sea DHA/EPA-rich Salmon Oil product made by Carlson's. Our American diet is excessive in the Omega-6's, we need only 81-162 calories per day or one-third to one half-ounce daily, yet most Americans consume much more than we need from breads, processed foods, canola oil, salad dressings etc.

Omega-3 Health Benefits

Myriads of responsibly published research conclude the health effects from Omega-3-fish oils consumption are extraordinary. Salmon oil is highly regarded for its Docosahexaenoic Acid (DHA) and Eicosapentaenoic Acid (EPA) content. DHA and EPA present remarkable health-enhancing effects against cardiovascular heart disease, atherosclerosis, high blood pressure, heart arrhythmias, stroke, post exercise muscle recovery, and cancer. To note this research only scratches the surface on the health benefits from Omega-3 fish oil consumption, either as whole fish or encapsulated supplements.

A myriad of representative summaries report health-enhancing effects from consumption of Docosahexaenoic Acid (DHA) and Eicosapentaenoic Acid (EPA) found in fish oil. Here are but a couple:

DHA (1,500 mg per day) counteracts Arrhythmias (it reduces ventricular premature complexes associated with arrhythmias by approximately 50%).

Sellmayer A. et al. (1995) & Landmark (1998) reported that DHA reduces the proliferation of the atherogenic plaque that is involved in the development of atherosclerosis.

Sorrentino et al. (1991) showed that Omega-3 oils (including DHA) help to prevent the formation of abnormal blood clots. DHA lowers Fibrinogen and Apoprotein (a) levels within the body. DHA prevents heart attacks, reducing

the risk of abnormal blood clotting by preventing the blood's platelets from becoming too sticky.

Bonaa et al. (1990) reported that DHA lowers blood pressure in hypertension patients (by increasing the body's production of prostaglandin e1 and by inhibiting the production of aldosterone).

EPA and DHA reduce blood pressure in essential hypertension, depending on increases in plasma phospholipid n-3 fatty acids. Diep et al., concluded that Omega-3 fatty acids (n-3 FAs) are shown to exert a blood pressure-lowering effect in hypertension, possibly in part by influencing vascular structure.

Frenoux et al., (2001) reported that gamma-linolenic acid (GLA), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) have been reported to prevent cardiovascular diseases.

Okada M. et al. (1996) tested the possibility that DHA supplements might improve mental functioning in patients with moderately severe dementia from thrombotic stroke. DHA is enriched in brain tissues and plays an important role in sensory functions. It also has electrical stabilizing effects and is antithrombotic. Terano et al. (1999) reported that DHA helps to prevent and alleviate the dementia that often results from strokes. DHA protects the brain from many of the Toxic aftereffects of stroke (this means that people who supplement with or consume high dietary quantities of DHA prior to experiencing a stroke will experience less cognitive impairment and brain damage following a stroke).

DHA stimulates the (normal) apoptosis [programmed cell death] of some types of cancer cells. Numerous studies conclude that the anti-tumor effect of DHA is mainly related to its ability to induce (normal) apoptosis in cancer



(article continues on next page)

(continuation of Fish Oil article)

cells (in 2000 Monograph Fish Oil).

Stubbs (1992) and Burke (1999) reported that DHA enhances the fluidity of the body's cell membranes (more so than any other fatty acid). DHA is important for the formation of cell membranes. DHA also concentrates in the cell membranes of the brain and nerve cells, nerve synapses, retina of the eye, inner ear, adrenal glands and sex glands.

Eicosapentaenoic acid (EPA) prevents cardiovascular diseases or disorders.

* Aucamp et al. (1993) and Hazra et al. (1999) report that EPA helps to prevent angina.

* Wood et al. (1987) and Salachas et al. (1994) concluded that there is an inverse association between dietary eicosapentaenoic acid intake and the risk of angina pectori.

* Salachas et al. (1994), Wood et al. (1987) and Hazra et al. (1999) concluded that there is an inverse association between dietary eicosapentaenoic acid intake and the risk of angina pectoris. They agree that fish oil superunsaturated fatty acids have been reported to lower the frequency of angina attacks.

* Landmark (1998) and Sellmayer et al. (1995) reported that EPA (900 mg per day) counteracts arrhythmias by reducing ventricular premature complexes associated with Arrhythmias by approximately 50%.

* Billman et al. (1997, 1994), Hazra (1999), and Sorrento et al. (1996) agree

that EPA helps to prevent Ventricular Fibrillation.

* Sorrentino et al. (1991) & Leaf et al., (1996) conclude that EPA can prevent ventricular fibrillation and sudden cardiac death.

* Aucamp et al. (1993) report that EPA inhibits the progression of atherosclerosis.

* Saynor et al. (1982) and Sorrentino et al. (1991) - EPA helps to prevent abnormal blood clotting by preventing the blood's platelets from becoming too sticky.

* Black et al. (1984) reported that EPA helps to prevent cerebral insufficiency (i.e. poor blood circulation to the brain).

* Bona et al. (1990) & Engler et al. (1999) report that EPA (2,200 mg per day) lowers elevated blood pressure in hypertension patients (by stimulating the production of prostaglandins PGE3 and PGI3).

* EPA prevents many forms of heart disease: EPA (at least 400 mg per day) reduces the risk of heart attack and helps to prolong survival in people who have already experienced a heart attack. Burr et al. (1989) demonstrated that the addition of 2,500 mg of eicosapentaenoic acid (EPA) to the diet per week (corresponding to approximately 300 grams of fatty fish per week) lowered mortality by approximately 29% in men during the first two years after a heart attack (as measured by the men's susceptibility to ventricular fibrillation). EPA may reduce the infarct size in patients with acute myocardial infarction (heart attack).

* Landmark et al (1998) & Hazra et al.

(1999) agree that the use of fish oils appears to reduce infarct size as estimated from peak creatine kinase and lactate dehydrogenase activities.

Conclusion

This article could easily contain at least 1000 other papers that support the dietary Omega-3 Docosahexaenoic Acid (DHA) and Eicosapentaenoic Acid (EPA) between 18-81 calories or 2-9 grams salmon oil per day. The BMJ single research paper is methodologically mixed in its concluding remarks. Some scientists interpret this research as supporting the use of pure wild fish omega-3 fatty oils is in fact neither disputed nor is the focus of the authors. I advise that unless the bulk of the research already reported is congruent, we ought to take any report that a natural essential metabolite will not do harm to human health except it be deficient or in excess.

Additional Information

Don't Be Fooled By The Omega 3 Scam
www.patrickholford.com/content.asp?id_Content=1607

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Race Caps Supreme : Idebenone explained

Steve Born

Idebenone - The unheralded but powerful component of Race Caps Supreme

"Ideba what?" That's what people often say when they first encounter this relatively unknown nutrient, pronounced I-deb-uh-known. So unknown, in fact, that I believe we're the only athletic supplement company that uses this incredibly beneficial nutrient. In the nearly two decades I've studied nutritional supplements, I've become extremely fond of many nutrients. I'd say that idebenone shares the top rung with old favorites such as lipoic acid (the "r" isomer form), l-carnitine, carnosine, and coenzyme Q10 (CoQ10).



So what is Idebenone?

There are six chemical names for idebenone found in research and trade publications and, to me, they're all names only a chemist could love... how about 6-(10-hydroxydecyl)-2,3-dimethoxy-5-methyl-1,4-benzoquinone? Whoa! Personally, I think I'd prefer to keep it simple by referring to idebenone as a "synthetic analogue (variant) of coenzyme Q10 (CoQ10)." Dr. Bill Misner aptly refers to CoQ10 as "the vital cell membrane antioxidant and essential constituent of the ATP-producing mitochondrial electron transport chain (ETC) system."

Space limitations prevent a full discussion on the importance of CoQ10 for both athletic performance and also a variety of health conditions, including life itself! Nutrition expert James South summed up its importance in just a few words: "Without CoQ10, or a good substitute, human life quickly ends."

What is this "good substitute" that South mentions? It's idebenone, which some experts suggest is equal to, and perhaps even more powerful than, CoQ10.

Idebenone's benefits

According to Dr. Bill, "Idebenone supplies all of the same benefits as CoQ10 [acting as a "spark plug" for the production of energy (ATP) as well as being a potent antioxidant] plus some distinct advantages based on its more complex chemical structure. Though very similar in chemical make-up to CoQ10, its longer chain organic structure gives it extra-powerful antioxidant properties making it a more effective 'free radical quencher' resulting in less cell and tissue damage."

While CoQ10 is perhaps the most important substance one can take for the prevention of cardiovascular disease and certain cancers, idebenone appears to have more brain-specific benefits. Dr. Bill writes, "Idebenone protects the brain from the detrimental effects of serotonin deficiency and facilitates endogenous serotonin production. Serotonin deficiency compromises sleep and may contribute to chronic depression. Idebenone favorably affects blood flow in the brain, reproducing verbal fluency, creativity, and memory. Idebenone enhances endogenous norepinephrine production by facilitating cellular uptake of tyrosine. This suggests that idebenone may indirectly improve the uptake and reproductive role of tyrosine in thyroid hormone production. Thyroid hormone deficiency is a factor in performance and body mass index."

Other "brain benefits" attributed to idebenone include improved cognition and mood, reduced damage from Parkinson's Disease and Alzheimer's Disease, and a role in the prevention of excitotoxin (a class of substances produced from the consumption of substances such as MSG and artificial sweeteners, which can impair or neurons) damage.

(see Idebenone on page 15)



Ask Dr. Bill

Bill Misner, Ph.D.

QUESTION : I was just reading about a study done by the International Journal of Sport Nutrition & Exercise Metabolism that concluded that a glass of chocolate milk was the best recovery drink, when compared to commercial sports (carb, protein) type drinks. Their study said that nine cyclists rode to exhaustion, then drank different recovery drinks. Those drinking just chocolate milk were able to double their endurance (as compared to commercial recovery drinks) in subsequent exercise. I would be curious to know how Perpetuem, Hammer Gel, Recoverite etc. stack up against lowfat chocolate milk?

ANSWER : I read the study in the International Journal of Sport Nutrition and Exercise Metabolism, Volume 16, Issue 1 (February 2006). Comparisons of nutrient properties must utilize like macronutrient compounds. When the nutrient ratio's active role in recovery from work or exercise is compared chocolate whole milk and chocolate skim milk fail in comparison to Recoverite. Recoverite contains 157% more total carbohydrates and 157% protein per 100-calorie count than chocolate milk.

Surprisingly Sustained Energy contains 170% more carbohydrate and 80% of the protein as chocolate milk. Perpetuem contains 167% more carbohydrate and 60% of the protein the so-called highly touted chocolate milk per 100-calorie count. It needs be emphasized that neither Sustained Energy nor Perpetuem were formulated to advance post-exercise recovery state.

Based on chocolate milk's macronutrient profile, it is not a state-of-the-art nutrient recovery compound. The predicted potential increase in homocysteine, saturated fats, plant-pesticides, bovine hormones, and an expected increase in allergen reaction from chocolate milk may

not be the best whole food post-exercise recovery nutrient recommended for endurance athletes.

Is chocolate milk a comparatively good post-exercise recovery drink?

Research reported by Hart et al. 1 (below), compared the recovery potential from consuming a carbohydrate replacement drink, a fluid replacement drink or chocolate milk after exercise against subsequent measures of time to exhaustion and total work. A realistic accurate comparison of post-exercise nutrient dynamics advancing recovery must compare like substances to each other. If the macronutrient profile of carbohydrates to protein to fatty acids post-exercise is not significantly alike, disclosure is the expected ethical action. Research comparing a carbohydrate replacement solution or fluid replacement solution to a whole food milk

byproduct with additional protein and fats not included in the former cannot be accurate when evaluating the nutrient effects of post exercise recovery. For example, the current trend in sports nutrition science recommends replacing carbohydrates with protein within a 2-hour window following exercise.

The following summary compares the macronutrient profile of Recoverite, a protein-enhanced drink made specifically to advance recovery against chocolate whole milk, which contains proteins. The nutrient profiles for the carbohydrate replacement drinks during exercise Sustained Energy, Perpetuem, Hammer Gel, and HEED are also listed. Though Sustained Energy and Perpetuem are not drinks intended for advancing recovery, their nutrient profile compares very favorably with whole chocolate milk.

DRINK NUTRIENT PROFILE PER 100 CALORIES

Post Exercise Recovery Drinks

	Calories	Carbs	Protein	Fat
Chocolate Milk	100	12.43 g.	3.80 g.	4.80 g.
Recoverite	100	19.50 g.	6.00 g.	0.00 g.

Carbohydrate Replacement Drinks

Sustained Energy	100	21.17 g.	3.04 g.	0.29 g.
Perpetuem	100	20.76 g.	2.28 g.	7.60 g.
Hammer Gel	100	25.07 g.	0.00 g.	0.00 g.
HEED	100	25.00 g.	0.00 g.	0.00 g.

1 Chocolate Milk as a Post-Exercise Recovery Aid

Jason R. Karp; Jeanne D. Johnston; Sandra Tecklenburg; Timothy D. Mickleborough; Alyce D. Fly; Joel M. Stager, *International Journal of Sport Nutrition and Exercise Metabolism*, Volume 16, Issue 1 (February 2006). Abstract

Nine male, endurance-trained cyclists performed an interval workout followed by 4 h of recovery, and a subsequent endurance trial to exhaustion at 70% VO₂max, on three separate days. Immediately following

the first exercise bout and 2 h of recovery, subjects drank isovolumic amounts of chocolate milk, fluid replacement drink (FR), or carbohydrate replacement drink (CR), in a single-blind, randomized design. Carbohydrate content was equivalent for chocolate milk and CR. Time to exhaustion (TTE), average heart rate (HR), rating of perceived exertion (RPE), and total work (WT) for the endurance exercise were compared between trials. TTE and WT were significantly greater for chocolate milk and FR trials compared to CR trial. The results of this study suggest that chocolate milk is an effective recovery aid between two exhausting exercise bouts.



Mark and Anne Lundblad Ultra (talented) Runners

Our featured athletes for this issue are the accomplished ultrarunners Anne and Mark Lundblad of Asheville, NC. And what a team they are! Anne was named the 2005 USATF Female Ultrarunner of the Year, based on a remarkable year. Check out these results:

2nd place (a mere 41 seconds behind the gold medal winner) at the Int'l Association of Ultrarunners (IAU) World Cup 100K in Japan, leading the U.S. to a gold medal finish.

1st place (course record) - Mountain Masochist 50 Mile

1st place (course record) - JFK 50 Mile

1st place - Promise Land 50K

1st place tie - Carrboro 50K

1st place (course record) - Bel Monte 50K

1st place (course record) - Great Eastern 50K

1st place (course record) - Virginia Creeper Marathon

1st place (course record) - Virginia Creeper Marathon

2nd place - Mt. Mitchell Challenge

Mark's got a pretty darn impressive 2005 resume as well:

2nd place - Holiday Lake 50K

2nd place - Umstead Trail Marathon

2nd place - Highlands Sky 40 Miler

2nd place - Great Eastern 50K

3rd place - Capon Valley 50K

3rd place - Bel Monte 25K

3rd place - Promise Land 50K

5th place - Mountain Masochist 50 Mile

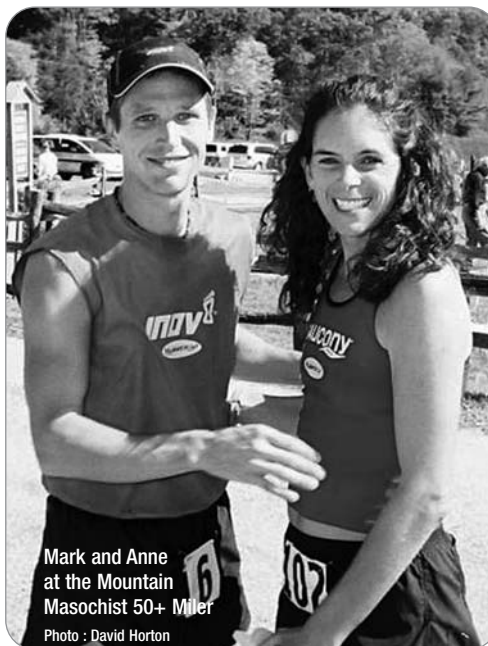
5th place - JFK 50 Mile

WHEW! Talk about a couple runners with stellar 2005 seasons!

EN: Anne, congratulations on a superb 2005 season. It seems as though, looking at your results, you were the picture of consistency. What do you credit for your tremendous success over the course of such a long season?

Anne: I mapped out my schedule at the beginning of the year, picking two races to focus on (the World Cup and JFK) and used the other races as build-ups for those targets. I was careful to plan in some rest periods. December, 2004, and July, 2005, were both very low-key months. I did a fair amount of cross-training and kept the running easy. That helped me to recover from the hard efforts and to prepare mentally and physically for the work ahead.

EN: I would imagine your 2nd place finish at the 100k Championships, in a time so close to first place, had to be the highlight of the season... correct?



Mark and Anne
at the Mountain
Masochist 50+ Miler
Photo : David Horton

Anne: Yes, it was definitely a thrill. For most of the race I was in 5th or 6th place. I wasn't on a super-fast pace and wasn't thinking it would be an especially great race, until around 80K when I started feeling stronger and began picking off some of the competition. With 10K to go, I was ten minutes behind the leader, so I really didn't think I had any shot at the victory. Had I known that she was fading, maybe I could've dug deeper...but as it was, I feel like I gave it all I had.

EN: Mark, you had a tremendous season as well, stringing together a whole bunch of top five or better finishes. Which race or races were

the highlights for you, and what made them that way?

Mark: 2005 was my first year of concentrating solely on ultras. I learned a lot, through my own mistakes as well as circumstances beyond my control. Towards the end of the season, my racing started feeling like a comedy of errors, from getting lost on courses to being stopped by the train at JFK. Promise Land was a good race for me, as was JFK, despite losing 13 minutes to the train. I proved to myself that I could run with some of the best ultrarunners in the U.S.

EN: If you could pick out a race where everything went absolutely perfect, nothing seemed to go wrong, everything was "firing on all cylinders" which race would it be and what was the feeling like? Did you do anything special prior to this particular race that helped make it the near-perfect experience it was?

Anne: That's a difficult one to answer. The length of ultras pretty much guarantees that you're going to have some ups and downs. I can't think of any races in which I felt great every step of the way. Having said that, however, I think JFK stands out in my mind as one in which I felt under control for most of the race. I had figured out the splits I would need to make at certain points in the race, and at each checkpoint I was right on, or maybe even a little ahead of my game plan. It was a great day, weather-wise, which helped. The other thing that helped was my attitude. I went into the race with a pretty relaxed mindset, as I had already accomplished a lot that year and felt like I didn't really have anything left to prove.

Mark: JFK last year was a race where I felt like I put it all together. Unfortunately things out my control dictated my finish position and time. As far as what I could control I felt great from start to finish and kept my mental focus and picked a few runners off late in the race. I knew I couldn't let up because Anne was having a super race and was right behind me. The last time I had that feeling was in the Chicago Marathon in 2002 when I ran my marathon PR. With ultras, especially



on hilly trails, there can be many highs and lows. It is a battle of attrition, both physically and mentally, which is why I love it.

EN: Conversely, was there ever a race when absolutely nothing went right, the “nightmare” race, so to speak? If so, which race was it and what made it such a struggle?

Anne: My first two World Cups, in 2001 and 2002, were both nightmares. I went into the first injured and found out afterwards that I had run 62 miles on a femoral stress fracture. In 2002, I had terrible GI problems, which made for a quite unpleasant experience. Both races were terribly disappointing, as I had traveled so far and had such high hopes for my first couple of international competitions.

Mark: Mountain Masochist last year was a race where I thought I could do well. I tried something new for my pre-race meal (mostly liquid) and I had stomach issues during and after the race. When runners ask me for advice, one thing I always tell them is to not try anything new on race morning. Well, I made a rookie mistake and paid for it.

EN: My wife is a very accomplished ultra marathon cyclist (two-time RAAM winner) and I have to admit that we are pretty competitive, even against each other, whenever we train or race. Is that the case for either of you? If so, were/are there any particular races that come to mind where the competition between the both of you was particularly fierce? Please describe how it went.

Anne: That hasn't really happened. Even when I'm running a great race, I'm nowhere near Mark. The one close call we had was at JFK, when I came off the trail section (mile 16) and caught a glimpse of him ahead of me on the tow-path. I thought, “uh oh - he's not having a good race and this could get awkward.” I was actually relieved when another runner told me that he had been delayed at the train crossing. He soon peeked over his shoulder and saw me, and took off. That was the end of that!

Mark: I'm proud of Anne and all her accomplishments. I haven't been “chicked” by her yet, but if it happens I'll be gracious in defeat and not lock

her out of the house. Seriously, it helps that we can train together sometimes and that we both are competitive so we understand the commitment and time it takes to train for races.

EN: What's a training week look like for you mileage-wise? What's the highest mileage you'll accrue in any given week? Describe the various types of training you might do in a given week (LSD, hill repeats, intervals, track work)

Anne: I usually top out around 100 miles during my heaviest training periods. This is done in nine or ten runs. I typically hit the track for intervals once a week, run tempos on the roads or the treadmill once or twice a week, and run a long run of 20-30 miles on the weekend. The rest of the days are recovery and base mileage.

Mark: I run my best off high mileage like 90-110 mile weeks. However I also walk that fine line of getting injured when training at higher miles. I usually try to build off a good base of miles (1-3 months) then one interval session (400's on the track) and one tempo run of 3-12 miles in length per week depending upon the race. On my long runs I try to run terrain that is similar to what race I'm getting ready for and try to push that last hour on my long runs when I'm tired.

EN: Which of the E-CAPS supplements and/or Hammer Nutrition fuels do you regularly use in your training and racing?

Anne: I take Sustained Energy, Endurolytes, and Hammer Gel on my long runs and in races. I took Sustained Energy (nine bottles) at the 100k World Cup in Japan last year.

Mark: I take Sustained Energy, Endurolytes, and Hammer Gel on all my long runs and races as well. I also use Recoverite or Hammer Whey after my long or intense efforts. I take the Anti-Fatigue Caps and Race Caps Supreme during periods of heavy training and racing.

EN: What does the 2006 season look like for you? What major races do you have planned? Any particular goals you're aiming for?

Anne: After racing so much on the trails last year, I decided to focus on develop-

ing my leg speed and competing mainly in road races this year. I started off the year in March with the USATF National 50K Championship on Long Island. I was pleased to run a new PR and win in the process [Note: Anne's winning time was 3:35:48, nearly 25 minutes ahead of the second place finisher]. My second goal race is Grandma's Marathon in June; however I'm currently dealing with a knee injury, so plans are a bit tentative at the moment. I'll finish out the year in October at the World Cup 100K in Korea.

Mark: My year so far as been all about getting healthy and re-hooked on the road bike. I plan on doing a biathlon in May and the Twisted Ankle Trail Marathon in Georgia, then a century road bike race in June and possibly a trail 50k in July. I'll see how all that goes, then plan my Fall schedule which hopefully will include a 50 mile ultra.

EN: What advice/tips can you offer someone who is competing in their first ultra?

Anne: I believe that anyone who can complete a marathon and is willing to put in the work can run an ultra. I think it's important to respect the distance and not to skimp on the long runs. Know the course and train on similar terrain/conditions. Experiment with supplements and fuels so that you'll know what works best for your body over the long haul. Most importantly, approach your training and the race with a good attitude and believe in yourself. Never underestimate the role that your mind plays in any physical endeavor.

Mark: I would start with a 50k or a 40-mile race. When selecting a race, do some research into what the course is like and also look into the past finishing times. There are several ultras out there that are longer than what is advertised coupled with technical terrain, which can make for an unpleasant first experience. I still feel that speed-work is important for ultras, but the long run is something that you cannot ignore. For your long run, time on your feet is more important than trying to run a prescribed distance in training. Lastly, try to do your long runs over terrain that will be similar to what you will encounter on race day.

It was great talking to you Mark and Anne. Good luck this season!



Steve Born : Senior Technical Advisor

Welcome to the 50th edition of Endurance News!

Is it just me, or is this year going by super fast? I mean, can you believe it's already May?? For us here in Montana, after a pretty darn good winter snow-wise, we're anxiously awaiting warmer weather; believe me, it's going to be nice going for a bike ride without having to wear multiple layers of clothing! Anyway, wherever you are, I hope that 2006 has been a good one for you so far and that your training is going well.

As you probably know by now, this issue marks the 50th edition of Endurance News as well as the beginning of my seventh year here at E-CAPS/Hammer Nutrition. I began working on the newsletter beginning with issue #28, which was half the size (12 pages versus 24) as the current editions of Endurance News, and I'm really pleased to see how much it's grown. As good as growth is, however, it has a way of diluting, and sometimes even eliminating, original ideals, concepts, and goals. Ever since its inception back in 1993, Brian has had specific ideas for this newsletter (you can read his introduction to the first newsletter on page 1), and I sincerely believe we have been maintaining his original vision. The information we provide you will continue to be, as Brian said a long time ago, "thought provoking, informative, educational, and helpful in your ongoing pursuit of optimum performance and health."

It seems that every edition takes on a particular theme; sometimes by design, sometimes it just happens. For this issue, the latter applies. Without intentionally planning on it, I've noticed that a large part of this issue rebuts much of

From The Saddle Of Steve Born : It's gonna be a busy year

the information you may be reading or hearing questioning the safety and/or benefits of specific nutrients. The media is laying a pretty hefty beating on supplements; on a seemingly regular basis nowadays it's hard not to read or hear about a study proclaiming that a certain nutrient has low-to-no benefits or, even worse, that it may be harmful to your health. Moreover, the media oftentimes emphasizes only one position/conclusion of a particular study or finding, overemphasizing the negative at the expense of fair (but maybe not-so-exciting) coverage of what the researchers actually did report.

That's why this edition of Endurance News is so important; it provides a "second opinion" regarding some hot supplement topics such as benefits and safety. Neil Levin's article on the Internet so impressed me that I gave it top billing in this issue. It's brief, to the point, and excellent reading that you'll benefit from. I thank Mr. Levin for graciously permitting us to reprint it. One of the topics he mentions, "The Vitamin E Controversy," is perhaps the hottest topic we've encountered in recent memory. He refers to a study that, according to the popular press, suggested that high doses of vitamin E might increase mortality rate (or shorten lifespan, depending on the media source). Based purely on the media reporting, many people panicked, worried that they might be putting themselves at substantial risk by taking vitamin E.

In addition to what Levin writes regarding the safety of vitamin E, I thought the following articles (links to the right) from James South were quite enlightening, especially the first one where he explains the problems/flaws associated with the meta-analysis of the 19 vitamin E trials. Of the points that South makes, two really caught my attention: (1) most of the trials involved people who were already sick, some gravely so, and (2) the list of subjects in the "shortened lifespan" category included those who had died as a result of factors unrelated to vitamin E consumption, such as car accidents. Now, when those kinds of variables are factored in, it kind of changes the conclusions of the study, at

least it does for me. Anyway, I think you'll find these articles quite interesting, and I encourage you to read them. Here are the links:

Vitamin E: Still Safe After All These Years - www.vrp.com/art/1647.asp

Vitamin E:

Still Beneficial After All These Years - www.vrp.com/art/1667.asp

Vitamin E

Does Not Increase Heart Failure! - www.vrp.com/art/1699.asp

Elsewhere in this issue of Endurance News you'll find other articles that deal with some of the latest controversies surrounding supplements. Dr. Bill's articles regarding fish oils and glucosamine sulfate & chondroitin sulfate contain some really valuable information. You can read full-length versions of these articles, references included, in the Endurance Library section of our website. Also, check out our "Ask Dr. Bill" column this issue; I think you'll find this particular information quite useful. Needless to say, even though Dr. Bill has officially retired, his spirit (and knowledge!) is still a very active part of this newsletter, and I plan on keeping it that way.

There are lots more great articles and features in this landmark issue, and I hope you enjoy reading them. For those of us involved in the production of each newsletter it is very much a labor of love, because we know that you will enjoy them and acquire practical, useful information to keep you healthy, train better, and race faster. And even though the newsletter - and indeed, the business in general - continues to grow, we'll stay firmly rooted in the principles Brian established over a decade ago. You can count on that.

Remember, we're here to help you in achieving your athletic and overall health goals, so please contact us with your questions.

Best wishes for a great rest-of-spring and early summer!

Sincerely,
Steve



Staff News : New faces at Hammer



Kelly Pris

Kelly joined the graphic department at Hammer in January. Hailing from a tiny town on the prairie of Northeast Montana, the hustle and bustle of the Flathead Valley is a welcome change for this Concordia College graduate. When not at work, Kelly spends her time with her husband enjoying one of the many outdoor activities this area has to offer. She is not YET an avid user of Hammer products, but sitting next to Joe in client services has made her a near expert in the products.



Melissa Miller

Melissa joined our client service team as a client advisor just this past March. Born and raised in the Flathead Valley (that's where we're located), Melissa is usually camping, hiking, skiing, snowboarding, fishing or hunting when she's not at work here or at her second job as an aerobics instructor for a local health club. She also keeps busy getting the staff at Hammer into shape with her twice weekly abs classes. Watch out Denise Austin!

Congratulations!

Autumn, a long-time member of the Hammer Nutrition family, recently welcomed a new addition to her own family. Lily Marie was born April 17th happy and healthy and joins her big sister Violet at home. We'll miss Autumn while she's out on maternity leave but look forward to her return this summer.

(Idebenone from page10)

On top of that, idebenone appears to positively affect liver mitochondrial function, which suggests that it would support and enhance the detoxification functions of the liver. (Another notable "liver health" nutrient is r-alpha lipoic acid, which is in Mito-R Caps).

Perhaps the most remarkable feature of idebenone is its unique ability to operate under hypoxic (low oxygen) conditions, helping to produce energy and maintain high energy levels without creating free radicals. In other words, under the same cellular low oxygen conditions that can cause CoQ10 to act as a pro-oxidant, idebenone helps prevent free radical damage while still supporting ATP production.

Why both CoQ10 and Idebenone?

If idebenone is supposedly a "better CoQ10," then why do we put both nutrients in Race Caps Supreme? I mentioned one reason earlier: while they are similar in chemical structure and provide some similar benefits, each nutrient also has its own specific benefits. Additionally, there's a synergistic process between them, as they enhance each other's effectiveness. They complement each other perfectly, so by combining both nutrients together we can get vastly increased benefits over either taken alone.

Get to know Idebenone

I remember when we decided to add idebenone to the original Race Caps formula. My first thought was, "Oh man, this is going to be one amazing supplement; there's just nothing like it anywhere." After doing additional reading and research on idebenone (and in addition to all the other benefits provided by the nutrients in Race Caps Supreme) I'm convinced that this initial thought/reaction was not an exaggeration.

I've listed just some of the benefits that idebenone provides; for more information check out www.idebenone.org. It might not be as well known as its near-twin CoQ10, but idebenone deserves a place at the top of the "nutrients that are vital for health and athletic performance" list. I believe you'll be hearing more and more about this remarkable nutrient. Each capsule of Race Caps Supreme contains a 60 mg combination of idebenone and CoQ10, providing a wide range of very potent benefits for the endurance athlete.

FCA Endurance : A new partnership

For many years, we have enthusiastically supported a number of athletic-based Christian ministries. These include the International Christian Cycling Club (IC3), the International Christian Triathlon Network (ICTN), and Believers on Mountain Bikes (B.O.M.B.). This number seems to be increasing every year and we are pleased to now be supporting the FCA Endurance ministry as well, the largest Christian sports organization in America. We are excited about this new partnership and we'll be sponsoring a number of FCA Endurance

athletes as well as the camps and clinics they host. You can find out more about FCA Endurance at their web site - www.fcaendurance.org



Getting Fast : All over again

Tony Schiller

At the first Twin Cities Marathon in 1982, 26-year-old training partners Mike and Roger ran stride-for-stride all the way until Roger's sprint gave him a three second gap over his college teammate as both runners set personal bests in just breaking the 2:30 barrier. It would be the only time either runner achieved the milestone.

Today, both runners are 50 and only see each other at the TCM. At last October's 25th running of the race, Roger looked smooth and easy running a sub 3-hour in his longest race of the year. Mike, on the other hand, appeared stiff and pained in his shortest event of the year, a 3 hour and 32 minute jaunt with perfectly paced 8:10 miles.

Now guess which one still does speed work and which one doesn't.

With no indictment of Mike, his running interests and reasons for racing changed greatly since the eighties, but his approach to speed work never evolved at all. Throughout that decade, he did his darnedest to maintain the same training routines (albeit slower) and gradually found less joy in doing speed work. In fact, he began to hate it. He also convinced himself that the source of all his stress-related injuries was traceable to running fast.

Over the years he just stopped going fast. He also stopped stretching (that's only needed for fast running). And he also stopped being injured (actually, his whole body is a mess, but a little pain is just the price to pay for having the vitals of a 20 year old). So every Saturday, rain or shine, you can find Mike logging 20 or more on the trails with his pals. To his credit, he tries to stay on soft surfaces, except the track.

Mike is hardly alone. As the last of the "running boomers" near 50 and the majority of athletes racing in general in the master's ranks, our mantra has become, "long and easy." We've all heard statistics on the high percentages of slowdown we can expect per decade. But Roger and a whole host of speed-racers are disproving all those time-honored scientific formulas for age-expected-decline.

Joining Fast Company

Regardless of what sport you are in, here's what I believe are the three keys to continued high-level performance after reaching the apex of your racing career:

1) Get there being relatively unscathed. As the years mount, respect the warning signs of overuse and imbalance injuries. Accept that you can no longer push through the pain. Realize there are alternatives... new ways to train, smarter ways to regain flexibility and strength, entirely new breakthroughs to speed recovery. Treat your body like a temple. That means scheduling more rest days, getting regular bodywork to break-up the adhesions and scar tissue that's restricting fluid movement. It also means being religious about your nutrition and recovery-intake as depletion is a thing of the past.

2) Maintaining the passion. Do you remember what it was like in the beginning; the unbridled joy and anticipation you felt just thinking about doing the next workout? Do you recall the energy put into a long winter run or basement trainer ride when the racing season was still months away? How long has it been since you invested in yourself... bought and read a book about your sport, took a workshop, or sought advice from a coach? And are you immersing yourself in positive energy... the people, forces, and pursuits that bring out the best in you and the childlike passion of greatness?

3) The ability to still turn it over quickly. There's no getting around it-speed is king. We're talking raw speed, the ability to turn it over fast. Most readers of this newsletter are incredibly fit, which means only small gains can be made through training more miles. But the pace you can maintain will always be limited or expanded by your raw speed. Don't despair if your giddy-up-and-go has gotten-up-and-gone;

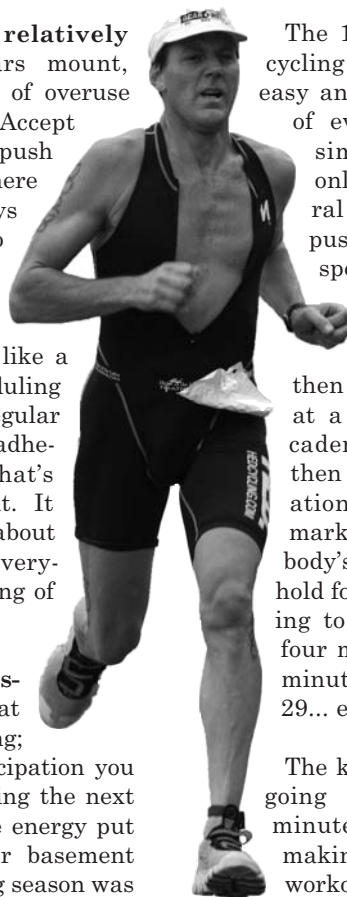
there's still hope. You do need, though, to have an evolving approach to speed as time goes by and the miles pile on. Since this is such an important key and the racing season is upon us, here's a safe and easy way to implement speed into your routine.

The 1 to 5 Method (great for cycling or running) - start out easy and finish the last minute of every 5 minutes with a simple acceleration. Go only up to the body's natural speed limiter. Do not push it or try to expand your speed threshold. Just pick-up to the limit the body wants to go. Hold it for 60 seconds and then slow down. Run or ride at a naturally easy, relaxed cadence for four minutes, then start the second acceleration at the nine-minute mark. Again, only go to the body's natural speed limit and hold for 60 seconds before slowing to easy level for the next four minutes (restart again at minute marks of 14, 19, 24, 29... etc.).

The keys to this session are 1) going easy during the four-minute sections and 2) not making this into an aerobic workout. It is a speed workout. You want to retrain the body to what it feels like to be fast, but only to the natural speed limit. What you'll discover is how quickly the body responds and becomes comfortable going at higher speeds. The natural speed limit will expand, naturally, during the workout and over the weeks you do it.

I like to do this workout one or two times a week from May to July on both the run and bike. I'll typically do 12 accelerations on the run (60 minutes) and 16-20 on the bike (80-100 minutes). My goals are to keep very smooth and fluid throughout, really concentrating on form and just letting the body extend or reach for its desired level of speed. I also want to finish with zero fatigue the next day. That's how I avoid burnout

(article continues on next page)





(continuation of Tony's article)

and injury. It really should be an exhilarating workout, not a body breaker.

I've been using this workout as my primary speed training over the last decade. I rarely go to the track, and I don't use a heart monitor with this workout. It isn't a cardio day; it's a turnover day and I want to keep my focus on the body's movement, not the heart. Over the course of six to eight weeks, I find it is more than adequate for bringing out my top speed while separate time trial or hill climbing days are my toughness days to get race ready.

Give it a try and see what happens. You'll be surprised how quickly you get fast all over again.

At 48, Tony Schiller still can turn in a 33 minute 10K. His goals for 2006 are to race fast in several Minnesota triathlons while growing the MiracleKids Triathlon, the race he directs, to 1000+ kids on August 19.

JOE CD : An endurance library

As you probably read in our last issue of Endurance News, Dr. Bill Misner retired in February of this year. The Journal Of Endurance, which Dr. Misner authored and edited, has been temporarily suspended until we locate a successor whom we feel is up to the quality and standards we believe are necessary to serve you.

We're sure you will agree that Dr. Bill's writings are an invaluable knowledge resource and that the timeless information and advice he provides can be used repeatedly. We have made the first 100 volumes of the J.O.E. available on CD. They normally sell for \$49.95, but as gift to you in honor of Dr. Bill's retirement, you can get the J.O.E. CD for half-off, at \$24.95. Act fast as there are only 99 of these CD's left!

The J.O.E. 100 CD contains 753

pages of relevant articles and studies for athletes in all disciplines and at any level. The indexed, PDF format provides an easy way to search for topics of

interest. A "comments" column included in each article explains the scientific data in layman's terms. Dr. Bill Misner says, "The information is quite compact and extensive. So many wonderful scientists submitted excellent in-depth information, work which no doubt could be called 'hallmark' in light of what enhances both health and endurance exercise results."

We're sure you'll find this special CD a valuable resource. We have only a small supply, so make sure you don't miss out. Order your copy today!



\$24.95
Was \$49.95

Hammer Gel : USAT official sponsor

We're excited to announce that we're partnering with USA Triathlon for 2006 and 2007, supporting a tremendous number of USAT-sanctioned events and all the USAT National Championships races this year and next. After sponsoring over 450 multisport events in 2005 (that number is sure to exceed 500 this year), and with many of them already being USAT-sanctioned events, becoming an official USAT sponsor was a no-brainer! Needless to say, if you're competing in a USAT-sanctioned event, chances are Hammer Nutrition will be supporting it!

In addition to our sponsorship of USAT events, we'll also be providing product support to members of Team USA (the national team) as well as National Select Resident Team members.

72¢
per serving

The economical,
26-serving Hammer Gel
jug. 9 flavors. \$18.95.
Buy three or more for
\$15.95 each.

Order today!

Brad Viera : Photo by Gene Viera



Muscle Cramping : Origins and resolutions

Steve Born

If you have faced the occasional problem of muscle cramps during a variety of conditions you planned for and prepared to avoid, you well-know that the causes of muscle cramps from related endurance exercise can be puzzling indeed! The three reviews below are from literally hundreds of studies that have attempted to isolate and name the origin of this unwanted, usually unexpected physiological phenomenon. If you have problems with exercise induced muscle cramping, it may be related to fitness level, acclimatization, rate of exercise intensity or duration, diet, viral or bacterial microorganisms, fatigue from lack of rest or sleep, weather changes, humidity, pre-event or during-event carbohydrate-, electrolyte-, fluid balance-intake. And there may be a few other factors not mentioned here also...

Muscle cramps have a multiple etiology. Clinically, "Exercise-Associated-Muscle Cramps [EAMC] have four separate theoretical causes. Athletes using non-sugared fluid energy drinks experience remarkable, indefinite cramp-free aerobic exercise [70-85% VO₂ Max] when the following criteria are met:

- 1) Total fluid intake rate 16-24 ounces per hour
- 2) Endurolytes intake rate from 3-6 capsules per hour
- 3) Caloric intake of 85%-95% complex carbohydrates, 5-15% protein, totaling between 250-350 calories per hour

Electrolytes are depleted at a faster rate than sweat-fluids loss. Adding more water without the electrolytes dilutes electrolytes dramatically in the muscle environment. Adding simple sugar for refueling exercise demands raises the osmolality fluid levels of the stomach from acceptable body fluid levels ranging from 280-303 mOsm. to 600 mOsm., hindering absorption of both fluids and food fuels. Electrolytes control osmolality and absorption rate, but when they are either diluted or depleted, the body rebels with an open display of muscle spasms, cramping, or failure.

If the internal muscle environment is in systemic stress, by dilution or depletion, or both, suddenly exposing it to a

decreased temperature gradient in water is enough to activate muscle fiber spasm, cramping, or failure.

The general origin of muscle cramps as defined by sport scientists in human performance laboratories is not well investigated and is therefore not well understood. Clinically, "Exercise-Associated-Muscle-Cramps [EAMC] have several theoretical causes:

- 1) Inherited abnormalities of substrate metabolism
"Metabolic Theory"
- 2) Abnormalities of fluid balance
"Dehydration Theory"
- 3) Abnormalities of serum electrolyte concentrations
"Electrolyte Theory"
- 4) Extreme environmental conditions from heat or cold
"Environmental Theory"

Any one of the above or a combination of each could stage the physiological environment for a muscle cramp.

Recent data from studies of runners [during EAMC] do not support a single hypothetical cause from #1-2-3-4 above. Electromyographic (EMG) data collected during these cramp episodes reveals baseline activity is increased (between spasms)... And, reduction of baseline EMG activity correlates well with clinical recovery. During acute cramping, EMG activity is high. Passive stretching reduces EMG activity and the stimulus evoking cramp mechanism.

In animal studies, abnormal reflex activity in the muscle spindle (increased exercise) and the Golgi tendon organ (decreased activity) has been observed in fatigued muscle. Schweltnus et al., (1997) have hypothesized that EAMC is caused by sustained abnormal spinal reflex activity, which appears to be secondary to muscle fatigue.

Local muscle fatigue is responsible

for increased muscle spindle afferent and decreased Golgi tendon organ afferent activity. Sustained abnormal reflex activity would explain increased baseline EMG activity between bouts of cramping. Passive stretching invokes afferent activity from the Golgi tendon organ, thereby relieving the cramp and decreasing EMG activity.

Slow down and/or stretch it out is a well-known remedy to most of us, because that is what we naturally do for relief.

Field "Reports" from athletes who have remedied their tendency to cramp reveal constant attention to intense interval sessions, prolonged endurance training, periodic rest, a balanced diet, and fluid-electrolyte use before and during each exercise session. Elevation of metabolic enzymes, creatine phosphate, and ATP tissue stores may be the resultant post-training factor resolution for problematic exercise-induced muscle cramps.

Abnormal reflex activity of the muscle spindle may be avoided by subjecting the muscle to excessive stress from the predicted demand-environment in a competitive event. The other alternative is to reduce effort during the event so as to maintain EMG activity below that which may induce a pre-EAMC environment.

Overview Of The Causes Of Exercise-Induced Muscle Cramping

A muscle cramp is a common, painful, physiological disturbance of skeletal muscle. Many athletes are regularly frustrated by an exercise-induced muscle cramp, yet the pathogenesis remains speculative with little scientific research on the subject. This has resulted in a perpetuation of myths as to the



(article continues on next page)



(continuation of Muscle Cramping article)

cause and treatment of it.

There is a need for scientifically based protocols for the management of athletes who suffer exercise-related muscle cramp. An in-depth review of the literature and the specific neurophysiology of a muscle cramp during endurance exercise needs to be both defined and reviewed.

Cramps Originate In The Nervous System

Disturbances at various levels of the central and peripheral nervous system and skeletal muscle are likely to be involved in the mechanism of cramp and may explain the diverse range of conditions in which cramp occurs.

The activity of the motor neuron is subject to a multitude of influences including peripheral receptor sensory input, spinal reflexes, inhibitory interneurons in the spinal cord, synaptic and neurotransmitter modulation and descending CNS input. The muscle spindle and golgi organ proprioceptors are fundamental to the control of muscle length and tone and the maintenance of posture, shortened muscle length, intense exercise and exercise to fatigue, resulting in increased motor neuron activity and motor unit recruitment.

The relaxation phase of muscle contraction is prolonged in a fatigued muscle, raising the likelihood of fused summation of action potentials if motor neuron activity delivers a sustained high firing frequency. Treatment of cramp is directed at reducing muscle spindle and motor neuron activity by reflex inhibition and afferent stimulation.

There are no proven strategies for the prevention of exercise-induced muscle cramp but regular muscle stretching using post-isometric relaxation techniques, correction of muscle balance and posture, adequate conditioning for the activity, mental preparation for competition and avoiding provocative drugs may be beneficial. Other strategies such as incorporating plyometrics or eccentric muscle strengthening into training programs, maintaining adequate carbohydrate reserves during

competition on treating myofascial trigger points are speculative and require investigation. (Bentley1996)

Fluid And Electrolyte Balance May Lower Muscle Cramp Incidence

Depletion of body water from sweating beyond 2 percent of body weight can significantly impair athletic performance through deficiencies in thermoregulatory and circulatory functions. Dehydration occurs when fluid loss exceeds intake, the degree being directly proportional to the amount of fluid loss. It is difficult for the endurance athlete to avoid a negative water balance, because it is both impractical and undesirable to attempt to replenish the amount lost in the course of an endurance event. A question often raised regarding athletic performance is whether electrolyte replacement is necessary during prolonged exercise. This article examines two of the electrolytes, sodium and potassium, in relation to athletic performance.

Several recent research studies, examining the influence of various exercise protocols on these two electrolytes, are reviewed. It appears that the need to replace sodium after ultra endurance events is more common than the need to replace potassium. Sodium replacement may prevent hyponatremia, a condition, which can result in diarrhea, exhaustion, syncope, or convulsions. Hyponatremia, associated with potentially fatal complications, is a risk to the health of athletes participating in events such as the Ironman Triathlon. The body is well equipped to conserve fluids and electrolytes at times of stress.

The sweat glands and kidneys conserve electrolytes to minimize their losses when adapting to the heat; therefore, degree of acclimatization, fitness level, environmental conditions should all be considered when choosing a means of hydration. (Massad 1994) Of the cramping cases reported to me during the untypically hyperthermic racing season of 1998, water intake exceeded electrolyte intake total in 80% of these disappointing performance failures, likely resulting in "dilutional hyponatremia"[diluted sodium levels].

Cramping Is Not Always Caused By Fluid Loss Or Imbalance Balance And/Or Electrolyte Depletion

Exercise-induced muscle cramp has been considered to result from disturbances of fluid and electrolyte balance resulting from excessive sweat loss. Serum biochemical and haematological measurements were made on 82 male marathon runners before and after a 42.2-km race.

Fifteen (18 percent) of the runners reported an attack of muscle cramp, which occurred after 35 plus/minus 6 km (mean plus/minus s.d.) had been covered. These subjects were not different from the others in terms of racing performance or training status. Serum electrolyte concentrations, including sodium and potassium, were not different between those suffering from cramp and those not so affected either before or after the race, although a significant increase in serum sodium concentration occurred in both groups. Serum bicarbonate concentrations fell to the same extent (from 28 to 24 mmol l-1) in both groups.

Significant decreases in plasma volume, calculated from the changes in circulating haemoglobin and haematocrit, occurred in both groups of subjects, but there was no difference in the extent of the haemoconcentration.

The results suggest that exercise-induced muscle cramp may not be always associated with gross disturbances of fluid and electrolyte balance.(Maughan 1986)

Of the athletes who reported reaching their goal-finish times during extreme heat-stress endurance events, the following characteristics also accompanied each of their reports:

1. Training acclimatization to heat at 70-75% VO₂ Max Race Pace.
2. Progressive training to 66% of the distance within 6 weeks prior to event at the above race pace.
3. Complex carbohydrate energy drink 250-300 calories/hour during event.

(see 'Cramping' page 21)

Tissue Rejuvenator's Glucosamine Sulfate & Chondroitin Sulfate : Challenging the New England Journal of Medicine study

Question:

What do you say in response to the NEJM study on Glucosamine and Chondroitin. They found that it only beat the placebo for severe joint pain. Does this imply anything for Tissue Rejuvenator since "G" and "C" are the main ingredients?

Answer:

The rate of response to glucosamine was 3.9 percentage points higher, the rate of response to chondroitin sulfate was 5.3 percentage points higher, but the rate of response to combined treatment was 6.5 percentage points higher, compared to the rate the rate of response in the celecoxib control group as 10.0 percentage points higher than that in the placebo control group:

P.O. Substrate

%-Symptoms Reduced

Placebo	20.0%
Glucosamine Sulfate	23.9%
Chondroitin Sulfate	25.3%
Chondroitin + Glucosamine	26.5%
Celecoxib	30.0%

Comment

Interesting that patients with moderate-to-severe pain at baseline, the rate of response was significantly higher with combined therapy than with placebo (79.2% vs. 54.3%). Furthermore, Glucosamine and Chondroitin primarily as building blocks if not available for natural structural synthesis over a 24-week period did produce limited symptom reduction. Osteoarthritic knee pain symptomology is effected body weight, ongoing weight bearing trauma, and the individual CELECOXIB response. CELECOXIB is a known anti-inflammatory, yet it absorbed only 1 part of 10 above placebo, or 3 parts above taking nothing out of a possible symptom-free "10" parts. I can rationalize the same sort of reasoning with protein intake in exercising subjects. Joint compatibility ease of exercise is influenced by muscle mass synthesis following exercise. The athlete who does

not consume adequate protein will not grow the muscle required for future exercise event stress demand, while the athlete who consumes enough protein to satiate the muscle mass resynthesis process post exercise will gain more muscle mass, hence better performance results. Other papers listed also contradict the NEJM paper (content.nejm.org/cgi/content/short/354/8/795) including the remaining anti-inflammatory natural substances in the Tissue Rejuvenator product, which, in my opinion deserve a careful review. I never conclude a review without consideration of a number of research publications. Whether Glucosamine or Chondroitin Sulfates are considered for their building block potential or anti-inflammatory effects are not conclusive based on one large study that calls 10% "significant" but calls 6.5% "insignificant." It is too close to call "insignificant" in light of so many other studies reporting "significant" results.

Specific Comments (XP)

The paper you refer to utilized Glucosamine HCL in a large subject contingent. Tissue Rejuvenator is formulated with Glucosamine Sulfate and 16 other ingredients shown to reduce chronic and some acute inflammatory joint pain. In contradiction, research does argue that glucosamine in dose dependent fashion reduces chronic inflammation in a large majority of human subjects.

Tissue Rejuvenator compound reduces the rate of trauma-induced inflammation by several different pathways. Besides Glucosamine Sulfate and Chondroitin Sulfate, other ingredients such as Methylsulfonylmethane, Peptidase, Bromelain, Papain, Protease, Amylase, Lipase, Cellulase,

Phytase, Boswellia Serrata, Devils Claw, Yucca Root, Curcuma Longa, Quercetin (Saphora Japonica), Undenatured Type II Collagen have been shown to reduce inflammation. You may download PubMedline research on each one to determine its efficacy in reducing joint inflammation.

I have included the link to the National Library of Medicine below for research engine to access the literature.

Introduction

No single study showing an association without corroborating evidence from other research properly concludes findings outside the study population. Science methodology typically requires 20 research papers from an assortment of researchers without biased competing interests. I suggest there is a simple explanation for the role of Glucosamine in reducing chronic inflammatory pain and support the oversimplification with what has survived the peer-review process published from recorded science.

(Note: Space limitations prevent us from listing the published studies here. They are listed in full, with references included, in the web site article of the same name)

Simplified Explanation

Kwashiorkor occurs most commonly in areas of famine with protein deprivation occurs, growth failure, loss of muscle mass, generalized swelling (edema), and decreased immunity. An over-simplified explanation is to compare muscle resynthesis following muscle loss, muscle damage or injury recovery on a low protein diet. When

(article continues on next page)



(continuation of Tissue Rejuvenator article)

activity increases the need for protein increases in order to accommodate the rate of loss and resynthesis repair. Protein synthesis requires from 3-14 days to complete, however glucosamine synthesis required for stimulating production of proteoglycans by chondrocytes can require from 28-180 days to complete. One researcher advises that a 3-year protocol has advantages. Glucosamine availability is to the repair and health of the joints, connective tissue, and joint space fluids what protein is to muscle growth and repair. Exogenous, supplemental glucosamine instructs chondroclasts to cease destroying cartilage and can reactivate chondroblasts to recommence "building" new cartilage. Our body does not revive joint structures as quickly as it does the high vascular tissues, such as muscles and skin areas. When the body has adequate supplies of both glucosamine sulfate and chondroitin sulfate, it will heal itself at the most rapid rate. In the absence of or deficiency of glucosamine sulfate and chondroitin sulfate, the body will not repair activity-induced joint structures, but with provocation and chronic deficiency, the inflammation state will progress.

Glucosamine Sulfate

Glucosamine sulfate is required by the body to regenerate or reform joints and tendons. We require a minimum amount of glucosamine sulfate to preserves the structural integrity of the joints (1-2 grams per day) in order to eliminate the pain from damaged joints or repair damaged joints. Glucosamine sulfate is an essential component of the connective tissue matrix of ligaments, cartilage, and tendons. Everyone's body makes glucosamine, but they do not synthesize it as fast as we may damage these structures. Both glucosamine sulfate and Chondroitin sulfate are precursor moieties (like building blocks) the body synthesizes naturally to generate connective tissue, cartilage, and synovial joint space fluid. Glucosamine sulfate is 64.6% glucosamine, presenting 90-98% oral bioavailability

orally-ingested absorption rate.

The majority of positive reporting clinical studies used glucosamine sulfate. The sulfate in the glucosamine sulfate molecule contributes to the therapeutic effects of this form. It has a short half-life and probably does not inhibit the elastase enzyme (which the chondroitin sulfate form DOES).

Chondroitin Sulfate

Chondroitin sulfate is the substrate precursor for optimal joint space fluid levels. Chondroitin sulfate inhibits collagenase (an enzyme that degrades the body's collagen). Chondroitin sulfate (CS-C form) inhibits the activity of elastase against collagen deterioration in the joint. Length of dose and dose potency are factors. Chondroitin sulfates are some of the most common glycosaminoglycans in the human body. They are mostly bound to collagen and serve as constituents of the fundamental substance of connective tissue.

Comments

I suggest further research of the other metabolites in TR (Methylsulfonylmethane, Peptidase, Bromelain, Papain, Protease, Amylase, Lipase, Cellulase, Phytase, Boswellia Serrata, Devils Claw, Yucca Root, Curcuma Longa, Quercetin (Saphora Japonica), Undenatured Type II Collagen). Each of these substances are well-research and shown to reduce inflammation without side effects, enhancing the joint space building blocks donor health activity.

References Associate Anti-Inflammatory Effects Oral Dose Glucosamine & Chondroitin Sulfate's

In NIH's PubMed:
www.ncbi.nlm.nih.gov/entrez/query.fcgi

NOTE: Studies and references available at www.e-caps.com

('Cramping' from page 19)

4. Fluid intake less than 30 ounces per hour but more than 16 fluid ounces per hour.

5. Electrolyte intake with Endurolytes at the rate of 3-6 Endurolytes per hour.

6. Attempted to run first half of the event slower than race pace, while attempting to run the second half faster.

7. Attempted to sponge upper body* as often as possible all through the event.

**Some used an ice collar-ice in towel wrapped around the neck*

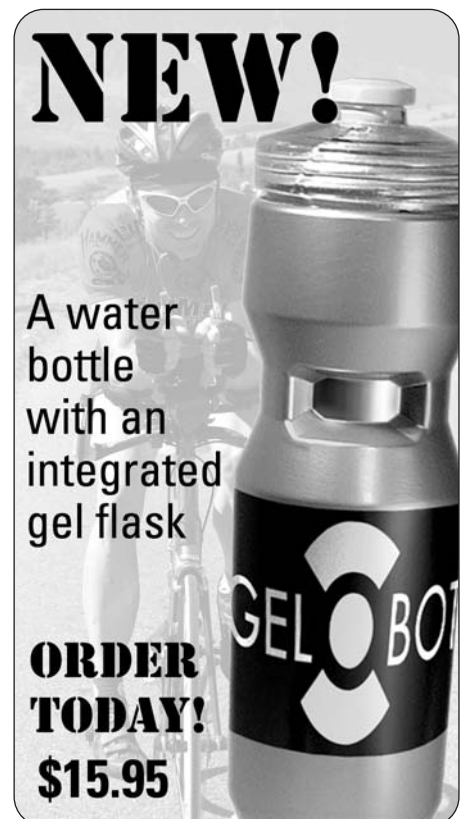
8. A few of these athletes planned 1-2 preventative stretch breaks when muscle areas began to spasm or cramp.

9. All of these athletes used regular interval sessions in the heat of the day in order to elevate muscle tissue stores of glycogen, metabolic enzymes, ATP, and Creatine Phosphate.

10. Each of these athletes reported employing a 7-10 day taper to the last 2-3 days prior to the event practiced by warming up and light-easy stretching.

References

Available upon request



NEW!

A water bottle with an integrated gel flask

ORDER TODAY!

\$15.95

On The Road : Say hello!

Now that the racing season is going into high gear, that means that I'll be on the road a bit more, working the Hammer Nutrition booth and doing clinics/seminars at a few of the races we sponsor. Here's where I'll be in the next couple months:

Memphis in May Triathlon

5/18 - 5/21

Memphis, Tennessee

Liberty Triathlon

6/8 - 6/11

Independence, Minnesota

Pacific Crest Triathlon

6/22 - 6/25

Sunriver, Oregon

USAT National Triathlon Championships

7/7 - 7/9

Kansas City, Missouri

If you'll be doing any of these races, please come by the Hammer Nutrition booth and say hi!

Team Hammer - Senior Div.

Just wanted to give special recognition to some amazing sponsored riders in California. Way to go guys!

Sea Otter Circuit Race 60+

Richard Shields 1st

Sea Otter RR 60+

Richard Shields 2nd

Jim Fox 5th

Wente RR 55+

Richard Shields 1st

Jim Fox 4th

Wente Criterium 55+

Richard Shields 4th

Endurance News : Your very own library

Beginning with the last issue of Endurance News, we are now having the newsletter three-hole punched for convenient storage. To make it even more convenient, we have 1" binders in stock that can be purchased for \$1.50 with any order. This is a great way to keep your newsletters for quick and easy reference. Throw one in on your next order.



Binders shown may differ from actual binder.

Multisport Mania : Partnerships in 2006

Steve Born

Recently, I assembled a list of the partnerships we have with various race production companies. I knew that we sponsored a lot of events, but until I put it "on paper" I didn't realize just how many great organizations we work with! We'll probably sponsor over 2000 endurance races this year, with multisport events remaining our leading category. With that in mind, I thought it'd be fun for you to see just how many multisport organizations we have the pleasure of working with. Keep in mind that this is just a list of the partnerships we have with organizations that produce several events annually; we also sponsor several hundred individual multisport races. I've listed them pretty much in alphabetical order by state. If you're a duathlete or triathlete, you'll likely find Hammer Nutrition sponsoring a race nearby!

- **Team Magic** - AL., NC., TN.
www.team-magic.com
- **DCB Adventures** - AZ.
www.dcbadventures.com
- **Mountain Man Events** - AZ., NV.
www.mountainmanevents.com
- **TriEvents.com** - CA. (L.A. area)
www.trievents.com
- **KOZ Enterprises** - CA. (San Diego)
www.kozenterprises.com
- **On Your Mark Events** - CA.
www.onyourmark.com
- **Racing Underground** - CO.
www.racingunderground.com
- **Piranha Sports** - DE., MD., NJ.
www.piranha-sports.com
- **Sommer Sports** - FL. and other states (Tri-America series)
www.sommersports.com
- **MultiRace.com** - FL.
www.multirace.com
- **Blue Sky Sports** - GA., FL.
www.tribluesky.com
- **Georgia Multisports Productions** - GA.
www.gamultisports.com
- **Greater Smoky Mountain Triathlon Club** - GA.
www.gsmtc.com
- **Matoon Beach Multisport** - IL.
www.wetri.net/endure
- **Cutting Edge Events** - IL.
CuttingEdgeEvents.net
- **Tri-Shark** - IL.
www.tri-shark.org
- **Heart of America Series** - IA.
www.pigmantri.com/hoaseries/hoaraces.html
- **Headfirst Performance** - KY.
www.headfirstperformance.com
- **Tri Maine** - ME.
www.tri-maine.com
- **Fiske Independent Race Management** - MA., RI.
www.firm-racing.com
- **3 Disciplines Racing** - MI., KY.
3disciplines.com
- **Elite Endeavors** - MI., OH.
www.eliteendeavors.com
- **Midwest Multisport Series** - MN., IA.
www.midwestmultisport.com
- **UltraMax Events** - MO.
www.ultramaxtri.com
- **SwimBikeRun St Louis** - MO.
www.swimbikerunstlouis.com
- **BBSC Endurance Sports** - NV.
www.bbscendurancesports.com
- **Endorfun Sports** - NH.
www.endorfunsports.com
- **CGI Racing** - NJ., MD., PA.
www.cgiracing.com
- **Genesis Adventures** - NY., IL., PA.
www.genesisadventures.com
- **Event Power** - NY.
www.eventpowerli.com/home.cfm
- **Score This!!!** - NY.
www.score-this.com
- **Set-up, Inc** - NC., SC., VA., GA.
www.set-upinc.com
- **HFP Racing** - OH., WI., WV.
www.hfpracing.com
- **Triathlon Club of Oklahoma** - OK.
www.triokc.org
- **AA Sports** - OR., WA.
www.racecenter.com/aasports/06schedule_tridu.htm
- **American Sports Events** - RI.
americansportsevents.com
- **Go Tri Sports** - SC.
www.gotrisports.com/gotri
- **Race Day Events** - TN.
www.racedayevents.net
- **Start 2 Finish Event Management** - TN.
www.s2fevents.racesonline.com
- **Tri Utah** - UT.
www.triutah.com
- **Vermont Sun Triathlon Series** - VA.
www.vermontsun.com/triathlon
- **Richmond Multiports** - VA.
www.richmondmultisports.com
- **Odyssey Adventures** - VA., WV.
www.oareevents.com
- **Fins Wheels Feet Racing** - VA.
www.finswheelsfeet.com
- **Vermont Sun Triathlon Series** - VT.
www.vermontsun.com/triathlon.html
- **Emde Sports** - WA.
www.emdesports.com
- **BuDu Racing** - WA.
www.buduracing.com
- **Midwest Sports Events** - WI.
www.midwestsportsevents.com
- **Lake Geneva Extreme Sports** - WI.
www.lakegenevasports.com

Race Report : Catching up with a few amazing athletes



Sea Otter Success

Brian Butler

WOW! What a weekend! The Sea Otter Classic, the race I had been waiting for, was finally here. After closing the books on the wettest March ever in Monterey, I was sure the course was going to be a quagmire, full of mud and muck! Amazingly, the course turned out to be in great condition! I figured with all the climbing on this years course, I would ease into the event and not burnout in the first few tough climbs. I popped a Hammer Gel after the first tough climb and again after another climb to have enough fuel for the final killer climb. NO PROBLEM! With the gels during the race and PIC's, AF, and Race Caps before, I was set...OH, and I almost forgot, we were the second wave to take off in the morning (8:05am) and I was lazy and didn't want to wake up super early, meaning I didn't get enough fluids in ahead of time, so I just took 5 Endurolytes hoping to keep the cramps away...and it worked perfect!

Anyway, I ended up winning the Sport 25-29 year old class and setting the fastest time for all the sport racers! So, I was VERY excited about my finish! Oh yeah, and I did it on a borrowed bike that I had never ridden before! But, I couldn't have done it without the help of you guys and Hammer, you truly make the best products I've ever used to enhance my performance, thank you so much!

Have a great day
Brian Butler

Grand Prize At The Grand Prix Bonnie Stoeckel

I knew you would enjoy seeing a copy of the award I received this spring for my participation in the Mid-Atlantic Duathlon Gran Prix and the Greater Atlantic Multisport Series last year.

Early in 2005 as one of my goals for the year, I thought it would be nice to be Master's champ for both series. While I didn't win an award at the conclusion of the G.A.M.S. due to having only done three races, I won the Gran Prix! Not Master's champ, I was first overall female! At the age of 49! Ain't that amazing?

If I do the whole series this year, which is uncertain as my knees aren't aging well, I will again strive to be Master's champ and the G.P.. As far as the G.A.M.S, most events are triathlons so probably won't win a series award again. I am a lousy swimmer!

I really appreciate all the support you've given me over the years and want you to know I am extremely proud to represent your fine company.

Sincerely,
Bonnie Stoeckel

U23 Sweep Racelab Cycling Team



On a hot day in sunny Scottsdale AZ, Hammer Nutrition sponsored Racelab U23 Cycling Team Takes the Podium at the AZ state Crit champs in the Junior 17-18 class.

Nick Keller 1st
Matt Briefer 2nd
Andrew Jorgenson 3rd

Picture courtesy of Brian Smith of Racelab
U23 Cycling Team

Crushing the Competition Team Stampede

Missoula, Montana based Team Stampede triathletes Ben Hoffman and Linsey Pickell had record-setting performances Saturday morning at the 2006 Tri-State Outfitters Spring Duathlon at Hells Gate State Park in Lewiston, Idaho. Hoffman, who won the men's race in 52:36, and Pickell, who won the women's race in 59:09, both set new course records. Team Stampede athletes took seven of the top 14 places overall in a race that consisted of a two-mile run, 12-mile bike and two-mile run. Joining Hoffman and Pickell in the top 14 were Brendan Halpin (third, 56:08), Matt Shryock (eighth, 58:55), Jeff Cincoski (ninth, 59:01), Joel Brown (12th, 59:53) and Aaron Riley (14th, 1:01:04). Pickell, who was 10th overall, took two minutes off the previous course record of 1:01:09 to win the women's race by over seven minutes. Hoffman won the men's race by 1:01 over Roger Thompson.

Courtesy of Montana Sports Information

24 Hours in Old Pueblo Dan and Kara Durland

Quick update on our results at the 24 Hours in the Old Pueblo.

Kara and her duo partner Kat, riding single speeds, won the women's duo class. They spun out 17 laps, besting the 2nd place Demi Luna Chix by 2 laps. Per usual, Kara's 9 laps were fueled by Perpetuem/Sustained Energy mix, Hammer Gel and the new chocolate chip Hammer Bars.

My results were not quite as good. After winning the 4 person single speed division in the torrential rain last year, my duo partner and I were back to give the Duo Open class a run. Unfortunately a rider swept my front wheel on my first lap sending me to the ground and a date with EmergeCare. I returned, 7 stitches later, and put in another 3 laps but my left knee joint was done.

Keep you posted....
Dan and Kara Durland
www.mtbrace.net



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The Back Page

Now That's A Testimonial! : Kind words from Jackie Burt

Dear Steve,

I would like to express my gratitude to Hammer Nutrition and to you. Thank you for your support and for the products you gave us. We're thrilled for many reasons. I'd like to share with you my thoughts and feelings about your company and products.

For the first couple of years of my racing career I battled the fueling issue immensely. I could train on almost anything and then when the all out effort of race day came my stomach would cramp terribly every time. I was lost as to what to do about it. I happened to mention this to Lizzie Burt (my amazing mother-in-law, accomplished triathlete and faithful customer of yours). She convinced me to try your product, of which she happened to be in

possession, for the 2003 Xterra Mountain Championships in Keystone.

Ashley was opposed to my trying anything new on race day but I felt I had to take the chance. I had my very first pain free race - did I say pain free race? What I meant is my stomach felt great! I was so pleased and so surprised. I was able to fuel solidly throughout the race. I've not used another product since that day. I have come to love and even crave the taste of Sustained Energy as my body is in need of replenishment. I can't say enough about it.

I largely credit Hammer with my ability to continue racing. It is for this reason that I proudly wear Hammer clothing. I enjoy being asked about it and telling my story. I'm a firm believer in supporting and receiving

sponsorship from products I sincerely like, trust and buy on my own.

I'd also like to compliment your company on your choice of clothing products. In addition to wearing your logo for marketing purposes I very much appreciate the quality of clothing products. I've not worn anything from Hammer that is not of very high quality in material, fit and technology.

So all in all, I'm an extremely happy customer/Hammer athlete. Thank you very much!

Here's hoping for a great season!

Sincerely,
 Jackie Burt