

ENDURANCE NEWS

Photo - Vince Arnone



Endurance News : Helping you 'FUEL RIGHT, FEEL GREAT!'® since 1992

The Results Are In...

... and we've got two new winners!

Author : Steve Born

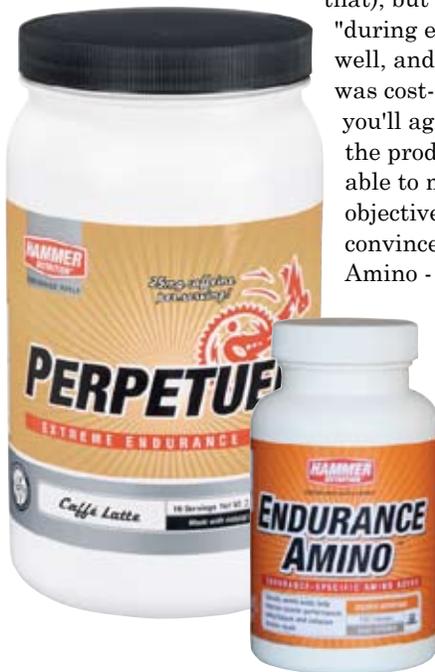
Endurance Amino

"I just wanted to drop a note about EA. **What a great amino supplement. I have tried others, none compare to Hammer's.** I notice a great difference during 50+ mountain bike rides with better endurance, and even a better mood, and afterwards for recovery. Great stuff! Thanks!"
- Jennifer T.

"I am impressed with the addition of Endurance Amino. You have been the most reliable company with outstanding products. Never coming out with anything but the best grade. I have used your products for some years now and look forward to another season using them. **I was using BCAA's from another company and soon will be using yours.** Thank you for all of the products and information, I find them very helpful."
- Jan

"**The new Endurance Amino is awesome** - I've been taking 3 before and 3 after my weekly high intensity rides, usually threshold intervals, and I feel great during with no soreness the next day."
- A.J. K.

It's become apparent that Endurance Amino is a smashing success, based on the feedback we're already receiving on this new product. When Brian and I first discussed producing an amino acid formula, we had two primary objectives: (A) Make a product that wasn't just for recovery (though it is outstanding for that), but one that provides "during exercise" benefits as well, and (B) Make sure it was cost-effective. We hope you'll agree, once you've tried the product, that we've been able to meet both of those objectives. I'm personally convinced that Endurance Amino - especially in tandem with Anti-Fatigue Caps - will upgrade the quality of your long workouts and races to even greater levels. After exercise, Endurance Amino will definitely play a major role in enhancing your recovery.



Caffé Latte Perpetuem

"I got a chance to try out the new Caffé Latte flavor of Perpetuem last weekend and again

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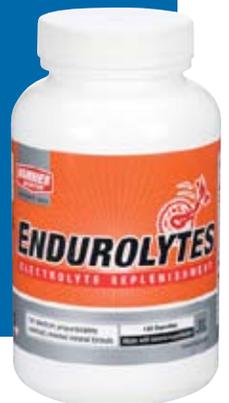
HOT TIP: New Endurolytes use



My Endurolytes have been sitting in the cupboard with all the chilly weather we've been having as of late. However, I came across a two weeks unlimited Bikram (Hot) Yoga for \$20 offer that I couldn't pass up. For those of you unfamiliar with Bikram Yoga, it is a 90-minute class performed in a room heated to about 105 degrees and 30% humidity. If you are not soaked after the first 10 minutes of practice, something is definitely wrong with you!

Anyway, it is recommended that water only be consumed during practice (no electrolyte drinks). The instructors say, "dizziness and nausea are normal; they are not signs that something is wrong and that you should stop..." Hmph. I decided to go against the grain and pop an Endurolytes at the beginning of class and another one hour into it. Voila! No dizziness or nausea for me!

Thanks to Michele Magnaghi who originally posted this information on the Endurance List forum. If you're not yet a member of the Endurance List it's easy to join, and there's no cost whatsoever. Click on the "HAMMER FORUM" link—found in the left column on the home page of the Hammer



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Our Staff

Editorial : Brian Frank, Steve Born, Bill Misner

Editorial Contributors : Jim Bruskewitz, Suzy Degazon, Lowell Greib, Chris Kostman, Al Lyman, Randy Profeta, Tony Schiller

Layout : Angela Nock

Proofing : Kadidja Sierra

Note : *Contributing author articles, and Dr. Bill submissions, are not proofed in-house.*

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.

Endurance News features insightful articles on diet, nutrition, training and



Brian with Jean, Jen, and Kim on top of Mount Lemmon at the February Hammer Camp. Photo - Vince Amone

Welcome

Author : Brian Frank

Welcome to issue #63

It was a long and tough winter up here in Montana and there are a lot of moving trucks headed south. It seemed like it only snowed when I was out of town, leaving me with the fewest ski days in 14 winters. Maybe that's why I'm so glad to put this winter behind me. Skate skis and snow boards are waxed and put up for the long summer and now it's time to ride!

This is another issue packed full of great information that you can take outside and put to good use today - to make you faster and healthier. Be sure to read Jimmy Dean Freeman's race report on page 50. It amazed me and I've been joyfully reading reports like this for 22 years.

Last year, when we decided to go to 6 issues per year, we planned to lower the page count to 48 from the 56 we averaged when Endurance News was a quarterly publication. That would have

taken our page count for the year from 224 to 288. However, we have so much good content to fill these pages that we have yet to put out a 48 page issue this year, and this one is no exception. Steve, Angela, and Kadidja have really stepped up with the increased frequency and that has been greatly appreciated. Thank you also to all of our contributors; they really add value to the publication. Keep up the good work, crew.

I say "good content" because of the consistently positive feedback we get from you and because more and more of the content is coming directly from our clients. I like that and hope to see it continue to increase - send us your photos, stories, and funnies and we'll put them to good use. I don't know about you, but the athlete submissions and race reports are my favorite part of EN. Likewise, keep that feedback coming. I still personally monitor suggestions@hammernutrition.com and we take your suggestions very seriously.

Two of the suggestions we've received and acted on are a new flavor of Perpetuem and an amino acid product. You responded with such enthusiasm that we have had trouble keeping these items in stock. Not to fear though, our new purchasing ace is on the case. It is such a relief to finally have some strength in this position after years of shortages. I know it has been frustrating for you when items are continually out of stock, but I really do believe that it's a thing of the past and that very soon even clothing will be near 100% in stock. Speaking of hard to get items, have you got one of our new kits yet? You'll get more compliments than usual. Bergamo bibs and a summer weight long sleeve

other topics of interest for endurance athletes - written by myself as well as professional and elite amateur athletes and other experts in the area of nutrition and exercise. In addition, Endurance News will include articles highlighting new and existing Hammer Nutrition 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 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.

Back issues are available at www.hammernutrition.com

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see WELCOME on page 3

WELCOME from page 2

jersey are my "daily drivers."

Although we've visited this subject in past issues, the question keeps coming up, so I'll explain again why we are not coming out with a "block," "chew," or "chomp" anytime soon. These products are candy. What I mean is that to make a gelatinous cube hold its shape, you need about 50% of the carbohydrate content to be from sugar, simple sugar. It cannot be done with 90% or so complex carbs like our gels and drinks. We have long advocated, and I firmly believe to this day, that predominantly complex carbs are the BEST carbohydrate choice for endurance exercise. It would be hypocritical to contradict this by coming out with a "Hammer block." I know a lot of you are using them and dealers are constantly asking for them, but they are not what Hammer is about. If you want some candy, I suggest you go down to the local convenience store, get the good stuff, and use it as a treat after you finish a race. I call it principles before profits.

It may sound cliché, but that's how I've been doing it for 22 years and I really don't plan to change anytime soon. After all, what other company would introduce an unflavored energy drink, with protein, that tastes like "soggy cherrios" or "wallpaper paste"?

The block question came up at two large clinics that I did in San Francisco and Walnut Creek in March. I explained the reality of these products (candy) and my ethical dilemma, then I took a poll. In both clinics, with well over 100 athletes combined, less than 10% said we should bring out a block. Perhaps I swayed the vote a bit, but I took this as a strong sign that our clients appreciate our standards.

I hope that May and June are full of good training and even better race results for you. Be sure to try out the new flavor of Perpetuem, and test one or more of our new products; they may become your new favorites.

NEW from page 1

today. **I give it a big thumbs up!** Great job Hammer!"

- Dave

"I definitely agree with Dave. **I tried the Caffé Latte this weekend and I think it is the best flavor EVER!** Thanks, Hammer!"

- Richard L.

Along with the feedback above, this flavor was given overwhelmingly positive reviews at the last two Hammer Camps!

Although it's only been out for a short while, we've already received some great comments on the Caffé Latte Perpetuem. Seriously, this new flavor of the finest endurance fuel around is just superb. And, that little touch of caffeine (12.5 mg per scoop) really comes in handy. It's nowhere near enough to get you "jangled" but it is enough to provide a nice, continuous little energy "spark." Plus, this new flavor of Perpetuem tastes good even when it's warm... how could a true Caffé Latte flavor not?! If you even remotely enjoy the taste of coffee, lattes, cappuccinos, or anything similar, you have simply got to try the new Caffé Latte Perpetuem. It really is that delicious and it works even better than it tastes.



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Single serve \$2.69 / 16 servings \$23.95 / 32 servings \$44.95

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Race Report

Dan Jensen, from South Dakota, comes out of Stove Pipe Wells during the 18 mile climb to Townes Pass at the 2008 Badwater. Dan, a Below Knee amputee runner/triathlete, went on to finish 41st out of 82 competitors.

Be sure to catch up on what other Hammer athletes are doing in our Race Report section starting on page 47.



Photo - Robin Jensen

Variety!
26 servings - \$19.95



Photo - Vince Arnone

From the Saddle of Steve Born

Author : Steve Born

Hammer Camp – Lessons Learned

Though I am not proud to admit this, I attended the most recent Hammer Camp with minimal fitness under my belt. “Why on earth would you do that?” you might ask. Well, it wasn’t intentional, that’s for sure. Let’s just say that ever since I retired from active competition in 2003, and have become more and more involved in work responsibilities, work-related travel, and home-related responsibilities, it’s become easier and easier to not workout nearly as consistently as I was when I was actively competing. As you can imagine, as an ultra marathon cyclist I spent many, many hours on the bike... it was as though a good majority of my world for 15+ years revolved around the bike.

In addition, it’s still very much winter here in Montana so riding outdoors isn’t possible yet (in fact, it’s snowing as I begin this article). During my 15+ years as a competitive athlete, I spent many, many hours in the gym doing trainer sessions (which I didn’t enjoy a whole lot then), so it’s become a lot easier to blow off going to the gym now, especially after a long day of work... instead of making that left turn to the gym I admit that it’s become a lot easier to make the right turn and head towards home instead. Also, I happen to be one of those “slow metabolizer” type of athletes so when the cold weather starts hitting Montana, my body goes into “insulation mode.” Sometimes I think I don’t even have to

eat the food, I just need to look at it and next thing I know, I’ve got an unwanted 10+ pounds more on my already large frame (I was never the lightest guy on a bike to begin with... at the peak of my fitness I was still around 185 lbs).

Bottom line is that I’ve got no truly valid reasons, just a bunch of not-so-great excuses for arriving at the Hammer Camp in less-than-stellar shape.

Anyway, I get to the Hammer Camp in Tucson, AZ where there are a lot of already fit triathletes and cyclists, many of whom are prepping for soon-to-be-happening races. I’m coming in with minimal fitness, almost zero on-the-bike time (I’ve been on the bike one time since October if you can believe that), and now I am going to be riding lots of miles—some of them quite difficult—in temperatures that are easily 50-60 degrees warmer than what I’ve been living in for several months. Needless to say, though the riding was thoroughly enjoyable, I got my butt handed to me on a daily basis by these much fitter athletes. There’s a lesson to be found here and one of these years since my post-competitive days I’m going to learn it without having to learn it the hard way. Still, although I don’t recommend kick-starting your fitness by doing long, hard daily rides with a bunch of very fit triathletes and cyclists, my experience at the Hammer Camp was great and I look forward to attending another one in the future... in better shape, of course!

My time at Hammer Camp allowed me to experience a couple of things that really

saved me and allowed me to ride better than my fitness level and lack of on-the-bike time would have indicated was possible:

1) The use of the Daily Essentials prior to each ride (Race Caps Supreme, Mito Caps) and after each ride (Premium Insurance Caps, Race Caps Supreme, Mito Caps).

2) The use of Endurance Amino and Anti-Fatigue Caps prior to the rides and every hour during the rides. Afterwards, I took another 4 Endurance Amino capsules. A 5-hour ride doesn’t seem like much until you realize that you haven’t done a 5-hour ride in who knows how long, in temperatures you’re not acclimated to, in windy conditions, and on terrain that’s challenging to say the least. I have no doubt that this supplement combination kept me going.

3) The use of Super Antioxidant and AO Booster after each ride. I would take 2 Super Antioxidant + 1 AO Booster with Recoverite (another life saver) after each workout, with another capsule of AO Booster with dinner. I am convinced that the combination of the Daily Essentials, Super Antioxidant, AO Booster, and Recoverite played a significant role in allowing me to even get out of bed the next day, let alone ride another lengthy and sometimes arduous ride.

4) The use of Seat Saver. For a guy who’s had almost no time in the saddle, I was fully expecting some significant discomfort, if not downright agony. I kid you not, Seat Saver worked so well and the irritation I experienced was almost non-existent. I have used

see STEVE on page 5

STEVE from page 4

many of these types of products over the course of several years of ultra distance cycling and, even after only a couple days at the Hammer Camp, it became obvious to me that there is not a product that I have personally found works better... this stuff is absolutely amazing and I will never use any of the products I had previously used.

Thanks to Owen, Andy, Brendan, and Jen for helping make my time at the Cycling House for this recent Hammer Camp so enjoyable.

Tips for a successful race What to do in the days leading up to the race

I do a lot of seminars throughout the year and one of the topics I talk about is in the title above: What to do in the days leading up to the race. It's pretty generic material, I know, but I think that it's good information nonetheless. Now that the season is here in full swing, I felt compelled to include this information here for you in the hopes that it will take the guesswork out of what to do as your race approaches. Here goes:

In the days leading up to the race

- **Avoid the temptation to train too much and/or too close to race day!** - You will not be able to positively influence your fitness level in the days leading up to the race; however, you can negatively impact your race by training during that time (training meaning anything of significant duration or intensity). As well-known coach Jeff Cuddeback states, "The week of any event of this duration should be all about resting up and topping off your energy stores. Training is done to keep the engine lubed and tuned up, nothing more. If you think you're going to further your fitness through training the week of your key race, you're sadly mistaken. If you are the type to train right up to the event, you will almost certainly under perform."

Best performances in long-duration events are achieved by getting to the starting line well rested rather than razor sharp. In doing so, you may find yourself not hitting on all cylinders

during those first few minutes. In fact, you might even struggle a bit. However, your body will not forget all the training you've done and it will absolutely reward you for giving it the time it needed to "soak up" all of that training.

- **Don't let your diet deviate too much from what got you there in the first place!**

has, for all intents and purposes, passed. In essence, "carbo loading" is what you did in the 0-60 minutes after all your workouts leading up to the race. That's when the glycogen synthase enzyme—which controls glycogen storage—is most active, and that's how you topped off your glycogen stores. Any excess food you eat in the days leading up to the race is either going to be passed through the bowels or stored in adipose cells...

neither of those things will benefit you.

Brian and I do a little training while in Hawaii for the 2008 Ironman World Championships. Photo - Cassie Lowe



NOTE: Refer to the article "Recovery - A crucial component of athletic success" in The Endurance Athlete's GUIDE to SUCCESS for more detailed information on this topic.

SODIUM
- Don't

FLUIDS - Don't drink excess amounts of water in the hopes of getting a head start on your fluid requirements for the race. Consumption of roughly .5 to .6 of your body weight is a good gauge in regards to how much water you should be consuming daily, in addition to what you consume during training (example: 180-lb athletes should drink approximately 90-108 ounces of water daily). However, if you've not been following this recommendation consistently, don't start "cold turkey" as this will overwhelm your body with too much fluid too soon, which may increase the potential for hyponatremia. Instead, build up your fluid intake slowly so that you eventually reach your target goal.

NOTE: Refer to the article "Hydration - What you need to know" in The Endurance Athlete's GUIDE to SUCCESS for more detailed information on this topic.

CALORIES - Don't stuff yourself with extra food in the hopes that you're "carbo loading." The time period for carbohydrate loading (i.e., maximizing muscle glycogen storage capabilities)

consume extra sodium (salt) in the hopes that you'll be "topping off" your body stores prior to the race. Since the average American already consumes approximately 6000 to 8000 mg of sodium per day (if not more), an amount well above the upper end recommended dose of 2300-2400 mg/day, there is absolutely no need to increase that amount in the days prior to the race. (Hint: Adopting a low-sodium diet will do wonders for both your health and athletic performance). High sodium intake, especially in the days leading up to the race, is a recipe for disaster because it will greatly increase the potential for disruption of the hormonal mechanisms that control sodium regulation, re-circulation, and conservation. In the days leading up to the race, be especially cognizant of the salt content in your foods, especially if you go out to eat. Dining out can easily increase your already-high salt intake dramatically (into double figures!). Be sure to read (or re-read) the article "More Sodium... Add more sodium to your diet? Don't believe it!" on page 8 of the

see STEVE on page 7



Two-time Race Across America champion, Cassie Lowe, gets a ride in around the Australian countryside.
Photo - Pamela Lowe

Product Spotlight : AO Booster

The "year-round protection" product to combat fat-soluble-produced free radicals

Author : Steve Born

Many years ago, Dr. Bill Misner wrote (paraphrased), "Antioxidant defenses in humans are comprised of both enzymatic and non-enzymatic defenses. The antioxidant enzymes are glutathione peroxidase, superoxide dismutase, and catalase. There are two types of non-enzymatic antioxidants, the water-soluble and the fat-soluble. The enzymatic antioxidants are lodged within the cellular membranes; in contrast, the water-soluble antioxidants (as free molecules) are present in the cytosol of the cells. The fat-soluble antioxidants are found within the lipid membranes. Each antioxidant defense system protects the cells from oxidative damage in its own sphere of action, and a deficiency in any category puts the cell at risk for oxidative damage."

"Free radical production is increased 12-20 times higher in athletes as compared to the sedentary subjects. The endurance model at an aerobic pace may be generating far more free radicals against

their fatty tissue components than water structures. My biggest criticism of antioxidant (AO) supplementation is that we take mega-doses of water soluble AO's, but are quite negligent of the fat-soluble components, whose ORAC values are remarkably high. It is my view that natural fatty acid nutrition and fat-soluble antioxidants should accompany the high ORAC (Oxygen Radical Absorbance Capacity) foods and water-soluble components [such as] Vitamin C, B-Complex, and [the multiple antioxidants in] Super Antioxidant for reducing free radicals."

A variety of Hammer Nutrition products—especially Super Antioxidant and Premium Insurance Caps—provide a wide range of water-soluble antioxidants... we've got that pretty well covered. What wasn't really missing, but we felt was somewhat lacking, was more of the fat-soluble antioxidants. That's where AO Booster comes in and it "completes the picture," so to speak, by providing wide-ranging nutrient support for the all-important neutralization of

fat-soluble free radicals and the specific damage they can cause. It perfectly complements the fat-soluble antioxidants in Race Caps Supreme and Mito Caps, and provides a variety of other benefits, as I'll discuss later.

I personally consider AO Booster to be one of the most important products we've ever come up with. In fact, it is in my "Top Five" supplements, ranking just below the three Daily Essentials products—Premium Insurance Caps, Race Caps Supreme, and Mito Caps—and is equally important (if not fractionally more so) than Super Antioxidant. That's not to discount the other Hammer Nutrition products and the benefits they provide, far from it. For example, if you've had/are having joint-health issues, then Tissue Rejuvenator is most likely your key product. Similarly, if you're dealing with anemia or similar issues, Xobaline would be a key product for you. Prostate concerns? PSA Caps is the ticket. What I am saying is that if I were to pick my top five supplements—the ones that would, in general, provide the widest range of benefits for athletic performance and overall health—they would be the three Daily Essentials, AO Booster, and Super Antioxidant.

The importance of free radical neutralization

Our bodies need antioxidants to protect

see AO BOOSTER on page 7



Dosage Suggestions

Non-workout days:
1 capsule with food.

Workouts under 90 minutes:
1 capsule after workout with recovery drink or food.

Workouts over 90 minutes:
1 capsule after workout with recovery drink or food and 1 capsule later in the day with food.

AO BOOSTER from page 6

us from the damaging effects of free radicals. Researchers Bradford and Allen write, "A free radical is simply a molecule carrying an unpaired electron... All free radicals are extremely reactive and will seek out and acquire an electron in any way possible. In the process of acquiring an electron, the free radical... will attach itself to another molecule, thereby modifying it biochemically." [R. Bradford & H. Allen. Oxidology. Chula Vista CA: R.W. Bradford Foundation, 1997. Pp. 64-65.]

Leibovitz and Siegel state: "However, as free radicals (FR) steal an electron from the other molecules, they convert these molecules into FRs, or break down or alter their chemical structure. Thus, FRs are capable of damaging virtually any biomolecule, including proteins, sugars, fatty acids, and nucleic acids." [Leibovitz, B. & Siegel, B. (1980) "Aspects of free radical reactions in biological systems: aging" J Gerontol 35: 45-56.]

Dr. Bill Misner writes, "If free radicals are not neutralized by on-site antioxidant body stores immediately, tissue damage occurs to absolutely every cell membrane touched by these imbalanced molecular wrecking machines. Some theorize soreness and stiffness result because free radicals and waste metabolites build up during either prolonged or intense exercise."

A wide range of both water- and fat-soluble free radicals is continually formed in the body as part of normal biological processes. Other factors, such as pesticides, cigarette smoke, pollution, alcohol, stress, and foods that are fried at high temperatures or burnt, also contribute to an overload of free radicals. Supplementing with a variety of antioxidants is required to counteract the damaging effects of the various types of free radicals.

The AO Booster formula

Tocopherol (150 mg)/tocotrienol (50 mg) blend – The vitamin E "family" has eight "members" – four tocopherols and four tocotrienols. Studies suggest that optimal health benefits are obtained via intake of a mixture of tocopherols and tocotrienols versus "regular" vitamin E

see AO BOOSTER on page 11

STEVE from page 5

previous issue (#62) of Endurance News.

NOTE: Refer to the article "Electrolyte Replenishment" in The Endurance Athlete's GUIDE to SUCCESS for more detailed information on this topic.

The night before the race

- **Eat clean, eat until you're satisfied, and then call it a night** – You can't positively affect muscle glycogen storage capabilities the night before the race, a time when the glycogen synthase enzyme—which again, is the enzyme that controls glycogen storage—is inactive (hint: that's why post-workout refueling is so important). Consume complex carbohydrates, some high quality protein, low-to-no saturated fat, and be sure to drink sufficient amounts (but not too much) of water. Skip the alcohol, fatty foods, and dessert... save those "rewards" for after the race.

NOTE: Refer to the article "Recovery – A crucial component of athletic success" in The Endurance Athlete's GUIDE to SUCCESS for more detailed information on this topic.

The morning of the race

- **If your race is longer than 60-75 minutes, consume NO calories three hours prior to the race** – The first fuel your body will use when the race begins is muscle glycogen (again, this is why post-workout refueling is so vital). Eating a pre-race meal at the wrong time will negatively affect how your body utilizes its finite stores of glycogen, which will negatively impact your performance. If you're taking any

supplements prior to the start of the race—such as Race Caps Supreme, Mito Caps, Anti-Fatigue Caps, Endurance Amino—it's ok to take these on an empty stomach.

NOTE: Refer to the article "The Pre-Race Meal" in The Endurance Athlete's GUIDE to SUCCESS for more detailed information on this topic.

- **Don't sacrifice sleep to eat** – A better strategy than eating 1-2 hours prior to a long-duration race is to consume 1-2 servings of Hammer Gel 5-10 minutes prior to the start. That will top off liver glycogen stores nicely (the goal of the pre-race meal), and provide some calories to augment muscle glycogen stores during the first hour of the race, without negatively affecting how muscle glycogen is utilized.

NOTE: Refer to the article "The Pre-Race Meal" in The Endurance Athlete's GUIDE to SUCCESS for more detailed information on this topic.

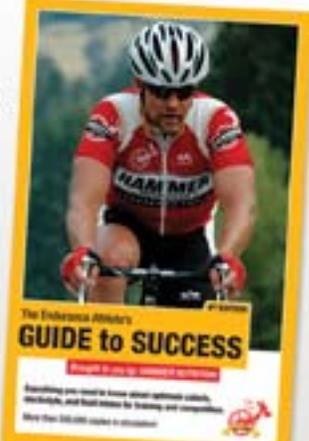
I believe the more of these "common sense" principles you adopt in the days leading up to a race, the better your chance for success.

Speaking of success, on behalf of all of us at Hammer Nutrition, I want to wish everyone a safe and successful season. Thanks for making Hammer Nutrition your choice for supplements and fuels!

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A.J. Kennedy leads the chase in the Cherry Pie Critterium in Napa, California.
Photo - Joe Aspatore

Cholesterol

A necessary nutrient, but with consequences deserving mention

Author : Bill Misner, Ph.D.

Introduction

Cholesterol has an unearned and earned negative reputation associated with several life-ending consequences. Despite the well-known toxic effects of excess cholesterol, our body only requires 1 gram of cholesterol each day (as a precursor for cell building blocks and necessary hormones). The average human body contains a total of 150 grams of cholesterol; of this total body content the total amount of cholesterol present in serum is approximately 7 grams. The average normal healthy adult manufactures 1 gram of cholesterol per day [1 gram cholesterol = 9 calories]. Some athletes associate endurance performance with “Automatic” low total cholesterol and optimal cardiovascular health. While cholesterol levels impose both positive and negative effects on cardiovascular health, maintaining cholesterol levels under control via dietary choice is an important adjunct to both health and performance over the long haul. Some cholesterol is required for many physiological functions:

POSITIVES: Cholesterol is regarded as an essential for the following:

1. Formation of all steroid hormones
2. Cell membranes, the myelin sheath that insulates neurons
3. Cholic acid, chenodeoxycholic acid and deoxycholic acid are essential components of bile
4. Facilitates the body's absorption

- of dietary fats in the intestine
5. Protects the skin against infection by detrimental bacteria and detrimental fungi
6. Possesses antioxidant properties
7. Healthy function of the brain
8. Prevents depression (low cholesterol (under 160 mg/dl) is associated with an increased risk of depression)
9. Prevents or counteracts excessive stress (due to it being an essential constituent of the adrenal hormones - adrenaline, cortisol and cortisone - that are released by the body in response to stress)
10. Comprises 1% of human sebum (protects the skin against dehydration and accelerates the healing of skin tissue)

NEGATIVES: Cholesterol excess however has an earned negative reputation for an increased risk of atherosclerosis, heart attack, hypertension, gallstones, age-related macular degeneration, male pattern baldness, lung cancer, prostate cancer, Alzheimer's disease, and male impotence.

What Increases Cholesterol Excessively?

Only 20–25% of total daily cholesterol production occurs in the liver while high synthesis rates come from the intestines, adrenal glands and reproductive organs. You may attribute 70-80% of your

cholesterol production to the genes inherited from your family. Total fat intake, especially saturated fat and trans fat, plays a larger role in blood cholesterol than intake of cholesterol itself. Saturated fat is present in full fat dairy products, animal fats, several types of oil and chocolate. Trans fats are derived from the partial hydrogenation of unsaturated fats, and in contrast to other types of fat, they are not essential for life. It is recommended that trans fats not be consumed at all as they are said to be more harmful than naturally occurring oils. Trans fat can be found in the commercial food supply including fast food, snack foods, fried food and baked goods. A change in diet may help reduce blood cholesterol.

Avoiding animal products may decrease the cholesterol levels in the body, not through dietary cholesterol reduction alone, but primarily through a reduced saturated fat intake. All meats except fish raise serum cholesterol proportionate to volume intake. Major dietary sources of cholesterol include high-fat dairy, cheeses, egg yolks, beef, pork, poultry, and shrimp. People who consume high amounts of meat, processed foods, animal-sourced saturated fats have higher cholesterol than those not. On the other hand, plant foods rich in fiber and phytosterols lower serum cholesterol. Vegetarians' blood typically contains markedly less cholesterol. It has been proposed that only 30% of the body's cholesterol content is derived from dietary sources. The very best anti-cholesterol diet demonstrated reduced cholesterol by 26% in a single subject over a 60-day period [Misner 2009]. Therefore a reduced cholesterol range is up to -8% based can be attributed to chronic exercise or from a rigid dietary protocol -26%. Two major food groups adversely

see *CHOLESTEROL* on page 9

CHOLESTEROL from page 8

affect total cholesterol levels:

1. Oxidized blood cholesterol levels are associated with cardiovascular health disease. Greenwell [1999] proposed that LINOLEIC ACID causes cholesterol to oxidize. Linoleic acid is an essential (omega 6) polyunsaturated fatty acid (18:2w6) (18:2n6) containing 18 carbon atoms with two double bonds. The number of health disorders associated with excess linoleic acid intake are dangerously numerous. Renaud reported [2001] that epidemiological studies indicate that high dietary intake of linoleic acid increases the risk of stroke. Head [2004] associates excess intake of linoleic acid with IBS (inflammatory bowel disease). Sauer's [2001] research associated nutritional carcinogenesis and growth of established tumors (cancers) in rodents with excess linoleic fatty acid intake. The higher percent of linoleic acid may create higher oxidized cholesterol. Food oils with the highest percent of linoleic acid are safflower oil 75%, evening primrose oil 72%, grape seed oil 71%, sunflower oil 65%, corn oil 59%, hemp seed oil 55%, maize oil 53%, walnut oil 51%, pumpkin seed oil 50%, soybean oil 50%, cottonseed oil 50%, & wheat germ oil 50%.
2. TRANS FATS are the worst; much worse than all the effects of the oxidized cholesterol and should be added to NO TOLERANCE/AVOID THESE list. Trans Fats are found in commercial dietary oils have been subjected to partial-hydrogenation and therefore contain large amounts of trans-fatty acids. Almost all fried foods contain trans-fatty acids, due to the high temperatures generated during cooking and also due to the use of oils that have been subjected to partial-hydrogenation as the frying medium. Processed foods contain trans fats; read the labels and avoid these! At least 95% of the average

daily consumption of Trans-Fatty Acids is in the form of Hydrogenated- or Partially-Hydrogenated Vegetable Oil products such as "Easy-Spread Butters", Margarine (contains up to 19.7% Trans-Fatty Acids) and Vegetable shortenings. Trans-fatty acids are "hidden" in many fast foods and processed foods that use hydrogenated- or partially-hydrogenated vegetable oils in their manufacture including baked goods, biscuits, breakfast cereals, cakes, chicken (fried), corn chips, dips, doughnuts, cookies, crackers, french fries, gravy mixes, ramen noodles, pies, potato chips, salad dressings, & toppings.

the obese sedentary men. Triglyceride (TG) concentrations were 24% lower in the master athletes than in the lean sedentary men, and 51% lower than in the obese sedentary group. Plasma low-density lipoprotein cholesterol (LDL-C) levels were 9% lower in the athletes than in the other groups of sedentary individuals. In stepwise multiple regression analysis the percent body fat was the major independent predictor of HDL-C and TG levels accounting for 29% and 41% of the variation in these levels, respectively. The VO₂max accounted for an additional 6% of the variance in HDL-C levels and 2% of the variance in TG levels.

These cross-sectional results suggest that the favorable lipoprotein profile of master athletes is largely due to

While cholesterol levels impose both positive and negative effects on cardiovascular health, maintaining cholesterol levels under control via dietary choice is an important adjunct to both health and performance over the long haul.

How does endurance exercise affect cholesterol levels?

Does endurance exercise make an endurance athlete immune from the cardiovascular consequences of elevated cholesterol? The answer is a partial yes/no with explanation. Master athletes are reported to have lipid profiles similar to those of young adults, which decrease their risk of heart disease. Master athletes also have better glucose tolerance and lower waist-to-hip ratios than sedentary adults, decreasing their risk for metabolic syndrome and Type 2 Diabetes [Rosenbloom & Bahns 2006].

Yataco and colleagues set out to determine further the relationships from exercise, specifically whether body composition or VO₂max was the major determinant of lipoprotein lipid profiles among 61 master athletes as compared to 51 obese sedentary men. Plasma high-density lipoprotein cholesterol (HDL-C) concentrations were 25% higher in those athletes than in the lean sedentary men, and 42% higher than in

their lean body habitus, with a small independent contribution from their higher levels of cardiovascular fitness. Thus, regular vigorous aerobic exercise and maintenance of low body fat may prevent the commonly observed age-associated deterioration in lipoprotein concentrations [Yataco et al. 1997]. Furthermore the American College of Sports Medicine position stance states conclusively, "Endurance training can help maintain and improve various aspects of cardiovascular function (as measured by maximal VO₂, cardiac output, and arteriovenous O₂ difference), as well as enhance submaximal performance. Importantly, reductions in risk factors associated with disease states (heart disease, diabetes, etc.) improve health status and contribute to an increase in life expectancy [American College of Sports Medicine Position Stand. 1998]."

Blood cholesterol normal levels

When a Cardiovascular lipid panel

see *CHOLESTEROL* on page 10

CHOLESTEROL from page 9

is ordered, Total Cholesterol, High Density Lipoprotein [HDL], Low Density Lipoprotein [LDL], Triglycerides, and High Density Lipoprotein [HDL] to Total Cholesterol ratio are examined for abnormal or normal values. Total cholesterol is defined as the sum of HDL, LDL, and VLDL. Ordinarily just the total, HDL, and triglycerides are actually measured. The VLDL is estimated as one-fifth of the triglycerides. It is important to fast for at least eight hours before the blood test because the triglyceride level varies significantly with food intake. Normal values are under 200 mg/dl for total cholesterol, less than 150 mg/dl triglycerides, above 40 mg/dl HDL, and less than 100 LDL. Many researchers believe that the body's total serum cholesterol level is less important than the ratio of oxidized cholesterol within low-density lipoproteins to cholesterol within high-density lipoproteins.

Conclusion

While chronic endurance exercise can reduce the effects of aging on elevated cholesterol levels anywhere from 8% to as much as 30%, exercise alone without dietary choices does not guarantee prevention of elevated cholesterols and a risk to cardiovascular disorders. A plant food dominant diet added to regular exercise has been demonstrated to lower elevated cholesterol significantly [Misner 2009; Esselstyn 2001]. Optimal cholesterol lowering substances formulated in specific Hammer Nutrition products may prevent the genetic compromised elevated cholesterol levels from occurring in some subjects. Persons consuming excess processed

foods or foods high in linoleic acid are at risk for elevated cholesterols that may influence the rate of plaque formation related to high blood cholesterols with performance-inhibiting consequences. The average age-group athlete can lose as much as 10% VO₂ Max every 10 years to as little as 4% every 10 years. I hypothesize that a diet rich in

plant foods, progressive training, and the use of specific Hammer Nutrition products may reduce the plaque-building effect from elevated cholesterol. We all should avoid any food-fuel that raises cholesterols excessively.

References available upon request.

How do Hammer Nutrition products affect serum cholesterols?

A number of substances are reported to lower elevated serum cholesterol levels. They are... Acetyl-L-Carnitine • Trimethyl/Dimethyl Glycine • Docosahexaenoic Acid & Eicosapentaenoic Acid • Bifidobacteria longum & Lactobacillus Acidophilus • Calcium • Chromium • Vitamin B3 • Vitamin B5 • Vitamin B6 • Vitamin C • Soy Protein • Coenzyme Q10 • Gamma-Tocopherol & Tocotrienols.

The following Hammer products contain one or more of the substances that may lower elevated serum cholesterol levels.

- 1. MITO CAPS**
(Acetyl-L-Carnitine)
- 2. RACE CAPS SUPREME**
(Coenzyme Q10 and Trimethyl Glycine that methylates to Dimethyl Glycine)
- 3. SALMON OIL**
(capsules contain Docosahexaenoic Acid & Eicosapentaenoic Acid)
- 4. iFLORA**
(Bifidobacteria longum & Lactobacillus acidophilus)
- 5. PREMIUM INSURANCE CAPS**
(Calcium, Chromium, Vitamin B3, Vitamin B5, Vitamin B6, & Vitamin C)
- 6. CHROMEMATE, HEED, PERPETUEM, SUSTAINED ENERGY, and RECOVERITE**
(Chromium Polynicotinate)
- 7. HAMMER SOY, SUSTAINED ENERGY, and PERPETUEM**
(Soy Protein)
- 8. AO BOOSTER**
(Gamma-Tocopherol & Tocotrienols)

Premium vegetable protein

For versatility, concentration, and multiple health benefits, it's hard to beat Hammer Soy!

- 100% GMO-free
- Convenient way to increase protein intake
- Multiple health benefits

24 servings - \$27.95
3 or more - \$24.95 ea.

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- Enhance energy
- Increase endurance

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3 or more - \$44.95 ea.

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AO BOOSTER from page 7

(d-alpha tocopherol) only. One researcher writes, "While alpha-tocopherol has long been known as an important antioxidant, research has now shown that the complete vitamin E team is much more effective. The different vitamin E forms have complementary effects as free radical scavengers. Together they can fight a wider spectrum of free radicals than alpha-tocopherol alone."

In fact, without taking anything away from the long known, multiple benefits of "regular" vitamin E (d-alpha tocopherol), the gamma tocopherol fraction may be as important, if not more so. Research has suggested that supplementing with just the alpha tocopherol fraction (which is what you typically find in most supplements) may lower the body's gamma tocopherol level significantly. This is worth noting because of the importance of having adequate amounts of gamma tocopherol available. According to one research scientist, "While both alpha- and gamma-tocopherol are potent antioxidants, gamma-tocopherol has a unique function. Because of its different chemical structure, gamma-tocopherol scavenges reactive nitrogen species, which, like reactive oxygen species, can damage proteins, lipids, and DNA." In other words, gamma tocopherol appears to be more effective than alpha tocopherol in scavenging reactive nitrogen oxides, toxic compounds that, when accumulated in body tissues in excess, are primary culprits in the cause of several degenerative diseases.

Tocotrienols may be even more potent free radical scavengers than the tocopherols. According to research by Dr. Lester Packer and Dr. Barrie Tan, tocotrienols may have 30-60 times more antioxidant power than alpha tocopherol. We use the patented Tocomin brand of full spectrum tocotrienols in AO Booster, which is extracted from virgin crude palm oil and is 100% NON-GMO and kosher.

Lutein – This carotenoid is a potent antioxidant, with a particular affinity for eyes and skin, helping to protect them from ultraviolet (UV) damage. In regards to eye health, not only does lutein provide the macula and lens with protection from sunlight's UV rays, it is suggested to decrease the risk of developing Age-related Macular Degeneration (AMD).

Lutein aids in protecting the skin from UV and free radical damage, it helps reduce inflammation and redness in the skin, and may even be a powerful ally for the prevention of skin cancer. In addition, studies indicate that lutein and other carotenoids (a class of natural fat-soluble pigments) may have protective benefits against breast cancer. Lutein is also purported to help prevent or slow down atherosclerosis, a condition that causes the arteries to clog and often leads to cardiovascular disease.

Astaxanthin – This carotenoid, most often derived from the microalgae *Haematococcus pluvialis*, is suggested to be 10 times stronger than beta-carotene and 100 times stronger than vitamin E in regards to its antioxidant capabilities. Japanese research suggests that mice supplemented with astaxanthin appeared to burn fatty acids for fuel more efficiently, were able to exercise longer, and had greatly decreased fat accumulation compared to mice not receiving astaxanthin. Other research has shown that astaxanthin reduces oxidative damage from strenuous exercise in the skeletal and heart muscles of supplemented mice. Research also suggests that astaxanthin may improve human cardiovascular health and prevent cancer, among other potential benefits, including anti-inflammation. Dr. Misner writes, "I first became interested in astaxanthin several years ago through a physician who practices in Hawaii. When I researched what fat-soluble antioxidants neutralized the most free radicals in fatty tissue sites, lutein was a close second to a virtual tie between lycopene [which is in PSA Caps] and astaxanthin."

Summary

If there were only one or two types of free radicals negatively affecting our bodies, we'd be able to get by with one, maybe two, antioxidants such as vitamin C and beta-carotene. The truth, however, is that there are a number of free radicals, both water-soluble and fat-soluble, which is why a wide variety of antioxidants is necessary. Additionally, not only do antioxidants work on a specific type (or types) of free radical, most-to-all of them work synergistically, supporting, augmenting, and enhancing the effects of other antioxidants... the oft-used saying, "The whole is greater than the sum of the parts" is quite appropriate when talking about antioxidants and how they work in the human body.

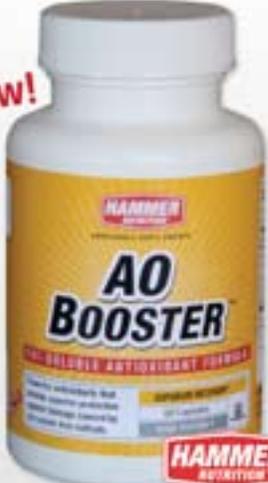
With Hammer Nutrition's AO Booster, you now have an arsenal of powerful fat-soluble antioxidants to provide even more immune system-boosting power to the water-soluble ones provided in Super Antioxidant and Premium Insurance Caps, and the fat-soluble antioxidants in Race Caps Supreme and Mito Caps. In addition, with AO Booster, you'll also notice benefits for your eyes and skin, reduced muscle soreness (a nice post-workout benefit!), as well as potentially increased endurance via enhanced fat-for-fuels utilization. As I mentioned earlier, I sincerely believe this is one of the most important products we've ever come out with and I enthusiastically and unhesitatingly suggest taking it every day, all year round.

References available upon request.

Supercharge your recovery, immunity, and overall health New!

AO Booster's nutrients help fulfill the all-important need for support against fat-soluble-produced free radicals and the damage they cause. There are numerous general health benefits you'll receive; your immune system will thank you in so many ways! Plus, you'll enjoy reduced muscle soreness and inflammation after your workouts and races, with additional eye- and skin-specific benefits as well.

- Supreme fat-soluble antioxidant support
- Reduce post-workout muscle soreness and inflammation
- Eye and skin-specific benefits



60 capsules - \$29.95
3 or more - \$27.95 ea.

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Lower Your Sodium

American Heart Association supports lower sodium limits for most Americans

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DALLAS, March 26, 2009 – New data from the U.S. Centers for Disease Control and Prevention (CDC) provides additional scientific evidence that the majority of Americans over the age of twenty should limit the amount of sodium (salt) they consume daily to 1,500 milligrams (mg) to prevent and reduce high blood pressure. The new data are published in the March 26, 2009 issue of the CDC's Mortality and Morbidity Weekly Report.

"In light of new data from the CDC, which show that 69 percent of adults are salt sensitive, the need to reduce sodium consumption has become an even higher priority for our country's health," said Linda Van Horn, Ph.D., chair of the American Heart Association's Nutrition Committee and professor of Preventive Medicine at the Northwestern University Feinberg School of Medicine in Chicago.

"The American Heart Association recommends that most people strive to lower the amount of sodium consumed daily to less than 1,500 mg, to prevent or manage high blood pressure, a major but modifiable risk factor for heart attack and stroke," Van Horn said. "The new CDC data adds to a growing body of scientific evidence that supports this recommendation – there are now a substantial number of scientific studies that show a direct relationship between salt intake and a rise in blood pressure. An upper limit of no more than 1,500

mg could significantly reduce the rate of high blood pressure in the United States."

The U.S. food supply contains excessive amounts of sodium (salt), which makes limiting sodium (salt) consumption to less than 1,500 mg difficult. According to the CDC report, Americans over the age

"...we urge all Americans to reduce the amount of sodium they consume preferably to no more than 1,500 mg daily. ..."

of 2 consumed a daily average of 3,436 mg between 2005-2006, up from a daily average of 3,329 mg from 2001-2002.

In recognition of this fact, the American Heart Association is currently working with federal agencies to identify strategies to reduce the amount of sodium in the food supply and is encouraging food manufacturers and restaurants to reduce the sodium (salt) added to food by 50 percent over the next ten years.

In 2006, the American Heart Association acknowledged that a daily upper limit of no more than 1,500 mg is a good therapeutic goal to strive for to prevent and treat high blood pressure, but also suggested an interim goal of no more than 2,300 mg a day of sodium because the current food supply makes it difficult

to achieve the lower number.

"The American Heart Association will continue to explore ways to help reduce the sodium content in our food supply," Van Horn said. "In the meantime, we urge all Americans to reduce the amount of sodium they consume, preferably to no more than 1,500 mg daily. It may be difficult, but adhering to this goal could significantly reduce blood pressure levels in the United States."

High salt diets have been linked to an increase in blood pressure and an increased risk for a number of cardiovascular diseases including heart disease and stroke.

- High blood pressure (HBP or hypertension) is defined as the top number (systolic) of a blood pressure reading as being 140 millimeters of mercury (mm Hg) or higher or the bottom number of a blood pressure reading (diastolic) of 90 mm Hg or higher.
- One in three adults in the United States has HBP (Hypertension. 2004; 44:398).
- Most of the sodium (salt) in the U.S. diet comes from processed foods, so consumers should be careful to read the Nutrition Facts Panel.
- 1,500 mg of sodium is between one-half and three-quarters of a teaspoon of salt. One teaspoon of salt equals about 2,300 mg of sodium.



Steve Romnes and his father take a short break during their yearly cycling trip to Colorado.
Photo - courtesy of Steve Romnes

Comments...

... on the recent news release from the American Heart Association

Author : Steve Born

One of the most interesting parts of the recent AHA news release is the statistic that “Americans over the age of 2 consumed a daily average of 3,436 mg between 2005-2006, up from a daily average of 3,329 mg from 2001-2002.” Think about it; that’s an average figure for everyone older than two years old. Take the younger people out of the equation and I would bet that the remainder—mostly adults but teenagers as well—consume amounts significantly greater than that. Dr. Bill Misner’s article, “Does a High Sodium Diet Inhibit Endurance Performance and Health?” (on the Hammer Nutrition web site) seems to confirm that. He writes, “The average western diet contains 2.3-20 grams (2,300 – 20,000 mg) of sodium per day. In 70 diets computer-analyzed from actual food-intake lists of athletes and non-athletes from 1996-2006, endurance athlete consumed between 6000-8000 mg sodium per day.”

In the article, Dr. Misner also writes, “The American Heart Association (AHA) says that healthy American adults

should consume no more than 2,300 milligrams of sodium a day.” However, a lower amount—1,500 mg a day—is now being recommended by the AHA based on this latest information from the CDC. Clearly, the link between high-sodium diets and negative health consequences

(especially hypertension) are even more evident than before.

We believe that lowering the sodium intake in your diet will positively affect your athletic performance as well. The body is very adept at storing sufficient amounts of sodium so you will start your workouts and

run with plenty of sodium “on board” and ready to serve you. The difference is that, unlike people who consume a high-sodium diet, an athlete who adopts a low-sodium diet will not lose sodium at the same high rates; it will utilize those stores more efficiently and conserve them more thoroughly. In the words of Dr. Misner, “Evidence supports limiting sodium intake during rest and exercise. The harmful effect of more chronic sodium over-dose above the body’s daily need is a real and present danger to compromise optimal health. Tight

chemical messengers and hormones help the body to spare serum sodium loss.”

Although the figures vary, depending on what source you read, it is suggested that approximately 75% of the sodium we consume is from processed/prepared foods, which is why it makes sense to minimize or eliminate them from your diet as much as possible. Additionally, about 10-12% of the sodium we consume comes from salt added while cooking or eating, so not salting your food—both in the cooking process and while eating—is also a good way to lower your sodium intake.

We are in 100% agreement with the words of Steve G. Aldana, Ph.D., professor of health and human performance at Brigham Young University in Provo, Utah: “The easiest way to avoid consuming too much sodium is to choose fresh, whole foods that are as close to their natural state as possible. The closer we get to foods in their natural forms, the better.”

So make a conscious effort to keep track of your sodium intake, lowering it as much as possible, and reap the health and athletic performance benefits.

“The harmful effect of more chronic sodium over-dose above the body’s daily need is a real and present danger to compromise optimal health.”

Bill Misner, Ph.D.
Director of Research and Product Development Emeritus, Hammer Nutrition

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- Improve energy production
- Antioxidant support
- Potential increase in longevity

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Animal-Derived

Nutrients and substances in Hammer products

Author : Steve Born

One of the questions we've been receiving with increasing frequency is "Are there any Hammer Nutrition products that contain animal-derived nutrients?" Here's the answer to that question:

Protein

Hammer Whey and Hammer Recoverite contain dairy-derived whey protein isolate; they are the only fuels to contain animal-derived nutrients.

Hammer Bars

It's important to note that none of the Hammer Bars contain any ingredients from animal sources. The bars that

contain chocolate chips are not listed as "vegan" because the manufacturer makes them on shared equipment that also makes dairy chocolate. According to the manufacturer, the bars are made "in our own certified organic and kosher facility (which is exceedingly rare in this business). We also thoroughly clean the machines between productions. However, there may be trace amounts (in extremely low PPM (parts per million)) of dairy. Otherwise, our chocolate chips are dark chocolate and are non-dairy."

Technically, these particular Hammer Bars could be listed as being vegan, but the manufacturers are extremely conscientious when it comes to "truth in labeling," as are we at Hammer Nutrition, which is why they chose to

not list the bars that contain non-dairy chocolate chips as being vegan.

Supplements

In regards to the Hammer Nutrition supplements, the only one that contains any animal-originating nutrients is Tissue Rejuvenator – the glucosamine sulfate and chondroitin sulfate come from marine sources, and the UC Type II collagen comes from chicken cartilage. These nutrients are highly purified but still of animal origin.

Also, any of the fillers that we use in the encapsulated products are not of animal origin and we use only vegetable capsules.

The ultimate energy bar!

- Delicious taste, moist texture
- Natural, all-organic ingredients
- No preservatives, gluten-free

HAMMER BAR Fuel your body right!

HAMMER BAR Fuel your body right!

HAMMER BAR Fuel your body right!

50g bar \$2.40
12 count box \$27.00

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HAMMER NUTRITION

Reader Recipe

Keep this in a safe place and refer to it come November; you'll be glad you did.



Mix a serving of the Apple Cinnamon Hammer Gel with steaming hot water and a tea bag of "Good Earth ORIGINAL: Sweet and Spicy" in a water bottle. Great hot drink for cold rides. It'll stay hot to warm

for about an hour, depending on how cold it is.

Thanks,
Jim K.



Ian Moore, age 14, hammers up the 6,000 ft. Dante's View Climb in Death Valley National Park. Photo - courtesy of Ian Moore

From the Archives

Ask Dr. Bill about Magnesium Stearate

Author : Bill Misner, Ph.D.

Q: I've been hearing negative things about magnesium stearate, which you use in some products as filler I believe. They say it inhibits absorption of things and is toxic. What are your thoughts?

A: I know of no research that associates magnesium stearate with inhibiting absorption. If magnesium stearate is extracted from cottonseed oil, hydrogenated fatty acids are restructured when exposed to the heat-extraction process. Hydrogenated fatty acids inhibit optimal healthy blood lipid profiles when dosage approaches a relative intake in grams per day volume. Cottonseed oil also contains pesticide residues depending upon the original oil crop selection area.

Magnesium stearate consists of 4.5% magnesium bound to stearic acid. This is not like a supplemental magnesium but is used as an anti-caking agent lubricant food-additive. Stearic acid is a long-chain saturated fatty acid with a carbon chain length of 18 (c18:0) and a melting point of 70° C. Stearic acid normally comprises 9.3-17% of total fasting red blood cell fatty acids.

Not all Hammer Nutrition capsules use magnesium stearate and [in the capsules that do] the magnesium stearate %-milligram content in Hammer Nutrition capsules is microscopically tiny compared to the amount in cooked or heat-processed common foods such as those listed below. Still, Hammer

Nutrition is in the process of converting the capsular lubrication-filler ingredients into stabilized rice bran for our products manufactured in Montana.

For each gram [1000 mg] of supplement—for example an Endurolytes capsule—only 0.4 calories [is comprised] of magnesium stearate's saturated fat component. The recommended sedentary dose for safe upper levels of saturated fat is 20 grams, meaning you would have to take 50 Endurolytes to accrue this amount of saturated fat from a supplement form. The typical burger and fries combination can easily provide way more than the 20 gram safe upper tolerance level of saturated fat including its trans fat from heat relative.

Now let's look at the purported problematic report. Whenever a saturated fatty acid is heated, heat-processed, or pressure extracted, the risk of hydrogenation of the fatty acid molecule structure increases. Do you cook foods containing saturated fat? If you do, you are getting large amounts of hydrogenated fatty acids in your diet. Check out the table of Stearic Acid content in some common foods. If your diet contains any of the above, your exposure to hydrogenated fats and pesticide residues is calculated at between 100-4600 times greater than all the combined total magnesium stearate formulated in Hammer Nutrition's encapsulated supplements.

Hammer products that contain Magnesium Stearate include : Energy Surge, Xobaline, Appetat, Mito Caps, AO Booster, Endurance Amino, and Super Antioxidant.

Common Food Stearic Acid Content

(mg stearic acid per 100 grams)

Tallow (beef)	18,900
Butter	10,000
Chocolate (dark)	11,500
Chocolate (milk)	8,500
Margarine	6,180
Pumpkin Seed Oil	6,100
Brazil Nuts	5,790
Sesame Seed Oil	4,800
Sunflower Oil	4,500
Palm Oil	4,300
Salmon Oil	4,240
Flax Seed Oil	4,100
Parmesan Cheese	3,250
Swiss Cheese	3,250
Blue Cheese	3,230
Gouda Cheese	2,920
Gruyere Cheese	2,320
Canola Oil	1,500
Olive Oil	1,980
Almond Oil	1,300
Macademia Oil	3,000
Safflower Oil	2,250
Wheat Germ Oil	1,000
Walnut Oil	2,000
Lard	13,500
Coconut Oil	2,800
Palm Kernel Oil	2,800
Cod Liver Oil	2,800
Grape Seed Oil	2,700
Cottonseed Oil	2,300
Peanut Oil	2,200
Chicken Egg Yolks	2,420
Beef (lean)	1,200
Chicken	500
Lamb	1,200
Pork (lean)	1,100
Veal	600
Cashew Nuts	3,450
Macademia Nuts	2,330
Sesame Seeds	2,090



What Should I Eat?

A new book from Dr. Bill Misner

Author : Bill Misner, Ph.D.

What Should I Eat? is menu for health

I wrote this 136-page book to answer a question constantly asked by endurance athletes and persons with compromised health disorders. This is a very complicated question which required over 480 hours research to determine what foods, consumed on a regular basis, have been associated with healthy cardiovascular lipids. Surprisingly, I was the first person to strictly apply instructions posed in chapters 1-10 and then the foods listed in chapter 11 were chosen for a 30-day trial. As a result my total cholesterol levels dropped from over 230 to 185 after only 30-days application. Curious, I continued the protocol directions for another 30 days and my total cholesterol dropped again to 171!

This is a "How-To" tool for designing a personal menu consisting of food-choices that will improve a cardiovascular lipid profile. To the degree this lifestyle menu is applied is the degree that benefits for cardiovascular health are realized.

Dr. Bill Misner, Ph.D.
AAMA Board Certified Alternative
Medicine Practitioner

Early Reviews Are In

Nutrition Book Right On Target!

Thanks for the book Bill. I'm very impressed by all the work you put in and the detail that the book provides too. It is right on target. I am happy to recommend it, especially with its detailed references to ORAC values and the nutrient content of various foods.

Best, Michael Colgan

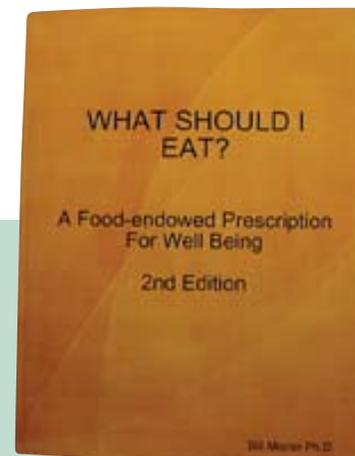
Dr. Michael Colgan, PhD, CCN, is one of the world's most popular scientific experts in nutrition. He is a best selling author and travels the world lecturing on anti-aging, sports nutrition, and hormonal health. His professional memberships include the American College of Sports Medicine, the New York Academy of Sciences, and the British Society for Nutritional Medicine. He is on the Council of the International and American Association of Clinical Nutritionists, the certifying authority for nutrition, and on the Editorial Board of the Journal of Applied Nutrition. Dr. Colgan has also been a consultant to the US National Institute on Aging and the New Zealand Government. Dr. Colgan is the Founder of Colgan Institutes.

A Wealth of Information!

Dr. Bill Misner's book is a welcome addition to my shelf, for it serves as an encyclopedia regarding health as it relates to foods and nutrients. This book will be useful to any person interested in this subject. If the beginner simply wants the ideal diet, it is readily available in chapters 8, 9, 10, & 11. On the other hand, the professional will find a wealth of data and current knowledge. The many charts and graphs will offer new thoughts to even the most educated.

Stanley B. Covert, MD

Dr. Stanley Covert is the Medical Director at the High Road Clinic in Elk, Washington.



136 pages / \$10.40

Marvelous Volume!

Thank you for sharing with me your marvelous volume, "What should I eat?" Congratulations!

Caldwell B. Esselstyn, Jr MD.

Dr. Esselstyn has been listed in "The Best Doctors in America" by Woodward and White. He is a past President of the American Association of Endocrine Surgeons. Esselstyn became the first recipient of the Benjamin Spock Award for Compassion in Medicine. Dr. Esselstyn's surgical expertise is listed in the categories of endocrine and breast disease. In 1995, he published his bench mark long-term nutritional research arresting and reversing coronary artery disease in severely ill patients. That same study was updated at 12 years making it one of the longest longitudinal studies of its type. Esselstyn's scientific publications number over 150!

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(enter Bill Misner in the search field)

Reader Recipe Smoothie with Whey

- 1 scoop of Hammer Whey (I use unflavored)
- About 5 big frozen strawberries or an equivalent amount of a frozen berry blend
- A few ounces of water
- A handful of, dare I say it, kale
- One-half of an apple
- Sometimes I'll include a small scoop of ground flax seed
- Sometimes I'll include a small handful of walnuts or almonds
- A little maple syrup (perhaps a tsp or two)



Enjoy!
Will M.

**How do you Hammer?
Send us your recipes and you could see them published.**

anock@hammernutrition.com



No Simple Sugars

By themselves or with complex carbs!

Author : Bill Misner, Ph.D.

Simple sugars can be mixed at isotonic osmolar pressures in solutions between 6-8% solids to 92% water (which yields minimal amounts of calories for energy). Complex carbohydrates can be mixed at isotonic osmolar pressures in solutions between 10-20% solids to 80-90% water (which provides significantly more calories to the body for energy). It only takes a few grams of sucrose or glucose or fructose or corn syrup solids to raise a hypotonic 280-300 mOsm solution (body fluid osmolality parameters) to well over 500 mOsm. Once the gut is given several hypertonic high-osmolar solutions, it cannot draw enough fluid in to the stomach or intestine to an acceptable hypotonic 280-300 mOsm solution.

Additionally, adding simple sugar fractions to complex carbohydrate fractions may double the osmolar pressure of the solution to hypertonic values. When a 6-8% simple sugar solution is added to a 15-20% complex carbohydrate solution, the osmolality of the combined solutions are simply unabsorbable in the human gut.

In other words, complex carbohydrate solutions generate more calories than simple sugar solutions and they are absorbed immediately. Simple sugar solutions force the gut to draw fluids and electrolytes out of the blood stream before they can be absorbed. Complex carbohydrate solutions are rapidly absorbed and provide over double the carbohydrate calories as simple sugar solutions. Hammer Nutrition's Hammer

Gel, HEED, Sustained Energy, and Perpetuem formulated with long-chain complex carbohydrate maltodextrins mixed in 10-15% solutions are immediately absorbed and transferred into the energy cycle.

We continue to warn athletes that adding a simple sugared energy product during endurance exercise may cause the stomach absorption of calories to stop resulting in "hitting the wall" or performance-ending stomach problems. This is especially true when an athlete becomes dehydrated and the body has no fluids or electrolytes in the circulation to spare. Once again "No Simple Sugars" is a mantra worth repeating.

Precaution: Never add a simple sugar energy product to a complex carbohydrate energy product during exercise as this will stop the stomach's absorption of both!

Steve's Note: See the article "Simple Sugars and Complex Carbohydrates – An Incompatible Combination" for more information on this topic. Go to the GETTING STARTED link on the left side on the Hammer Nutrition home page, click on that link, then click on the article link.

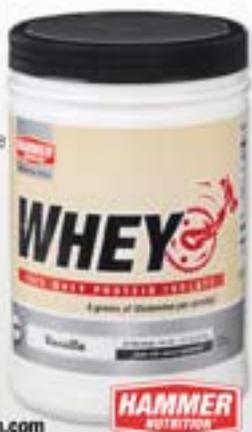
Powerful protein

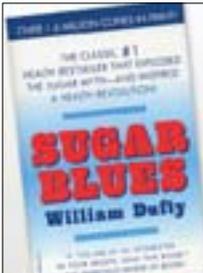
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- Protect lean muscle tissue
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Martin Scates heads to the finish at Ironman CDA. Photo - www.asiphotos.com

Three Essential Elements

Elasticity / Stability / Mobility - Don't forget these as your race season heats up!

Author : Al Lyman, CSCS

By the time you read this, many of you will be in the middle of your racing season and have left thoughts of your “off” season training and preparation behind. While it is important that training go from general to specific as key races loom closer, I caution you not to forget three elements that are essential for continued improvement AND injury avoidance, especially as workout intensity (and racing) increases. If you become complacent about these elements, it is only a matter of time before your performance suffers or worse, you get injured. These elements I’m speaking about are elasticity, stability, and mobility. In other words, the elasticity of our muscles and the stability and mobility of (and around) our joints, particularly our hips/pelvis and shoulders.

For many of us, these elements are a big part of our off-season training. The risk we all face as our training gets more intense and becomes more race-specific is that we’ll begin to neglect these elements, thinking they no longer are applicable to our race-day success. That would be a mistake! For the folks I coach, I focus on these almost more than anything else, they are that important! Simply put, a high degree of these elements are an absolute necessity for efficient and injury free performance. They aren’t less important at this point in the year, they are even more important! These elements are the

“foundation” upon which our ability to swim, bike, and run, better and faster, is built. If we let them deteriorate, we definitely won’t perform as well, or worse, we will get injured.

Elasticity

Every single movement, whether it is part of swimming, cycling, or running or not, has an essential elastic component to it. Many of you may recall me discussing elasticity in my last Hammer article on basic plyometrics for runners. This article is definitely related to that one in this regard: Without elasticity, you would have to work a LOT harder to accomplish ANY task, including and especially running, cycling, or swimming.

Mark Verstegen, in his book “Core Performance Endurance” brings up a great and simple example when discussing elasticity: Try this! Put your hand on a table, palm

down and fingers laying flat, and then lift your middle finger up and press it down as hard as you can. Really lift it up high, and then press down hard! Keep at it, and I bet you can feel the fatigue setting in. Now, take your other hand and lift that same middle finger up high, and then just release it like an elastic band, and watch it snap down! Do you notice how much more powerful that is? The difference in power when you use the elastic component available in the tissue vs. just muscling it up on your own is dramatic. Not only that, it can be done over and over again with a lot less fatigue. That’s a very simple example of the power of elasticity!

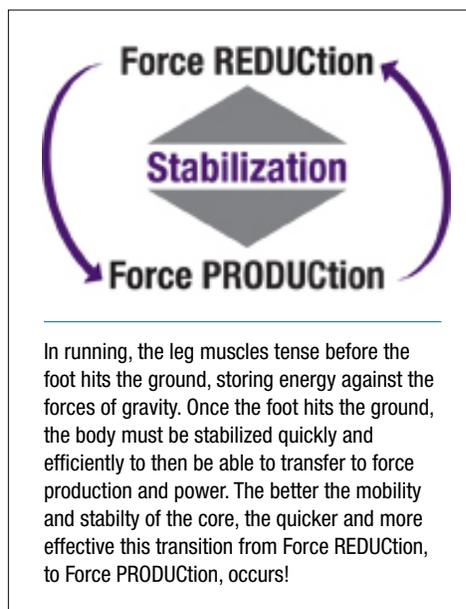
Simply put, the more you can take advantage of the elasticity in all its forms, the faster and easier you will run, swim, or bike. In order to take advantage of elasticity, you need to

maintain the natural quality of your muscle tissue. Massage, Trigger-Point work, and staying well hydrated, will help. You also need to continually work to improve movement skills and coordination to take advantage of this element. Before that, though, you need to go back to the other two fundamental elements: stability and mobility.

Stability and Mobility

The core and functional strength

see *ESSENTIALS* on page 19



ESSENTIAL from page 18

training I prescribe for my athletes (and the basis of my program, Runner-CORE) is about improving pelvic/core stability first and foremost. Stability provides the foundation, or fixed point, so that muscles can stretch to release energy. Think of Verstegen's finger exercise once again: As you lift that middle finger up, your other fingers naturally press down into the table more firmly. The harder you press those other fingers down, and the more firm they are, the higher you can lift that middle finger and the more powerfully it snaps down. That's stability in action.

Mobility on the other hand, is the ability to move through a complete and full range of motion. The greater your mobility, the more relaxed and fluid your movements are, and the greater the potential to store more energy and release it in a powerful way! Think about how mobile the best swimmers are around their shoulders and upper back. Think about how much easier your cycling would be and how much more aerodynamic you would be fit on your bike, if your hips and low back were more mobile.

As we run, swim, or bike, mile after mile, or spend too much time sitting at our desk or in our car, mobility can be lost because of tightness or dysfunctional movement patterns. Mobility and stability form the foundation for elasticity. Elasticity enhances mobility and affects our stability. They are all related, and more importantly, essential for every endurance athlete to develop and maintain. I've used Verstegen's simple example of you lifting a finger, but this IS what happens throughout your hips, pelvis, shoulders – your entire body, when you swim, bike, and run.

Think of it like an elastic band: If you were to grab a new, highly pliable elastic band out of the bag and pull it apart, you know it will stretch easily and has very little risk of breaking. But, grab one out of the drawer that's been there a while and is older and less elastic, and then tie a few knots in it to restrict its movement potential, and then try pulling it apart. What happens? It'll break, often a lot sooner than you might have guessed. That's your muscle folks, as you lose the pliability and elasticity because of either dysfunctional movement patterns, tissue tightness, or from various deeper scar tissue and trigger

points in the muscle resulting from overuse and chronic cellular damage that comes from our daily training.

Here's one running example of how this all works together: think of your leg as it comes forward after push off, during the swing phase of the stride. As your leg comes forward, the hamstring is contracting eccentrically (contracting as it is shortening - highly stressful to the tissue) and while it is coming forward, it is storing elastic energy that will be released when your foot hits the ground. What is key is, the more mobility and elasticity you have in your hips, and the more elastic your hamstring muscle is, and the more stable and thus neutral your pelvis and core are, then the farther that leg can swing forward easily, storing more energy, increasing your stride length naturally, and ultimately allowing you to put a lot more force to the ground when your foot hits the ground! When you look at elite runners, this is what you're seeing - the mobility to allow the knee to swing forward farther and more easily, storing lots of elastic energy, and what they get is a very powerful application of force upon touchdown and push off, hence a much longer stride and faster, more efficient running!

run mechanics, looking for signs of lack of symmetry, alignment, or poor stability. Avoid placing hard training upon poor movement skills! Email me directly for more information on this analysis. I can help!

- Commit to improving the health and elasticity of your muscles. I highly recommend the products from TP Therapy (<http://www.tptherapy.com>). These are the best tools I know of to pro-actively improve muscle elasticity. To get a 10% discount on any of their products, go to their site and order using the discount code: COACHAL
- Continue to do smart functional strength training and stretching/flexibility training, right through the in-season. The best strength programs will address balance and stability first and integrate those elements gradually into more progressive training designed to improve force and power. Smart stretching will help improve mobility and make sport specific movements easier and more fluid.

Mobility and stability form the foundation for elasticity. Elasticity enhances mobility and affects our stability. They are all related and essential for every endurance athlete to develop and maintain.

Every movement we perform has an elastic component, and requires a high level of stability and mobility to be efficient and powerful. It is that simple, and that essential! Here are some tips for how to maximize these elements as part of your normal "in-season" training and racing:

- Commit to taking care of your body during the in-season, the way you might in the off-season. The first step is to acknowledge you need to think differently, and realize maintaining these fundamental elements will allow you to keep doing the sports you love and improving!
- Get video or motion analysis from an expert to evaluate the quality of your swim strokes or

What I've been talking about is truly PRE-habilitation, so you don't have to go through RE-habilitation. Without good core/hip and shoulder stability, you won't have much power or be able to produce a high degree of force to the ground, pedals, or water. Without muscle elasticity, you'll have to work a lot harder to get the same result. Without a high degree of mobility around your joints, every movement you do will be restricted, tense, and a lot less efficient and powerful. Even during the in-season, think about how you can maintain and even improve upon these elements. If you do, you'll find you will avoid injury and be faster and more efficient when it counts the most! Best of luck!

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Tissue Rejuvenator's Anti-Inflammatory Nutrients

Author : Steve Born

Most everyone who uses the Hammer Nutrition joint health supplement, Tissue Rejuvenator, are familiar with its primary “raw materials for ligaments and tissue” components, glucosamine sulfate and chondroitin sulfate. However, unlike many other joint health products, Tissue Rejuvenator contains a number of other nutrients that are included specifically for reducing inflammation and pain.

Here is some information and research that shows the effectiveness of these nutrients, which helps explain why they were selected for this multi-beneficial joint health product.

Devil's Claw -

has been used in extensive European clinical research comparing it to Phenylbutazone, the standard of potent antiarthritic drugs. Devil's Claw was found to be more effective in reducing pain and inflammation, yet no problematic side effects were observed. Other studies show that osteoarthritis pain can be significantly alleviated with iridoid glycoside harpagoside, the active ingredient in Devil's Claw (*Harpagophytum procumbens*) remedies. Several pharmacologic studies using animal models of inflammation have found that Devil's Claw root produces powerful anti-inflammatory and analgesic effects (Blumenthal M 2000). In one study, 122 patients who had osteoarthritis of the knee and hip were treated with either Devil's Claw or the drug Diacerhein for 4 months (Chantre P et al 2000). Both groups experienced

similar pain relief, but the group taking Devil's Claw experienced significantly decreased side effects, particularly less gastrointestinal distress (Chantre P et al 2000). Other studies in Germany and France have found that the herb's ability to alleviate pain and inflammation compares favorably with that of cortisone and phenylbutazone (Blumenthal M 2000; Brady LR 1981).

Boswellia serrata –

Unlike NSAIDs, boswellia fights inflammation by blocking pro-inflammatory 5-LOX (5-lipoxygenase). 5-LOX is the first enzyme in the metabolic pathway leading to the synthesis of leukotrienes, which are harmful inflammatory substances that scientists believe may have a direct influence on a number of disease processes. Efforts to develop 5-LOX inhibitors that target asthma and cancer suggest that boswellia extract may well have applications in managing these and other disease conditions. In addition to inhibiting 5-LOX and blocking the biosynthesis of harmful inflammatory leukotrienes, boswellic acids decrease the activity of another pro-inflammatory enzyme, HLE (human leukocyte elastase). HLE is associated with rheumatoid arthritis and respiratory illnesses such as pulmonary emphysema, cystic fibrosis, chronic bronchitis, and acute respiratory distress syndrome—all of which are linked by inflammation. Significantly, both leukotriene levels and HLE release are increased in many inflammatory diseases and allergic reactions. To date, the only anti-inflammatory compounds that have been found to inhibit both HLE and 5-LOX are those derived from

boswellia. Scientists revealed boswellia's mechanism of action in a study in 2005. They found that boswellia works in part by altering the expression of tumor necrosis factor-alpha (TNF-a), which plays an important role in inflammation. While the body needs pro-inflammatory cytokines like TNF-a to fight off acute infections, an excess of such cytokines promotes chronic inflammation. Applying boswellia to cells had the selective effect of decreasing the TNF-a-induced expression of cell adhesion and matrix metalloproteinase proteins, biochemicals that are related to harmful endothelial dysfunction, cancer metastasis, arthritis, and other disease processes.

Osteoarthritis and rheumatoid arthritis can cause disabling pain and immobility in aging adults. Boswellia may offer relief for arthritis sufferers because of its well-known analgesic, anti-arthritic, and anti-inflammatory properties. Osteoarthritis, the “wear and tear” arthritis, is caused by deterioration of the cartilage that cushions joints. Research suggests that boswellia helps prevent the deterioration of cartilage and joint tissue. Scientists now theorize that boswellia may work by inhibiting the breakdown of connective tissues that is caused by tumor necrosis factor-alpha (TNF-a)-induced expression of matrix metalloproteinase enzymes. A pre-clinical animal study demonstrated boswellia's benefits in managing osteoarthritis. Dogs suffering from osteoarthritis received boswellia extract once daily for six weeks. After only two weeks of therapy, 71% of the animals showed significant improvements in clinical symptoms of arthritis, including reduced pain, stiffness, and lameness. In a human study, boswellia was similarly shown to be effective in adults with osteoarthritis. Thirty subjects with osteoarthritis of the knee took part in a 16-week, randomized,

see TR on page 21

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double-blind, placebo-controlled trial. All of those who took a boswellia supplement reported less pain and swelling, increased knee flexion, and the ability to walk a greater distance. Rheumatoid arthritis is classified as an autoimmune disorder, in which the body attacks its own tissues as though they were foreign invaders. Boswellia may also offer relief of autoimmune-related rheumatoid arthritis. Boswellia can help reduce immune cells that encourage inflammation while increasing the number of immune cells that inhibit inflammation. Studies indicate that boswellia's ability to modulate the immune system and inhibit inflammatory activity may help improve the symptoms of rheumatoid arthritis and other autoimmune conditions.

Turmeric (Curcuma longa) Root Extract

- Curcumin is the active ingredient in turmeric root that adds color and flavor to curry and other foods. It has anti-inflammatory properties and has been

received MSM experienced significant pain relief. MSM is known to be very safe and virtually non-toxic.

Yucca Root –

One double-blind placebo-controlled trial concluded that the use of yucca reduces arthritis symptoms (both osteo- and rheumatoid arthritis).

Bromelain –

In a double-blind controlled trial, 95 patients undergoing treatment for cataracts were given 40 mg of bromelain or placebo (along with other treatments) 4 times daily for 2 days prior to surgery and 5 days post-operatively. Overall, less inflammation was noted in the bromelain-treated group compared to the placebo group. A somewhat informal controlled study of 146 boxers suggested that bromelain helps bruises to heal more quickly. Another study—this one without any type of control group—found that bromelain reduced swelling, pain at rest, and tenderness among 59 patients with blunt trauma injuries, including bruising.

Even if you aren't currently sidelined with a joint-related injury, a couple capsules of Tissue Rejuvenator after a tough workout my very well help minimize-to-diminish post workout muscular/joint soreness.

used to combat the pain and swelling of arthritis (Lodha R et al 2000). Curcumin can inhibit the release of inflammatory mediators and inhibit the COX enzyme (Huang MT et al 1991; Joe B et al 1997). It may also work as an enkephalinase inhibitor (the enzyme that degrades natural endorphins), serving to increase levels of natural endorphins by slowing their destruction (Kita A et al 1997).

MSM (Methylsulfonylmethane) -

In experiments using radioactive-labeled sulfur, it was shown that after ingestion, MSM gives up its sulfur to the essential amino acids methionine, cysteine, and other serum proteins, eventually finding its way into the collagen of skin, joints, and blood vessels. It is also incorporated into the keratin of hair and nails. Animal studies have shown that joints affected by osteoarthritis have lower sulfur content, and that arthritic mice given MSM experience less joint degeneration. In a double-blind trial in people with osteoarthritis, study participants who

Quercetin (Saphora Japonica Source) -

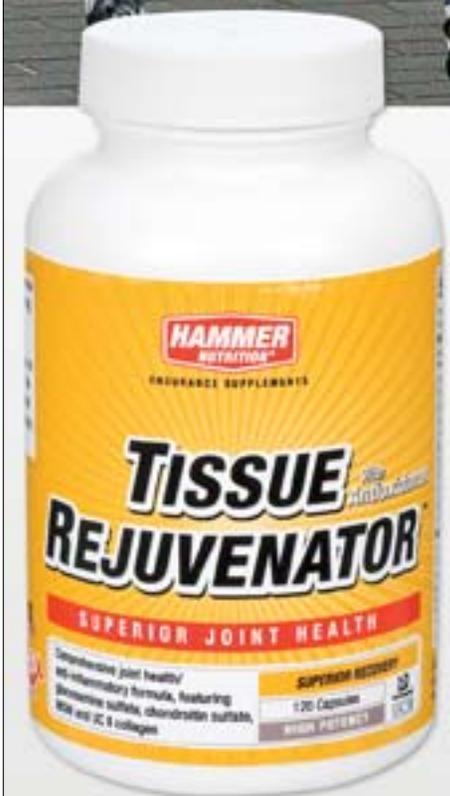
Many studies have shown quercetin to inhibit mast cell secretion of inflammatory factors such as histamine, leukotrienes, and prostaglandin D2.

Summary

In addition to the “raw materials for joint health” components of Tissue Rejuvenator—glucosamine sulfate, chondroitin sulfate, UC Type II collagen—you also receive a number of effective anti-inflammatory nutrients as well. So even if you aren't currently sidelined with a joint-related injury, a couple capsules of Tissue Rejuvenator after a tough workout may very well help minimize-to-diminish that post-workout muscular/joint soreness. Use Tissue Rejuvenator with AO Booster and your post-workout Recoverite and you've got a potent “inflammation reduction” combination.

References available upon request.

Joint health second to none



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Robb Beams works with some of his athletes at his Florida training facility. Photo - courtesy of Robb Beams



Faster Lap Times and Increased Endurance

Understanding energy systems

Author : Robb Beams

There are many different ways to train, depending on who you listen to. Though each approach is designed to improve a distinct function, there is always some overlap. The two ends of the spectrum are aerobic to anaerobic and here we will discuss the five elements that fill up the middle of this spectrum. The key to ultimate success in racing is to combine all of the following elements into your training so that you will be able to compete closer to your anaerobic threshold for a longer period of time without fading. As we discuss the following energy systems, keep in mind that the various types of training are defined as a percentage of your current field testing and maximum HR (specific to the discipline you are using for training – road cycling, mountain biking, running, swimming, rowing, etc.). If you haven't completed a Time Trial/Max HR test, please contact me directly at robb3@earthlink.com and I will provide you with the testing protocols to identify and enhance the five energy systems we are going to discuss within this article: *Explosive Speed, Sprint Speed, VO2, Anaerobic Threshold and Endurance.*

Explosive Speed

This high energy training is to work above your maximal time trial effort in order to develop power and the ability to throw in bursts of speed when necessary (i.e. to bridge to a rider in front of you or after you go down and need to

restart your bike) and to finish a race strong. The duration of these intervals is usually between 15 and 30 seconds and can be completed 4 to 8 times while maintaining high output levels. You will be enhancing your fast twitch fibers A (slightly oxidative) and fast twitch B (anaerobic). Adjust your recovery time to allow for full recovery – don't begin your next interval until your HR is around 20 beats above your resting HR. The fatigue levels associated with this type of training is high and should not be performed within more than twice a week with a minimum of 2 days of recovery in between.

Sprint Speed

This type of training helps you adapt to high levels of lactic acid and oxygen debt. The major benefit to this type of training is that it teaches you how to vary your speed within a race without depleting your glycogen storages (i.e. bonking). The duration of these intervals is usually between 30 seconds and 2 minutes and can be completed 4 to 6 times while maintaining high output levels. You will be enhancing your fast twitch fibers A and B as well as your slow twitch fibers. Each interval needs to be started fully rested. If you allow for this to happen, you will split your energy sources evenly between anaerobic and aerobic. In my opinion, this type of training is the most productive for high level racing, yet is the most overlooked within a racers program. High level racing requires that you get up to a fast pace quickly and

then maintain it for the entire duration. During the first lap, your respirations will increase, lactic acid will accumulate and your effort level will be very high. If your muscles are trained to cope with the lactic acid level and oxygen debt of the initial sprint, your body will not be as "shocked" as a body that has not familiarized itself with this glycogen burning byproduct (i.e. lactic acid). Due to the higher levels of lactate, you will experience significant muscle soreness and stiffness so keep the frequency of these workouts to two times per week (with a minimum of three days of rest for optimum performance).

VO2 Max

This type of training gets a lot of publicity and is tossed around by many performance coaches as the key indicator of ability. There is credibility to this mind set due to the fact that a racer that has a greater oxygen uptake number should also indicate a greater aerobic capacity and hence the fastest racer; however, it is not that simple. In a race, physical capacities as racers come down to combinations of all the other elements in one's performance: anaerobic thresholds, technique and efficiency while fatigued and desire.

The benefit associated with this type of training is that your heart pumps a lot of blood per beat and your stroke volume is elevated during the recovery phase, which allows more blood to be pumped during the next working phase. More blood means more oxygen. By elevating your VO2 max, will allow you to perform closer to your aerobic capacity. The duration of these intervals is usually between 2 and 10 minutes and are progressive (you will elevate your HR to a high output level within the first two minutes and then maintain for the

see MOTO on page 23

MOTO from page 22

duration of the interval). Your interval count should be no more than 4 times in order to maintain workout quality. You will be enhancing your fast twitch fibers A as well as your slow twitch fibers. Your rest interval will be half of your work duration. One interesting side note, since your VO2 Max is a numerical value determined in relation to body weight, the leaner you are the higher your VO2 maximum due to the increased mitochondria and capillaries (in relation to body fat) present to deliver oxygen. These types of workouts can be completed three to four times a week with adequate hours of quality sleep and consistent food intake to enhance the recovery opportunity.

Anaerobic Threshold

At your anaerobic threshold, lactic acid begins to diffuse back into the bloodstream for use as a fuel. If you slow down, you will activate your aerobic system; if you speed up, you will produce lactic acid at a faster rate than you can diffuse it. Anaerobic Threshold training teaches your body to perform at the highest point possible without exceeding your anaerobic threshold. The duration of these intervals is usually between 1 and 3 minutes. Your interval count can be as minimal as 10 and as many as 50 (depending on the interval duration) and still maintain overall quality. You will also be enhancing your fast twitch fibers A as well as your slow twitch fibers. The rest intervals are short - between 20 and 60 seconds. It is the enhancement of your Anaerobic Threshold in conjunction with your VO2 Max that makes the ideal racer. The combination of these two performance elements allows the racer to perform at a higher level of output and for the entire duration of the race! Anaerobic threshold training is not as demanding as VO2 max training; your day to day recovery will be quick. By keeping your workout recovery times to a minimum, you are stimulating your aerobic metabolism more than you're anaerobic. Your lactate levels are not nearly as high (resulting in less residual soreness). Additionally, you are breaking the effort into shorter segments than in distance training which allows you to perform at a higher intensity level developing your aerobic energy stem to burn more fatty acids in proportion to glycogen. This side benefit leads to a leaner body which in turn drives up

your VO2 Max – see how this disciplined form of training has all kinds of fringe benefits? Most importantly, working at this level of intensity simulates race pace and all of the physiological changes that occur within a race. As the body



Practicing technique at the MotoE Performance Training Center in Haines City, Florida. Photo - courtesy of Robb Beams

becomes more familiar with this effort, the easier the racing becomes.

Aerobic Training

Aerobic Training teaches your body to conserve glycogen and burn fatty acids as a primary fuel source. Benefits to enhancing your aerobic engine: you will engage the fat burning process within the first 10 to 15 minutes of aerobic exercise; expedites the delivery of oxygen to working muscles; increase your stroke volume within the heart; increases the capillary density within the muscles; increases the mass and number of mitochondria and helps release ATP aerobically. The ironic element of Aerobic Training is that it is the discipline of training that gets pushed aside first, yet has substantial benefits. Because we are so acclimated to the “No Pain, No Gain” mentality, we have tendency to think that the easy, long workouts are not productive. If you want to get fast – go long and at measured aerobic enhancement intensity! The duration of Aerobic Training intervals are usually between 15 minutes and 3 hours. Due to the continuous nature of Aerobic Training, there isn't any actual interval count. You will be enhancing your slow twitch fibers with this type of training. A couple words of caution with this type of training. First, don't check out mentally and go too easy. You need to be at 60-70% of your maximum heart rate to reap the physiological benefits we are looking for during these types of workouts. Secondly, though the

intensity is low, don't jeopardize your mechanics of whatever type of training you are doing (i.e. pedal mechanics, swim stroke, etc.) to avoid any unnecessary injuries. These types of workouts are ideal for working on mental rehearsal and breathing focus (more on these elements in future articles).

As you can see each of the energy systems provide important physiological benefits to a racers performance program. When you incorporate the proper workouts into a week of training (based entirely on your race Periodization – Pre Season, Pre competitive, Competitive) you are building a human body that is as capable as any motor that a mechanic can build for you. It just takes a little bit of research and field testing on behalf of the racer to determine how to put all of the elements together at the right time and at the correct intensity levels for optimum performance.

Motoendurance.net is a premium resource center for motocross and supercross riders of all abilities. The site outlines the MotoE Performance Training programs available to racers for 2009 - similar to training programs used with great success by WMA Champion Ashley Fiolek and AMA MX Lites star Kyle Chisholm in 2008. Additional resources available include the MotoE Performance Training Facility in Haines City, Florida, eBooks on various human performance elements and online instructional videos. To discuss your current program or have a new one developed for you; feel free to contact Robb Beams at Motoendurance.net or 407.701.7586 directly.

The 'Endurance' Bunny

Here are a couple of photos of the Easter baskets that Hammer Ambassador Mike Meteyer's sister made for her husband and kids!





Stevie Cullinan, of the Hammer sponsored Team Waste Management, races during the Redlands Classic.
Photo - Brian Smith

Keeping It Fresh, Keeping It Going

Periodization principles for EMS

Author : Jim Bruskwewitz

Gains in strength, power and endurance are adaptations to stress (training). If the stress remains constant, there is no need for further adaptation and improvements are followed by a performance plateau and eventually an involution or decline in performance.

In order to enjoy gains throughout a prolonged training experience, the athlete needs to change the training stimulus in a regular fashion. Training efficiently requires a planning process that builds change into an EMS (Electro Muscular Stimulation) training routine. The kinds of changes and the rate at which they occur should be based on a few training principles mentioned below. Using these training principles as guidelines allows for a great deal of flexibility and individualization of a training program. You can develop your own training program to meet your needs and deliver the kind of results you desire if you can incorporate what is common to all successful training programs. These training principles as they apply to EMS are as follows.

Principles of Variety

- Variation between training phases
- Variation of training phase goals

Principles of Specificity

- The muscle fiber type (slow twitch or fast twitch) and therefore the energy delivery system trained.

Principle of Progressive Resistance

- Total training stimulus, the intensity of the current in mA at which one trains, should increase in a regular fashion.

We can hang our own EMS training tailored to our needs on these training principles.

Our training phase goals change because we'll eventually run out of improvement training the same way. When it comes to the different kinds of strength that

our training according to the principles listed above, we can enjoy the benefits of the various kinds of strength over an entire season.

It was suggested in the January 09 Endurance News to spend 6-9 weeks first in the max strength programs, followed by 6-9 weeks of resistive strength and finally 10-15 weeks of endurance. A transition of 1 week fits between the strength and resistive strength and again between the resistive strength and endurance phases of the EMS training. This is a very common and effective approach. The training pinpoints the various kinds of strength that can be gained with EMS training one adaptation at a time. There are other approaches that work too. Not only is variety in the kind of training beneficial, but it can be a useful approach to the way we plan our periodized training. Let's look at two other tried and true approaches to building strength with a

In order to enjoy gains throughout a prolonged training experience, the athlete needs to change the training stimulus in a regular fashion.

we can build using a Globus EMS unit, we'll notice improvements from the max strength program in a few weeks, from the resistive strength program in four to six weeks, and changes in the strength of endurance starting in six weeks. The rate at which we enjoy these improvements will change over time. Our rates of gain will slow in 6 to 8 weeks of max strength training, 6-12 weeks of resistive strength training, and 12 plus weeks of endurance training using the EMS programs. Hence, we are not well-served spending too many weeks training for a specific adaptation, like maximum strength. If we change

periodized EMS training plan.

The amount of time spent in each training phase can be reduced so that one cycles through max strength, resistive strength, and endurance in a six week period instead of the season long cycle described above. Spend two weeks each in the max strength, resistive strength and endurance Globus Premium Sport and Sport Plus model's EMS programs. After this six week cycle, start the six week cycle over again. This cycle can be repeated throughout an

see *FRESH* on page 25

FRESH from page 24

entire season. With this approach, the Principle of Variety and Specificity are certainly applied and the Principle of Progressive Resistance can be applied as follows. During the first six week cycle, the level 1 of the three programs should be used. The next time through the six week cycle, increase the level of the Programs from 1 to 2. Each week, the mA current (the intensity) should be increased slightly. A 5% increase in mA level settings from week to week within a given program level is appropriate. Adjust these levels based on comfort and individual needs.

Another approach to periodized EMS training is to mix the kinds of training programs within each week. If one fits two Globus EMS training days in per week, two different strength programs, like max strength and resistive strength, are included in each week of training. Since a program type is used once per week, one can at least double the number of weeks spent training for a specific adaptation. Throughout this period, the Principle of Progressive resistance should be applied. The mA current, intensity, can again be increased gradually each week. The program level 1, 2 or 3 can be increased bi- or tri-weekly. If you choose to build strength three times weekly, max strength, resistive strength, and endurance could all be trained in the same week.

Whatever form of periodization you choose to use, keep in mind that consistency underpins the potential for gain. No gains can be made no matter how carefully you plan your training if the Globus device is not consistently a part of your training regime. You can rigidly apply the Training Principles of Variety, Specificity, and Progressive Resistance while planning your performance improvement with a Globus EMS unit, and still have a good deal of freedom in how you organize your EMS training. Be creative, have fun with it, and enjoy the improved performance.

Jim Bruskewitz (ep1@charter.net) coaches triathletes online www.enduranceperformance.com, and is a Lecturer at the University of Wisconsin-Madison's Department of Kinesiology.

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Jamie Donaldson runs her way to first place at the 2008 Badwater.
Photo - Chris Kostman

Hammer Nutrition Ultra Runners Make 2009 National Team!

Author : Steve Born

By the time this newsletter reaches you, the race will have already been completed. Still, we wanted to recognize the Hammer Nutrition clients/ultra runners who earned a coveted spot on the National Team for the 2009 World 24-Hour Run Championship, held in Bergamo, Italy on May 2-3.

We'll post the results of the race in the next issue of Endurance News.

A massive "shout out" of congratulations to:

- **Jamie Donaldson**
Littleton, Colorado
- **Connie Gardner**
Medina, Ohio
- **Debra Horn**
Shaker Heights, Ohio
- **Carilyn Johnson**
El Paso, Texas
- **Jen Van Allen**
Bryn Mawr, Pennsylvania
- **William Allen**
Prince Frederick, Maryland
- **Scott Eppelman**
Coppell, Texas

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The Hammer Nutrition Referral Program is the easy way to save BIG on all your personal-use product purchases. In fact, some athletes have accrued so many referral credits, they've rarely had to pay anything for the products they need! What could be better than that? Here are the benefits:

- Every time you refer a new customer to Hammer they will receive 15% off their first order with us.
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The referral program is applicable for all non-family members. If you refer someone to us, it is absolutely essential that they mention YOUR NAME or CLIENT NUMBER when ordering. This is very important because it's the only way we will know that you referred them. (So when you talk to friends and athletes regarding our products, please make sure that they know to mention your name or client number to us when they order.) To make this more convenient, we have easy-to-use referral cards that are available on the product order form in each Endurance News and in the Hammer Nutrition catalog. You can download and print even more from the Hammer Nutrition web site at www.hammernutrition.com/downloads/referralcards.pdf.



HOT TIP

REM Caps for Restless Leg Syndrome

The results of a new study showed significant benefits for relief of Restless Leg Syndrome (RLS) using valerian. The amounts of valerian that were used in the study were high (800 mg), which is more than what's in a capsule of REM Caps (150 mg). Still, the results of this study showed a significant reduction of RLS symptom severity in the subjects given valerian. Therefore, a capsule or two of REM Caps, along with a couple capsules of Endurolytes, may be very beneficial for those dealing with RLS.

REFERENCE: Quilley NG, Rebotto S.J. Does valerian improve sleepiness and symptom severity in people with restless legs syndrome? *Aliment Ther Health Med.* 2009 Mar-Apr;15(2):22-8.J



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2009 Hammer Singletrack Camp

Author : Matt McFee

The Hammer Singletrack Camp returns for 2009! Explore the little-known mountain bike heaven of the Kettle Mountains near Spokane, Washington this summer with Hammer Nutrition and Hermosa Tours.

“The Kettle Crest is truly a hidden gem that the mountain bike community is just starting to discover. We're really excited to have Hammer Nutrition get behind this incredible new destination,” said Matt McFee, Director for Hermosa Tours.

The Hammer Singletrack Camp combines 4 days of world-class mountain bike terrain with Hammer Nutrition's expert training guidance and array of nutritional products. All Hammer products such as HEED, Hammer Gel, and Recoverite will be included in the camp price.

Hammer Nutrition's Brian Frank said, “We recognize that a significant segment of our customer base are very passionate about mountain biking. We think it's critical to offer up an event like this to showcase Hammer's various products in such an amazing setting.”

Join Us!

- **Location:** The Kettle Crest near Spokane, WA.
- **Dates:** July 23rd-26th
- **Details:** 4 nights lodging, 4 ride days, transportation from Spokane International Airport. Open to 12 participants
- **Cost:** \$1395
- **Contact:** www.hermosatours.net

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The crew at the February Hammer Camp.
Photo - Vince Arnone



Hammer Camp

Tucson recap - February 2009

Author : Brian Frank

The weather was the best we've ever had - 80 + degrees every day, no clouds, light wind... classic Tucson. The totals for the week were 19 hours, a little over 300 miles, plus the supplemental swim and run workouts that many added. We had a really good group this time around, as has been the case with all of the previous camps. Although the attendees came from all walks of life, and their ages varied greatly, everyone had so much in common that a cohesiveness developed right away. The fact that we were just about evenly split with veterans and rookies also helped get the first timers into the swing of the camp even more quickly with the vets. By Wednesday the daily routine of the house was established and everyone was fully enjoying the flow.

As always, Owen and his Cycling House staff, Mom Jenny helping in the kitchen and his crew of young Montanans - Brendan Halpin, Andy and Sam Schultz, and Jen Lupke, did a stellar job of running the house and making everyone feel comfortable, welcome, and pampered. They'd be up starting the coffee by 5:30 or 6 a.m. and have an enticing breakfast spread out by 7 or 7:30 a.m. (depending on the ride schedule), riding or driving support, making lunch and dinner, and cleaning until 9 p.m. at night. Owen definitely has the hospitality down and you'd be damn hard pressed to find a group of 23-24 year olds who are having more fun or working harder while training themselves than these youngsters. It's

worth a visit to TCH just to hang out with them.

Everyone arrived on Monday (2/23) between noon and three and enjoyed a light lunch. The TCH crew had everyone's bike built, tuned, and ready to ride by 3:30 p.m.. We rolled out shortly after that for our first ride and ended up spinning around NE Tucson for a bit over two hours. Back at the house, many jumped in the "cold" pool because it was that hot. Showers and rounds of EMS active recovery ensued and then it was time for our first dinner. I've copied the menu to the right. I'll say the food was amazing in its wholesomeness and taste. Everyone was extremely impressed with it and went back for seconds and thirds. Our two vegetarians were well fed and happy as well.

After dinner, we had our meet and greet social time to get everyone acquainted and Jim and I discussed our plans for the camp - no formal presentations, just lots of face time to discuss each camper's individual needs, goals, questions, etc. whenever - before meals, during meals, after rides, while mixing up fuels in preparation for rides, during rides especially and so on. I am pretty certain that no one left the camp with any

lingering questions or uncertainty about fueling or nutrition.

The Cycling House pantry was fully stocked with all of the Hammer products and everyone thoroughly enjoyed being able to taste all of the various flavors (the Caffé Latte Perpetuum was a HUGE hit) of our products and the opportunity to try all of the new ones like Endurance Amino (Kathy loved it), AO Booster, and Seat Saver (huge hit... 19 hours + in 6 days and not a sore bum to be found!).

With all of the miles being ridden, the campers quickly lined up for post ride e-stim recovery for their legs and

massages to top off the pampering. There were a lot of endorphin blissed out athletes laying around in the evenings.

From Monday to Sunday, every day offered a new ride of epic proportions and campers were heard to say things like "that was one of the most beautiful rides I've ever

done" (Mike from Canada, after riding through Saguaro East National Park on Tuesday). However, I'm pretty sure that the ride up Mount Lemmon on Friday or the Madera Canyon ride on Saturday were right up there too.

Our young tech/internet wizard Vince Arnone joined us for this camp to run the video camera and the big digital SLR. We ended up with 850+ high resolution images and lots of video, including some EMS instructionals and more.

On Friday morning, we made everyone skip breakfast - it was a 7:30 a.m. roll off and even though campers from the Central and Eastern time zones would



Group shot on top of Mt. Lemmon
Photo - Vince Arnone

see CAMP on page 29

CAMP from page 28

have been game for breakfast at 4:30 a.m., the staff and the rest of us needed our sleep. So, it was coffee at 7 a.m., on the bike at 7:30 a.m. and nothing in our stomach. Most went with the new Caffé Latte Perpetuem and some of the hyper metabolic campers brought a bar to munch on as well. Despite knowing that we advocate this, many had never had the courage to actually try it. All were amazed at how strong they felt during the entire 6 + hours of riding. We finished off the ride with chilled Strawberry Recoverite and then set everyone loose on a huge lunch spread and watched it vaporize. More EMS and bliss followed.

By Saturday, everyone was fully in the groove - getting up early to have coffee, read the paper, or check e-mail before loading up in the vans for a short portage to the start point of the Madera Canyon ride. Wind patterns and elevation make this ride a lot more interesting and challenging than a cursory review of the length and profile would suggest. It's 65 miles out and back with the first 10 miles down a slight grade with a tailwind. After that, it's a long way up to the top of Madera with a subtle increase in pitch starting from 1% and going to 14%. On the way back, you get to work against a persistent headwind. By the time everyone got back to the van, they were more than eager for some chilled Recoverite and a quick return trip to The Cycling House for another mid-day feast. After lunch, everyone assumed the now familiar positions of relaxing, running Active Recovery EMS, and queuing up for evening massages. Then, it was fiesta time - our normal gourmet fair turns Mexican (still 100% healthy and gourmet) with cervesas and margaritas the reward for a long week of training and more healthy eating than almost anyone was accustomed to enjoying. After living and training together for 5 days, the group now enjoyed the familiar ease of old friends handing out, talking about their favorite past time. Smiles and laughter quickly filled the house as we all enjoyed our last night in Tucson and looked back on the eventful week we'd all spent together.

The dates for our 2010 camps are already posted and people are signing up, so if you've been thinking about coming down to one of our camps, click on www.hammernutrition.com/camps for all of the details.

The Hammer Camp Menu

**Though The Cycling House does serve up some fabulous fare, the menu you see here was created specifically for The Hammer Camp.*

Monday

Lunch*

- Fruit platter
- Panini's

** small snack between building up bikes and riding*

Dinner

- Salmon roasted in cilantro salsa
- Orange scented quinoa with spinach
- Caesar salad

Tuesday

Lunch

- Turkey breast with leek and oatmeal stuffing
- Homemade cranberry sauce
- Brown rice pilaf
- Salad

Dinner

- Fresh tomato soup
- Sautéed tofu
- Cornbread
- Three bean salad
- Wild green salad

Wednesday

Lunch

- Smothered steak sandwiches
- Baked zucchini fritters
- Salad

Dinner

- Albacore tuna salad
- Pitas and wraps
- Wehani rice

Thursday

Lunch

- Buffalo burgers
- Sweet potato fries
- Baked beans
- Salad
- Fruit salad

Dinner

- Chicken or tofu stir-fry with rice noodles
- Edamame
- Mandarin spinach salad

Friday

Lunch

- Lemon artichoke chicken
- Spinach vermicelli
- Tomato salad

Dinner

- African peanut soup
- Dinner rolls
- Roasted cauliflower
- Spinach and avocado salad

Saturday

Lunch

- Kabobs
- Grilled asparagus -
- Spaghetti squash with spinach

Dinner - Fiesta Night!

- Carne asada tacos
- Beans
- Salad
- Chile-spiced fruit salad with queso fresco
- Margaritas
- Other Mexican fare

Athlete Feedback

Brian, thanks for an amazing camp! It definitely lived up to its billing of world class riding, pro level support, top rate coaching, great people, and fantastic food ...so the weather was a bonus. I sure would like to do it again next year, as it inspired me to train over the winter, and it's such a great jump start to the '09 season. I can hardly wait to get back into racing this season. It was great having Jim there with his combination of talent, knowledge, and easy-going personality. I was also very much impressed also by Owen and the rest of the "ride assistants"...what a great group! - Mike Baldigara

After going to the camp for the 3rd year, I have to admit that this was the best year. Everyone seems to be very comfortable with each other and the staff. Thoroughly enjoyed the camp experience. Will definitely be back next year! - Mark Barrette

I had a great time at the Cycling House last week and thought the Hammer Camp was worth the price charged. I would do it again and would highly recommend the experience. Two things were especially

important for me. One was the exposure to Hammer Nutrition products along with expert explanation on how to use these products during training and racing. The other was the exposure to the Globus EMS device. I was quite surprised to learn about it's potential for recovery and strength training. I knew it would be a good experience based on recommendations I had recieved but the overall experience exceeded those expectations. - Brian Fryar

In the 20 plus years I have been around endurance sports, I have not learned as much anywhere in a weeks time. The relaxed environment coupled with the information from Brian, Jim, and the staff, along with the knowledge passed on by the participants, was hopefully life-changing. My wife and I have started a different lifestyle. We've begun eating the way we should... fruits, vegetables, and sensible portions. We purchased a Cusinart Food processor, and a Cusinart Grind and Brew Coffee maker. Thanks Brian--it is great! Thanks everybody, you did it right. Couldn't have been better. You are welcome at my home anytime. Thank you for having me at yours. - Tom Moore



Mark Rhode stays focused at the 2008 La Ruta de Los Conquistadors in Costa Rica.
Photo - courtesy of Mark Rhode

Tips for Successful 24-Hour MTB Racing

Part III : Rest and recovery

Author : Randy Profeta

Congratulations! You just completed your first 24-hour mountain bike race. Whether you finished in the top three and will be making a trip to the podium, or you just simply finished, you are part of an elite group of athletes. This was no small feat! The preparation alone amounts to more saddle time than many riders log in an entire year. Previously thought of as being beyond human capabilities, athletes rose to the challenge of 24-hour racing, and Hammer Nutrition makes sure that we have products that will exceed the nutritional demands placed on our bodies when doing such a grueling event. Cherish the moment with your crew. Thank them for their support and for their help. Snap a few pictures. Enjoy the moment. Do some “bench racing” with your competitors. To quote Henry Ford: “One of the greatest discoveries a man makes, one of his great surprises, is to find he can do what he was afraid he couldn’t do.”

In the two previous articles, we reviewed training, race preparation, and strategies that have worked for me during an event. In the first article, I shared some of my thoughts about developing a fueling strategy during your training activities. Part I concluded with the pre-race meal on race day. The second article focused on fueling regimens and other race-day strategies that have worked for me during 24-hour solo mountain bike events.

You have just crossed the finish line and your thoughts may now turn to grabbing a hot shower, having cold beer, possibly downing a sloppy bacon cheeseburger, and sleeping for the next 18 hours, but not necessarily in that order. While I am sure that you have burned enough calories during the race that you could most likely consume anything that you please without any weight-gain consequences, you need to exercise some self-control and continue eating smart. Your race is not quite done yet: focus on helping your body effectively recover from what you have just asked it to do.

Proteins and Carbohydrates

As odd as it sounds, I am not really that hungry in the minutes immediately following a race. What is on my mind is getting off my feet and out of my race kit. I want to take care of some personal hygiene as soon as possible: wash up, brush my teeth, take a shower, and change into some clean clothes. Here is a tip: if you are fortunate enough to be a sponsored rider, make sure that you are ready for a podium visit. Have a clean sponsor’s jersey in your gear bag so that you can look your best when you climb the top step of the podium. This is the time to give back and to thank the people that have supported you.

Just as you did during your training, plan to consume carbohydrates shortly after your race is over. During the early part of the race, your body was burning through its stored carbohydrates in

the form of muscle glycogen. After an hour or two, your body started using its fat reserves as the main source of fuel. Even lean athletes have more than enough stored fat calories to supply more calories than they will ever burn during a 24-hour race.

Endurance training increases both muscle glycogen storage capacity and utilization efficiency. As we have already discussed, a big part of your training is the re-supply of glycogen after its depletion. According to the Fueling Handbook, several studies have shown that your pre-exercise muscle glycogen level is the most important energy determinant for exercise performance. To have a good race or workout, you need to start with full load of muscle-stored glycogen. The best time to start working on the re-supply of glycogen is within an hour of the completion of your last workout, or race.

That’s why it’s so important to start replenishing carbohydrates very soon after exercise, to take advantage of the highest glycogen synthase (the enzyme that controls glycogen storage) activity, which occurs immediately after exercise, when muscle glycogen is depleted. Glycogen synthesis from carbohydrate intake takes place most rapidly the first hour after exercise and occurs at lower levels for up to 4-6 hours longer. Moreover, research has demonstrated that glycogen synthesis is highest when subjects were given carbohydrate immediately after exercise. So depletion plus dietary carbohydrate yields the maximum glycogen re-supply. Chromium can further enhance glycogen re-supply. More about that later.

Like your racing regimen, complex carbohydrate (polysaccharides, such as maltodextrin) should be your fuel of

see 24-HR on page 31

24-HR from page 30

choice for glycogen replenishment during recovery. Complex carbs offer a high Glycemic Index, plus ease of digestion and high caloric impact.

How Much?

This is simple: you should continue taking in carbs at the rate that you had established for your race. So, for me at 182 lbs, I will be consuming about 240-250 calories an hour during the first few hours of my recovery. Clearly, I will not continue to take in calories all day, but I will for the first two or three hours immediately following a race.

Proteins and Recovery

So far, we have focused on carbohydrates. Now let's turn to proteins. Most endurance athletes do not consume enough protein. We tend to associate protein replacement with weight lifters "bulking up" after a workout. We need protein, also, so we will now look at some important reasons to include protein in your recovery nutrition. For instance, studies have shown that protein, when combined with carbohydrates, almost doubled the insulin response. This alone makes it logical to include some protein along with your complex carbohydrate. A ratio of 3:1 or 4:1 (carbohydrate to protein) is a good recommendation. This was discussed in Part I so I will not go into the details again. Whey Protein Isolate, not Whey concentrate should be your choice. Hammer Products use Whey Protein Isolate.

Our bodies need protein to rebuild muscles stressed by activity. Endurance athletes often think that protein intake is for the power-lifting crowd, but your body doesn't agree with that! True, intense weight training places a different kind of stress on muscles than endurance exercise, but muscle breakdown occurs all the same, and endurance athletes need far more protein than a standard diet provides.

After an event or a training ride, I consume protein from both natural sources, such as a piece of smoked salmon or lean turkey, as well as by sipping some Recoverite. Recoverite supplies carbohydrate and protein in

an ideal 3:1 ratio for superior glycogen synthesis and muscle tissue rebuilding, the two main components of recovery. Other recovery formulations on the market typically use a 4:1 ratio. To ensure rapid metabolism and ease of digestion, Recoverite contains only maltodextrin, a complex carbohydrate with a high glycemic index, as its carbohydrate component. Unlike many recovery products that contain simple sugars, maltodextrin provides a large volume of easily digested and rapidly assimilated carbohydrate, vital for preventing stomach distress and promoting full, efficient restoration of muscle glycogen.

Each serving of Recoverite also supplies

nutrients, but l-carnosine deserves special attention as it is one of the most versatile and beneficial nutrients you can put in your body. During exercise it's a great lactic acid buffer, and afterwards it continues to offer antioxidant and antiglycation properties.

And about that burger? Lean is OK, but even a lean 8-ounce turkey-burger (no bun or condiments) contains about 150 calories and 45 fat calories. Most have about 5g of fat (2g of saturated fat). This is similar to a lean ground beef patty (95% lean, 5% fat). Interestingly, both turkey and beef contain about the same amounts of cholesterol. Remember that carbs contain about 4 calories per gram; fat contains about 11 calories per gram.

Our bodies need protein to rebuild muscles stressed by activity. Endurance athletes often think that protein intake is for the power-lifting crowd, but your body doesn't agree with that!

a potent, recovery-boosting three grams of l-glutamine. The benefits of l-glutamine are hard to overstate. It plays a crucial role in preserving and rebuilding lean tissue as well as supporting the immune system following intense exercise. In addition, l-glutamine is vital for gastrointestinal health. Recoverite supplies other recovery-enhancing nutrients such as Hammer's ChromeMate brand chromium polynicotinate (for maximizing muscle glycogen synthesis) and l-carnosine, a powerful antioxidant and potential anti-aging nutrient. They're both important

Supplements and vitamins

In general, I continue with the dose specified in the first two articles. I will typically have one or two Endurolytes for the next hour or two to help minimize or eliminate cramping. In addition to the doses specified for Mito Caps, Anti-Fatigue capsules, and Race Caps, I will also have a package of Premium Insurance Caps after the race as well. I'll also add some Super AO and dissolve

see 24-HR on page 33

Save 15% when you buy a complete men's or women's Hammer kit!

Buy a kit consisting of a jersey, shorts or tights, arm warmers, and a wind jacket; and receive 15% off the individual prices! Gloves, socks, and other Voler items will also be discounted if they are ordered at the same time.



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In the kitchen at The Cycling House.
Photo - Vince Arnone

From The Cycling House Kitchen

Author : Andy Schultz

Hi, I'm Andy Schultz. I'm a professional mountain bike racer with the "Kenda-Tomac-Hayes" mountain bike team and the head cook at The Cycling House. I've been fortunate enough to be a Hammer Nutrition sponsored athlete since I was an up-and-coming junior racer in Montana. Through my sponsorship with Hammer Nutrition I have learned the best nutrition for bike racing, but I have

also learned that nutrition, and how you perform in your sport, goes way beyond what you consume while exercising. I have observed, first-hand, the old Hammer adage "garbage in, garbage out," meaning that if you eat poorly, you are not going to perform to your optimum.

My days at The Cycling House are pretty packed. Between training, cleaning, helping out around the house, grocery shopping, and cooking, I don't have a

lot of time. Therefore, I have developed a lot of recipes for delicious, nutritious, and quick meals. I try to center my main meals around a lean source of protein and lots of veggies. On days when I'm training hard I like to add an un-refined starch to the menu as well. Here is one of my favorite recipes. It doesn't take long, it tastes great, and it looks and sounds really fancy so you can impress everyone with your culinary abilities. I'll take you through the complete meal, step-by-step.

STEVE'S NOTE: Having recently spent a week at The Cycling House I can tell you from first-hand experience that the food they prepare there for the campers is simply outstanding. It is the perfect combination of "healthy" and "delicious" and everyone who attended the recent Hammer Camp gave Andy rave reviews.

Balsamic Chicken with Pears

(serves 4)

- 1 ½ cups cooked whole wheat couscous
- 4 small skinless, boneless chicken breast halves
- 2 Bosc pears, peeled, cored, & cut into 8 wedges
- 1 cup chicken broth
- 3 tablespoons balsamic vinegar
- 2 teaspoons cornstarch
- olive oil

Sweet Potato with Swiss Chard & Ricotta

(serves 4)

- 4 small-medium sweet potatoes
- 2 garlic cloves
- 1 bunch swiss chard
- 2 tablespoons balsamic vinegar
- ½ teaspoon red-pepper flakes
- 1 cup part-skim ricotta cheese
- Coarse salt and pepper

Preheat the oven to 450. Pierce the skin of each sweet potato with a fork all over and then give them a light coating of olive oil. Place the sweet potatoes on a baking sheet and put them in the oven for about 50 minutes. When you can pierce them easily with a paring knife, you know they are done. Meanwhile, cook the couscous according to the package directions. Set to the side. Remove and discard the stems of the swiss chard and tear the leaves into medium-sized pieces. Give a large pan a light coating of olive oil and heat until just before the oil begins to smoke. Peel and slice the garlic into thin slices. Add to the pan and cook until golden, 1 to 2 minutes. Remove from the pan and set aside. Add the swiss chard to the pan and season with salt and pepper. Cook, tossing frequently until tender, 3 to 5 minutes. Remove from the heat and stir in the balsamic vinegar and red-pepper flakes. Set to the side.

Core each of the pears and cut them into 8 slices. When the sweet potatoes have 20 minutes left to cook, lightly coat a medium pan with olive oil and put it on medium high heat. Let the pan heat up until the oil almost begins to smoke and then add the chicken. Let the chicken cook for 6 minutes on each side. Resist

the temptation to move the chicken during this time. Leaving it in place will give it a good brown color. While you wait for the chicken to cook, mix the broth, balsamic vinegar, and corn starch. After approximately 12 minutes, pierce the thickest part of the chicken with a knife. If the juices run clear then the chicken is done. Remove it from the pan and put another teaspoon of olive oil in the pan. Place the pears in the pan and cook until they begin to brown, about 5 minutes. Pour the balsamic mixture into the pan and heat to boiling. Allow the mixture to boil and thicken for about 1 minute, then add the chicken and any juice that has run out of it back into the pan. Coat the chicken in the balsamic mixture and heat through.

By this point your potatoes should be done. Pull them out of the oven and allow them to cool while you put a small bed of couscous on four plates. Place a chicken breast and a few slices of pears on the couscous and drizzle with the balsamic sauce. Next, slice partway through the potatoes lengthwise and open them up. Season with salt and pepper and then top with the ricotta, swiss chard, and garlic.

Make a quick salad and you're done!

24-HR from page 31

a Xobaline tab under my tongue. If I have sleep issues, REM caps have worked well for me.

I will take Xobaline for its influence on the re-synthesis of RNA, the basis for cellular reproduction. Hammer indicates that recent research suggests that improving RNA "status" within the body results in gains in lean muscle mass, increased mitochondrial re-synthesis, and other benefits. When this occurs, the athlete may expect increased energy capacity, improved metabolism, and enhanced recovery after exercise. In addition, the folic acid/vitamin B12 combination is vital for healthy red blood cell production and cardiovascular health, via the reduction of elevated homocysteine levels.

Hammer states that Mito Caps are some of the most potent supplements you can take for recovery and for overall health. The combination of acetyl l-carnitine(ALC) and r-alpha lipoic acid (r-ALA) has many extraordinary benefits. These two nutrients provide immune system support, lean muscle tissue preservation through the decreased levels of excess cortisol, and optimal functioning of the mitochondria, your body's energy producing "furnaces." They have worked for me.

Race Caps Supreme contain three very powerful antioxidants: Coenzyme Q10, idebenone, and vitamin E. They not only support enhanced energy production during exercise (from those nutrients plus other key substrates), they also support enhanced recovery. Additionally, all three nutrients have been shown to play key roles in maintaining optimal cardiovascular health.

Get some sleep!

Your body will recover more effectively once you allow it to mend. This means removing most of the stresses that you have placed on it. As tired as I am after a race, I cannot wind down enough to sleep right away. This usually takes about 3-4 hours, so it typically gives me enough time to attend the awards ceremony before I fall off to sleep.

REM Caps have helped me get a good

night's sleep when my physical activity has elevated my adrenaline levels and I find that, as tired as I am, I cannot fall into a sound sleep.

How soon until you resume your training?

I will be on my bike the day after a race for a 30-45 minute spin to help loosen my muscles. I do not resume any hard efforts for about five days. You will know when your body is again ready to work. Plan on doing some easy spinning only during the week after your event.

This obviously means that you do not schedule another event right on the heels of your 24-hour race. I will throw in a few short, hard intervals after three or four days to gauge how my recovery has been going and assess my readiness to resume my training regimen.

I am often asked how many 24-hour races that I can do in a year. As a 54 year old athlete that is not paid to race (yes, I have a job and have to make a living), three is my maximum, although I will do some 12- and 6-hour races to mix it up and keep me competitive. I'll also do a few endurance events like the (former) Endurance 100, Vision Quest, King of the Mountain series which consists of three road centuries and similar events throughout the year. I always plan my yearly event calendar around my target 24-hour races. In 2007, I did 18 events and three 24-hour races. In my injury-shortened 2008 season, I did three 24-hour events before August 9th and planned to do one more "team" 24-hour race in September. My target race was the World Solos in July. That was the event that I wanted to "peak" for. I was pleased with my results.

As an added perk, I will often schedule a one-hour "sports" massage or deep-tissue massage for the Monday after the race. This helps rid your body of lactic acid

and helps stretch your overworked muscles. My sports therapist is just a few miles from our house, but I generally avoid the temptation to ride my bike.

Hydration plays a big part in recovery. Make sure that you stay focused on the 0.5 ounce per pound of body weight rule that we discussed in Parts I and II. Racing, training, or at the office: proper hydration is essential!

So, the big question: when is your next 24? Let's get started!

Have fun, stay healthy, keep pedaling, never quit! "Self pity is an emotion reserved for quitters"

"One of the greatest discoveries a man makes, one of his great surprises, is to find he can do what he was afraid he couldn't do."

- Henry Ford

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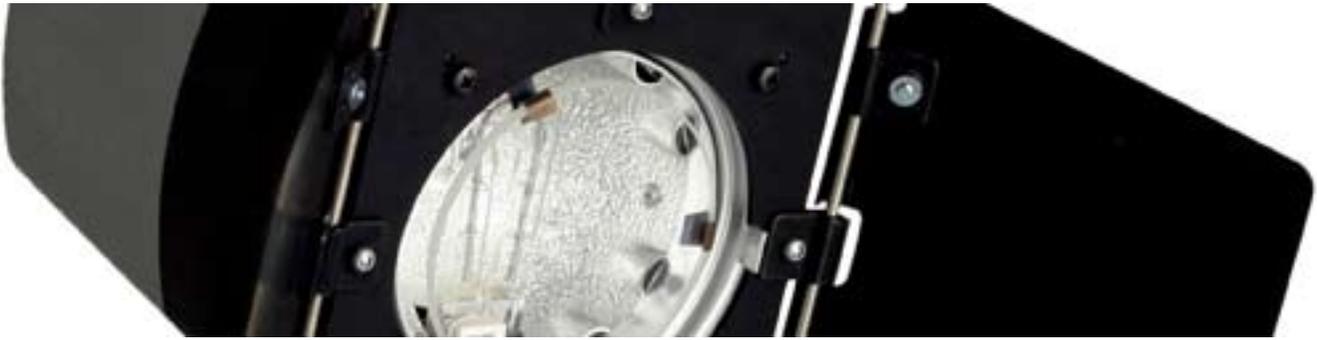
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Athlete Spotlight

Brian Bich

Author : Steve Born and Brian Bich

Our spotlight athlete for this issue is Brian Bich, from Duluth, Minnesota, who is best known for his prowess as a triathlete but also competes in Nordic ski races as well (Duluth is a hotbed for Nordic skiing). Recently Brian was named USAT Male Master Triathlete of the Year for the 2008 season so we figured he'd be a great "spotlight" athlete.

STEVE: Brian, congratulations on your recent award; that's really awesome.

BRIAN: Thanks very much Steve. I have been nominated for USAT age-group triathlete of the year and USAT master age-group triathlete of the year multiple times so receiving the award this year is really special.

STEVE: Give us a little background on your athletic career and some of the highlights from your career.

BRIAN: I did my first triathlon in 1993, when I was 27 and I'll be 43 in July, so I guess I've been doing triathlons for 16 years. Some of my recent highlights include winning three National Age-Group Championships (2004 in Shreveport, Louisiana in the 35-39 group where I was 6th overall; 2006 in Kansas City, Missouri in the 40-44 group where I was 11th overall; and 2007 in Portland, Oregon in the 40-44 group where I was 7th overall). This past summer (2008) in Portland, Oregon I was second in the 40-44 age group and 9th overall. I've finished in the top 11 overall at Age-

Group Nationals every year from 2002 to 2008 (except for 2005 when the race was cancelled).

I've also been a four time winner of the Minnesota Qualifier for the Best of the US Triathlon (since its inception) and have twice been a podium finisher at the Best of the US National Championship (3rd in 2005 at Lake Winnepesaukee, NH; 3rd in 2008 at Tempe, Arizona, which was the first time a masters athlete has finished on the podium at that competition).

The thing that I am personally most proud of is my consistent performances over the past decade and the fact that at age 42, I'm still performing near my peak. Your products have helped me to achieve my best in training and racing. I couldn't have done it without HEED, Perpetuem, Endurolytes, and Hammer Gel.

STEVE: What about your Nordic skiing career?

BRIAN: That's a bit of a different story. I began skiing at the age of 31, shortly after my wife and I moved from South Dakota to Duluth, MN. Prior to that, I had only been on skis (any type of ski) a few times in my whole life. Needless to say, it's taken me years to improve my balance and technique. Although I'm not as good at XC skiing as I am at triathlon, I thoroughly enjoy it and value the benefits it gives me as a triathlete (the reverse is true for triathlon training to aid Nordic skiing fitness). The two sports are the perfect compliment for

each other.

One of the things that I'm very happy with is how I've continually improved my XC skiing over the years. I only compete in 2 or 3 races per year, the granddaddy being the American Birkebeiner in Hayward, WI. I've been competing out of the elite wave at the Birkie for the past 5 or 6 years (after working my way up through the slower waves) and this past February (2009) I finished in 87th place, my best finish yet. My hope is to continue to improve my technique and performances in the years to come. Who knows, maybe I'll have my best finish at age 50??

STEVE: Since we're on the topic of Nordic skiing, tell us a little about the race you produce, which Hammer Nutrition sponsors, the Nordic Spirit ski race. How long has this race been going on? Are you seeing an increase in your participant numbers and how does the future look for this race? How long do you see yourself being involved in this race?

BRIAN: The Nordic Spirit XC Ski Race is hosted by the Duluth Cross Country Ski Club of which I am a member. Our ski club has hosted the race for 5 years now and we are hoping to develop it into a race of regional prominence. Our race had a significant jump in participation in 2008, but Mother Nature gave us some trouble this year. We had a massive cold snap on race weekend and the severe conditions limited our race numbers, although we were on track to have another significant jump in attendance. We have a great venue for our race (the Spirit Mountain and Magney Trails in Duluth) and our race course is both beautiful and challenging. We also have a great group of race sponsors in place

see SPOTLIGHT on page 35

SPOTLIGHT from page 34

and many wonderful volunteers, so we are optimistic that our race will continue to be a success for years to come.

STEVE: Switching over to triathlon now, what kind of training do you do in the off-season, aside from Nordic skiing? Do you do any strength work in the gym or anything triathlon-specific (such as indoor swimming or trainer sessions on the bike)?

BRIAN: I do quite a bit of maintenance strength training year round. I do a lower body strength session once a week and upper body every 4 – 5 days, depending on when I can fit it into my schedule. I have core exercises built into both of these sessions. My strength sessions only take about 15 -20 minutes, but they seem to provide what I need. I try to run almost every day, but most of my runs only last 15 – 20 minutes, and I usually do them on snowshoes or hard-packed snowmobile trails. I don't do a great deal of riding in the winter, but I often commute to work on my bike and I frequently do a warm-up on my bike trainer before skiing. I also try to get in the pool at least three times a week, even if it is only for a short time. The great thing about Nordic skiing is that it helps me maintain total-body fitness and strength for triathlon in a super fun way. I can't wait to get on snow every winter; it's such a fun sport!

STEVE: You've obviously had a lot of success at triathlon. Of the many you've done, is there one, maybe two races that you consider to be your best, and what put them at the top of your list?

BRIAN: That's a tough question, but a race that still stands out in my mind was the 2003 USAT World's Qualifier in Menominee, WI. I decided to do it, because it was close to home, and use it as a tune-up for USAT Nationals which was two weeks later. I ended up having a magical day where I seemed to feel no pain for the entire race, despite the fact that the race took place on one of the toughest courses I've ever done. I wish I could feel that way all the time!

STEVE: On the flipside, has there been a race where absolutely nothing went right; I mean, a race

when everything that could go wrong did? If so, what happened and what did you learn from it?

BRIAN: Fortunately, I don't feel like I've ever had that kind of race. Hopefully, I didn't just jinx myself! I haven't had too many equipment failures and I try not to race when I'm fatigued, which helps prevent bad race experiences.

STEVE: Is there a favorite race or two you try to do annually as much as possible? If so, what makes that race/races so special?

BRIAN: It would be tough for me to pick just one race, but I'd have to say that every race in the Midwest Multisport Series (a series of ten races in Minnesota and Iowa) is top-notch. The races take place at beautiful venues and they are filled with hundreds of enthusiastic racers within days after registration opens. I'm always amazed at the depth of racers we have here in Minnesota, so much so that when I compete at Nationals the level of competition doesn't seem any different than at our regional races. It's always special, though, to race the Brewhouse Triathlon, which is our local race here in Duluth.

STEVE: When you're at peak training volume, what does a typical week of training look like for you? If you can, give us a day-by-day breakdown of what a peak training week may encompass.

BRIAN: My peak volume usually occurs in early June, just after I've finished teaching for the year (I am a Biology instructor at Lake Superior College in Duluth). I usually have 2-3 weeks before my kids get out of school for summer break. During this time I probably average about 150-180 miles on the bike per week and 30-35 miles of running per week. If I'm preparing

for a half-iron distance race later in the summer, I'll usually have another similar volume peak in mid-July. As you can see, I don't do a huge volume of training, in fact, most of the time I don't even record my training hours or distances. I focus more on key workouts followed by periods of active rest and recovery, and I tend to stay relatively consistent in training hours throughout the year. For me, the consistency and quality of my training is more important than the volume. The type of workouts I'm doing is what changes the most. I think this philosophy, coupled with my strength training, is why I've remained injury-free over the years.

STEVE: What are your plans for this season?

BRIAN: I'll compete in many of the Midwest Multisport Series races

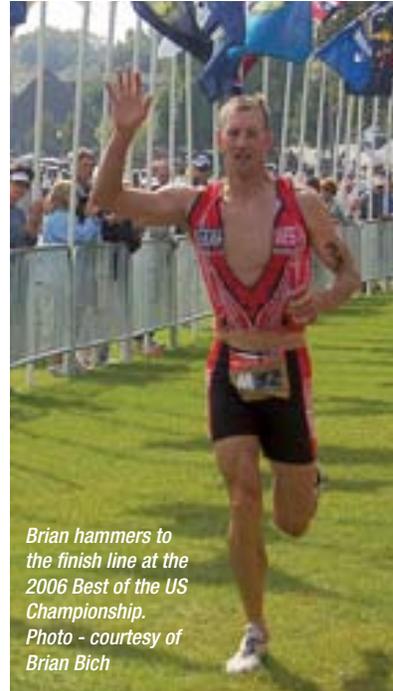
and USAT Nationals in Alabama. I'm also considering the USAT Half Ironman National Championship as well.

STEVE: Is an iron distance race in your future plans?

BRIAN: Not at this time. I've only done one iron distance race in the past (Lake Placid in 1999) and I didn't really enjoy all the training that is required to complete an Ironman successfully and safely. I also value the time I spend with my family too much to spend all those hours training and more importantly, recovering. I won't rule one out for the future, though.

STEVE: You've been in the sport quite a long time, Brian. What advice would you give to someone starting out?

BRIAN: Try to focus on consistent training based on key (focus) workouts followed by a few days of active recovery, rather than training based on volume and number of miles. Really challenge yourself during the focus workouts and



Brian hammers to the finish line at the 2006 Best of the US Championship. Photo - courtesy of Brian Bich

see SPOTLIGHT on page 37



Andy Schultz celebrates his second place finish during a recent Kenda Cup West series race. Photo courtesy: Andy Schultz

Race Day Boost

New loading dose protocol

Author : Steve Born

The majority of the studies of the main ingredient in Race Day Boost (RDB), sodium tribasic phosphate, showed remarkably positive, performance-enhancing results with administration of 1 gram (1000 mg) of the nutrient four times daily for four straight days. That is our dosage recommendation for most athletes. However, it is theoretically possible that lighter weight athletes may be able to achieve the same benefits using less of this nutrient.

With that in mind, here are some suggested usage instructions—based on a range of body weights—which you may want to test in your training:

It's important to note that these are estimated doses and that there is no research to back up these suggestions. Therefore, should you choose to give these protocols a try, it is absolutely necessary that to test this and any protocol for Race Day Boost in training before using it in the four days prior to a race.

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SPOTLIGHT from page 35

avoid going too hard on your recovery days. Remember, that hard training breaks your tissues down, but you improve and get stronger during the active recovery period. In other words, in order to gain the full benefits from hard training, you must rest!

STEVE: Thanks for taking the time to talk with me today, Brian, congratulations again on your recent award, and best wishes to you for another successful season!



Gear Review : Bar Mitts

Author : Brian Frank

Since moving to Montana in 1995, keeping my feet and hands warm while riding in the fall/winter/spring has been an ongoing challenge for me. I solved the cold feet problem years ago with the Northwave Arctic and the Sidi Hydro cycling shoes - both are insulated and waterproof. If it's really cold, cold weather booties over the top work great. However, up until a couple of months ago, the hands remained a problem. I've tried all manner of gloves - thick, thin, etc., and no matter what, after an hour or two, my fingers would be frozen. Dexterity and safety were also compromised with the heavy duty gloves.

So I was more than a bit curious when I saw the small ad in the back of a cycling magazine for the Bar Mitts. Just from looking at them, they made sense - big neoprene mitts attached to the bars of a bike. I ordered a pair and the inventor, Ward Graham, turned out to be a Hammer fan and recognized me when I called and introduced myself as "Brian from Montana". He said, "Oh, you're the guy that writes all of those articles." I said I wasn't sure if I was the guy he was thinking of and he said "Yeah, from Hammer Nutrition". He sent me a pair promptly and passed my first test for companies I do business with - nice, knowledgeable staff, efficient service, quick delivery - just how I like it. Now I'm a fan of his company and product too!

I've used the Bar Mitts now in a wide variety of temperatures and absolutely love them. Finally, no more cold hands, no matter if it's 30° or 0°. In fact, I've actually stopped wearing full fingered gloves altogether unless it's under 20-25 degrees, then a light pair of full fingered gloves, like our Giordana model, keeps my hands nice and toasty no matter how cold it is. Also, I found that bike control - operating the brakes/shifters, getting your hands in and out of them to wipe your nose or signal a turn is easy with the Bar Mitts. They work equally well with Campy, Shimano, and SRAM levers.

With a price tag of \$64.95 and free shipping if you order online, Bar Mitts cost about as much as a nice pair of heavy winter cycling gloves would and work infinitely better. When I told Ward I was going to write about them in my newsletter, he wanted to offer you an even sweeter deal. If you order now, he'll take 20% off the SRP and still pay the shipping. That reduces the cost to \$51.95, delivered. However, his web site can't calculate the discount, so you have to call him or e-mail him directly to get this "Hammer" deal. Here's his info - **(775)622-8048** or **barmitts@charter.net** and be sure to tell him you read this article.

Note: We have no plans to start reviewing all types of gear and equipment in Endurance News. However, when we find a cool product or something that we think most of you may not be aware of, we'll talk about it as above. We have no financial interest and are not receiving commissions on sales resulting from this article.

Reader Recipe

Q: Are there any issues with mixing multiple flavors of Hammer Gel into a single flask?

A: Not at all! Here are some of my favorite combinations. Enjoy! Randy P.

Banana + Chocolate = Banana Split

Chocolate + Vanilla = Milk Shake

Orange + Vanilla = Orange Creamsicle	Raspberry + Tropical = Tangy Berry
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Raspberry + Orange + Banana =
Fruit Punch





Photo - Greg Profeta

What a Pain!

Myofascial trigger points (MTrPs)

Author : Dr. Lowell Greib MSc ND CISSN

For the most part, athletes pride themselves on being able to push their bodies and minds to new heights. The motivation and drive to succeed is admirable, but may come with a price. Believe me, I have been a guilty party when it comes to trying to turn pain off during hill repeats, speed work or intervals! But, what am I really doing to myself by ignoring a pain response? Can there be long term repercussions? Most importantly, is there something that can be done about it? Simply put, the answers are a resounding “yes”!

Injury in any form of exercise can be devastating! Whether one is participating for general health maintenance or working at being a world class status, injury slows, or even stops activity. This can rapidly lead to deconditioning and, once back on the proverbial horse, the athlete needs to play catch up. A vast majority of pain syndromes that are experienced by athletes are muscular (more precisely, neuromuscular) in origin. The pain patterns are often a result of what are known as myofascial trigger points (MTrPs).

A MTrP is described as a tender spot within a shortened band of muscle and can now be “observed” using magnetic resonance elastography (MRE). When the trigger point is compressed it may illicit local discomfort, referred pain, or both. Through careful examination of signs, symptoms, pain patterns and manual palpation a practitioner

can isolate trigger points that may be causing neuromuscular dysfunction and pain, which ultimately increases the risk of injury. The pain generated from MTrPs is a diagnosis of exclusion, meaning that they are not usually the result of frank trauma, inflammation, degeneration, neoplasm, or infection. Further to this, the pain should not be as a result of neurological pain. With this said, it becomes evident that a proper screening exam for each patient is

For the most part, athletes pride themselves on being able to push their bodies and minds to new heights.

necessary to ensure that diagnoses other than neuromuscular dysfunction are excluded.

One of the larger mysteries is why (and how) these MTrPs form in the first place. The most accepted theory is that there is local dysfunction of the sarcoplasmic

reticulum (SR). It is the job of the SR to release calcium ions during muscular contraction and absorb them in muscular relaxation. When dysfunctional it is believed that there is a prolonged release of calcium ion leading to prolonged contracture of the local muscle. This in turn leads to increased metabolic demand and functionally localized compression of capillaries. Capillary compression causes local ischemia, a restriction of blood circulation. An “energy crisis” results which up regulates the release of certain chemicals from local tissue (neuroactive substances and inflammatory mediators) that will augment pain.

Research indicates that dry needling, using acupuncture needles, is an effective means of resolving MTrPs.

In fact, this form of resolution may be as effective as some alternatives in hypodermic injection therapy, which use saline, local anesthetics, steroids and Botox. Historically, needling MTrPs dates back to the 7th century AD when a

see PAIN on page 41

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Montana Monroe
Photo - Tony Schiller

Can You Learn to Be a Big Race Performer?

Author : Tony Schiller

I'd like you to meet Montana Monroe – Duke of Whitefish, my new King Charles Cavalier Spaniel puppy.

Monroe is smart, athletic and loves to run. He was potty trained in a single day and has picked up most of his obedience skills within a few tries. And based on the way he flies over, under, through and across the obstacles at our neighborhood playground, I felt certain he was headed for stardom in agility competition.

I heard about a top notch agility training school for dogs close by and signed him up for the first of three 8-week obedience courses required before he's allowed into agility. The first session was just for us handlers and I left feeling very confident since he'd already mastered most of what we'd be learning over the next several weeks. When we showed up the following week, I felt certain he was going to be the star of the class.

Oh how wrong I was. The moment we walked through the door under the bright lights on the big stage of doggie school, something went terribly wrong. With one look at the roomful of some 30 other dogs, Monroe was beside himself in excitement and forgot absolutely everything he'd learned.

After completing the first 8-week course last night, Roger, the school's master agility trainer, pulled us aside to share some tips while giving me a good scolding for being a homework slacker. Knowing that wasn't true and seeing

that all the other dogs were now gone, I asked if we could give it another try. To Roger's surprise, Monroe gave a stellar performance and even demonstrated his hurdle technique.

I felt vindicated and assumed he'd be impressed. That's when Roger said, "Well, he certainly has the potential and appears to be a nice dog, but y'know, maybe he's just not cut out for competition." His inference didn't sit

Take time in every workout to reframe your approach. Accept your talent and believe anything is possible. Trust your ability to go deep when it counts without needing to prove it so often.

well me, the competitor, so I pushed back, "Yea but isn't that a learned thing?" Roger responded, "Well, in my experience, no. Either a dog has it or he doesn't."

I've been thinking about our conversation a good bit since then. My stubborn side wants to keep going, just to prove Roger wrong. And maybe he was using some reverse psychology to get just that kind of response. After all, he stands to make a tidy sum in fees if Monroe and I go all the way through agility school.

Maybe he's right about dogs but the whole experience got me thinking about a lot of athletes I know who seem to be better during training than they are in

aces. Those same athletes also tend to perform better in smaller races than they do in their biggest competitions. Until late in my college career I was that kind of athlete – tough as nails and capable of pushing others to the brink in training only to get dusted by them on race day.

Studying two role model athletes helped me become a better big meet performer. They were my college teammate, Daryl Henderson, and marathoner Dick Beardsley. Both guys showed few moments of brilliance in training, but boy did they ever shine when the stage was biggest. In Daryl's case, he consistently ran 4th or 5th on our team in training only to obliterate entire fields in the biggest meets including nationals. As

for Dick, he never could have matched Alberto Salazar's epic training efforts, and yet ran stride for stride with him to the finish of the 1982 Boston Marathon losing by only 2 seconds with a 2:08:54.

So what was it about these guys that made them so special? Both were late bloomers who upon breaking through, quickly accepted their talent and adopted the belief that anything was possible. That acceptance, though rare, was critical. By accepting their talent they grew to have a deep trust in their ability to dial it up and to go deep when it counted. This allowed them to let go of the need to prove it everyday in practice.

see TONY on page 41



Pesticides

That go "bump" in the (metabolic) night

Author : Bill Misner, Ph.D.

One of the biggest inhibitors of optimal thyroid hormones is pesticides and excessive fluoride. People have a right to know what's in their food so they can choose foods with fewer pesticides. The government can and should take steps to dramatically reduce the number and amount of toxic chemicals, including pesticides, in the food supply. Each of us

can opt for food safety today by choosing to purchase produce low in pesticides and by buying organically raised fruits and vegetables as frequently as possible. With this first step we can protect our families' health and preserve our own future and the future of the environment from the harmful effects of pesticides. The vegetables least likely to have pesticides on them are onions, sweet corn, asparagus, sweet peas, cabbage,

eggplant, broccoli, tomatoes, and sweet potatoes. The fruits least likely to have pesticide residues on them are avocados, pineapples, mangoes, kiwi, papayas, watermelon and grapefruit. Some pesticides are higher than others in common plant foods; unless we are consuming entirely organic (which is obviously the ideal choice), we need to make better choices based on foods containing high amounts of pesticides.

Reference : <http://www.foodnews.org/reduce.php>

RANK	FOOD	SCORE	RANK	FOOD	SCORE	RANK	FOOD	SCORE
1	Peach	100 (highest)	17	Summer Squash	53	33	Sweet Potato	29
2	Apple	93	18	Pepper	51	34	Tomato	29
3	Bell Pepper	83	19	Cucumber	50	35	Broccoli	28
4	Celery	82	20	Raspberries	46	36	Watermelon	26
5	Nectarine	81	21	Grape (Domestic)	44	37	Papaya	20
6	Strawberries	80	22	Plum	44	38	Eggplant	20
7	Cherries	73	23	Orange	44	39	Cabbage	17
8	Kale	69	24	Cauliflower	39	40	Kiwi	13
9	Lettuce	67	25	Tangerine	37	41	Sweet Peas	10
10	Grape (Imported)	66	26	Mushrooms	36	42	Asparagus	10
11	Carrot	63	27	Banana	34	43	Mango	9
12	Pear	63	28	Winter Squash	34	44	Pineapple	7
13	Collard Greens	60	29	Cantaloupe	33	45	Sweet Corn	2
14	Spinach	58	30	Cranberries	33	46	Avocado	1 (lowest)
15	Potato	56	31	Honey Melon	30	47	Onion	1 (lowest)
16	Green Beans	53	32	Grapefruit	29			

We want you!

We are always looking for photos of our athletes to use in catalogs, mailers, newsletters, on our website, and elsewhere. Are you interested in being included? Send copyright-free photos to athleteupdates@hammernutrition.com with the name and date of the event, as well as the photographer's name, and you just might see yourself in print!



TONY from page 39

So they trained in more of a relaxed state, storing up the mental focus and physical energy for their big moments. Finally, probably as important as any, they raced to higher standards than most, defined by several internal measures that went so far beyond winning. As long as they met those, they were always happy and that's why you seldom saw Daryl or Dick uptight before a race or frowning afterward.

These are all things that are learnable, not necessarily for Monroe, but for each of us. Take time in every workout to reframe your approach. Accept your talent and believe anything is possible. Trust your ability to go deep when it counts without needing to prove it so often. Give yourself more space and room to experience relaxation and recovery. And finally, go crazy with excitement more often, just like Monroe.

Tony Schiller is the reigning ITU 50-54 world champion and has won nearly 100 races outright since becoming a Hammer athlete 22 years ago. He directs an amazing kid's triathlon. Check it out at www.mkidstri.com.

PAIN from page 38

Chinese physician inserted needles into "a shi" points (local areas of tenderness). By using a needle for therapy a direct "micro-stretch" effect can be elicited on the shortened sarcomeres which locally increases circulation and decreases inflammation. Needle insertion directly inhibits pain receptors, releases endorphins and affects spinal-cord pathways.

It is through proactivity that an injurious state can be avoided. Instead of the "it's broke and I'll fix it" attitude, performance can be maintain and even increase with the introduction of the philosophy of prehabilitation (including treatment of MTRPs). If we, as engaged athletes, make regular visits to medical specialists in exercise science, we can not only improve our everyday health, but also decrease our morbidity and improve longevity!

Dr. Lowell Greib holds degrees in biochemistry, chemistry, and naturopathic medicine. He offers his expertise in exercise science at private clinics and is faculty at both the Canadian College of Naturopathic Medicine and the Canadian Memorial Chiropractic College. Lowell holds the CISSN designation from the International Society of Sport Nutrition. He can be contacted at askthedoc@mahiganmedicine.com or toll-free at 1-877-624-4633.



Jamie and her crew celebrate her win at the 2008 Badwater.
Photo - Chris Kostman

Ultrarunning Magazine Awards

Hammer athletes shine!

Author : Steve Born

In the March 2009 edition of Ultrarunning magazine, a number of highlights and achievements are listed in the chapter "Ultrarunning Year in Review" with a few Hammer Nutrition athletes making these prestigious and coveted lists.

Cracking the top ten in any category is a major feat, and in the "2008 Runners of the Year" category, Erik Skaden of Folsom, CA was #9 of the men ultrarunners. Arguably, Erik's top performance in 2008 was co-winning the Tahoe Rim Trail 100 with Mike Wolfe of Missoula, MT (they worked together in the last 25 miles of the race, finishing together in 18:59), sharing the 2008 USATF 100 Mile Championship.

Byron Lane, who was our "Spotlight Athlete" in the last edition of Endurance News, received enough votes to rank #15.

Of the women ultrarunners, Jamie Donaldson of Littleton, CO was #2 and Connie Gardner of Medina, OH was #5 in the 2008 Runners of the Year category.

It gets even better for Jamie... check this out:

Performance of the Year - Women

- Jamie's win at the Badwater 135 Mile race was ranked as the #2 performance of the year. (Note: Jamie's win at the Umstead 100 Mile race also received votes as did Connie

Gardner's win at the Burning River 100 Mile race).

Significant '08 Course Records

- Jamie's time of 8:17:24 set a new course record for the 31-year-old Rocky Mountain Double Marathon race in Laramie, WY
- Jamie's time of 16:21:10 set a new course record for the 15-year-old Umstead 100 Mile race in Raleigh, NC
- Jamie's time of 26:51:33 set a new course record for the 13-year-old Badwater 135 mile race in Death Valley, CA

Jamie also topped the women's list in number of wins in 2008 with seven, and appears to have started 2009 off with a bang, winning the Delano Park 12 Hour Run (Decatur, AL). Her 78 miles accrued over 12 hours set a new course record and gave her the overall win, male and female!

Connie Gardner and Anita Fromm (Albuquerque, NM) also made the "Four or More Wins" list, winning a total of four races in 2008. Byron Lane topped the men's "Number of Wins in 2008" list with a total of eight. Recall that Byron also was the top American, first Masters male, and 3rd overall in the 24-hour race at The Ultracentric Division.

Congratulations to Jamie, Connie, Anita, Erik, and Byron!



The author poses at the finish of the 1987 Race Across America. Photo - courtesy of Chris Kostman

The Seven Pillars of Athletic Performance : Efficiency in Action, Part One

Author : Chris Kostman

Life on the endurance path has taken me around the planet and into many universes over the last 27 years. Competing in 3,000 mile cross-country bicycle races, 100 mile snowshoe races through the Alaskan wilderness, France's 48 hour Triple Ironman triathlon, I've covered a lot of ground. I also scuba dive in underground caves and deep wrecks and have led or participated in many, many expeditions into terra incognita.

The primary assets I've used on my quest over all these years are DESIRE and EFFICIENCY.

If you have the desire to live on the endurance path, this article will teach you efficiency, a character trait and process which should be your primary focus. With desire and efficiency in your metaphorical quiver, the world is yours.

My emphasis on the universal principles which transcend the barriers between "different" sports and between sport and "real life" has enabled me to become efficient and proficient at a multiplicity of pursuits. I may have spent eighty percent of my training time on a bicycle, but when I venture into other athletic worlds, I become an outdoor athlete and multisport savant because of this approach. You can, too.

This system, the Seven Pillars of Athletic Performance, is applicable to essentially

every form of athletic discipline, whether in training or during competition. In this article I demonstrate its usage in many of the most common sporting endeavours: cycling, indoor cycling (also known as Spinning), skiing, swimming, martial arts, strength training, and the foot sports, running, snowshoeing, and hiking.

The Seven Pillars

7

PILLARS of Athletic Performance

- Breath
- Intensity
- Effort
- Hydration
- Nutrition
- Heart Rate

Think of these pillars as the seven core components of athleticism in action. These components are what you're actually doing during your athletic experience, rather than as you prepare for athletics. In other words, what I discuss here is athletics, whereas visualization, massage therapy, a healthy day-to-day diet, a good night's rest, and the like are preparation for athletics.

In the ideal athletic pursuit, you will maintain all seven pillars at maximum efficiency in order to achieve the desired outcome, whatever that may be. In the real world, however, you'll find that you will place your emphasis on just a few of these pillars at any given moment. In so doing, your focus on the specific few pillars will "pick up the slack" for the other pillars. The net result is increased efficiency, which equals a faster, stronger, better, and higher performance athletic experience. Here's how it works:

Posture

Postural integrity is perhaps the key component in the meaningful enjoyment of long-term health and fitness, but postural awareness is also a tool for increasing efficiency during athletics. Attention to proper posture can aid in delivering more meaningful and useful performances or allow variety in the way muscles are used. This, in turn, extends endurance, builds more muscles, or otherwise increases efficiency. Additionally, attention to posture allows one to reduce undue stress in parts of the body which are not specifically or primarily in use at that moment. For example, removing unnecessary tension from the upper body allows more energy to be diverted to the lower body. Here are some sport-specific examples which highlight the importance of posture and the benefits to be gained from particular attention to posture:

Cycling: This is the most biomechanical sport of all, so posture is key to properly harnessing the necessary muscles, avoiding cramps and tightness, and staying fluid and smooth on the bike. Proper posture is also critical for aerodynamic slipperiness.

Indoor cycling: Indoors, posture can also allow the upper body, back, arms,

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SEVEN from page 42

and abdomen to be cultivated during the workout, making the experience much more of an all-body workout than its outdoor cousin.

Skiing: Posture keeps you upright on the boards, more aerodynamic, loose enough to soak up the bumps, and comfortable enough to put in dozens of runs in a day without pain or debilitating fatigue.

Swimming: Hydrodynamic slipperiness is "free speed," so proper posture is key to fast and efficient swimming with no additional energy cost.

Martial arts: Delivering and receiving powerful movements is rooted, literally, in proper stance, core integrity, and kinesthetic awareness of your body and how it's working.

Strength training: Posture is critical, of course, to safe strength training, but is also useful for developing subtle variations on different movements in order to tweak the most gains from the workout.

Foot sports: Postural awareness keeps your feet light on the ground with as little impact on the body as possible and preserves joints, muscles, and bones over the miles. Posture can also improve traction and footing, and help to minimize overall fatigue.

Breath

Breath brings energy, in the form of oxygen, into your body (not to mention prana, but that's another article). Efficient transport of oxygen to your muscles requires an excellent and consistent supply of the oxygen. The more oxygen you can deliver to your muscles, the more work you will be able to perform with those muscles. A byproduct of cardiovascular training is increased cardiovascular efficiency, but what I'm talking about is the use of specific breathing techniques - or attention to breath - in order to immediately affect efficiency during the actual performance.

One of the most startling physiological experiences of my life took place during the Race Across America in 1988. I was climbing Berthoud Pass (elevation 11,307 feet) in Colorado on day four of

the race. Considering the grade, high altitude thin air, and race conditions, the eight miles per hour I was riding seemed to be a good pace. But I knew I could do better by delivering more oxygen to my muscles. Having planned for this before the race, I had my support vehicle pull along beside me while I was riding and hand me an oxygen mask attached to a large tank of pure oxygen carried in the van. The flow of pure oxygen into my lungs and out to my muscles was like a shot of electricity; instantly, my speed jumped from eight to fifteen miles an hour, all the way up the mountain!

The lesson learned is that breathing efficiency is paramount to athletic performance. You may not have a tank of pure oxygen at your disposal, but taking ten deep breaths (fully extending the entire chest cavity, not just the upper chest) will flood the bloodstream with oxygen, help muscles recover, and lower your heart rate quickly. Use this whenever you need a supercharge.

Breath is also a calming and centering mechanism. Attention to breath can be very powerful for focusing energy, reducing tension in the body, developing explosive power (as in strength training or sprinting), not feeling pain, and keeping the mind clear of distracting, counter-productive thoughts.

Intensity

Intensity is what you are working against, what is "holding you back," what your effort is actually directed towards. How you interact with, or modify, that intensity can vary widely. In controlled athletic situations, such as strength training or indoor cycling, you can dictate what intensity you will work against at any given moment. In real world athletics, you often cannot change the intensity, so that intensity becomes the focus of your efficiency equation. Since the intensity is fixed and unchangeable, you work with the other

six pillars to find the optimal method for challenging that intensity. Following are some sport-specific examples of intensity.

Cycling: Headwind (the faster you go, the greater the effort is directed towards overcoming aerodynamic drag), grade, gear choice, and rolling resistance. Only gear choice is within your control. Indoor cycling: The amount of resistance you set on the bike.

Skiing: Density of the snow and grade. Steeper grades require less effort to go fast, while softer snow requires more effort to traverse efficiently.

Swimming: Water current, temperature, and water buoyancy (salt water is more buoyant than fresh water, thus helping

support the swimmer's body in a more streamlined position). You pick where you swim, but once you're in it, there's no way to change it.

Martial arts: Density of the surface area that you are contacting. Picking a softer sparring partner or wearing gloves is the only way to minimize the intensity of what you are contacting!

Strength training: Amount of weight you are lifting, pushing, or pulling. You are totally in charge, so remember that more is not necessarily better.

Foot sports: Grade, surface texture, and headwind. In a race, you have to run what you are given to run, whether it's mountains, snow, dirt, sand, pavement, uphill, downhill, or in a windstorm. In training, it's up to you,

Next Issue: Part Two of The Seven Pillars of Athletic Performance: Efficiency in Action

Chris Kostman has lived on the endurance path since 1982. Besides competing in races as diverse as the Race Across America, the Triple Ironman, and the 100-mile Iditasport Snowshoe Race, he also organizes endurance events such as the Badwater Ultramarathon and Furnace Creek 508 and a series of five day cycling and yoga camps in Death Valley and Mt. Shasta. This is his eighth article for Endurance News. Learn more at www.adventurecorps.com.





Riders prepare themselves for the San Dimas Stage Race.
Photo - Suzy Degazon

Changing places

From athlete to assistant race director

Author : Suzy Degazon

Chances are if you are reading this you may ride a bike, run, or swim, and most likely compete in a few events during the year. Recently I had the chance to see racing from a different perspective, that of the race organizer, and I would like to share a few snippets from my experience!

Now normally the week before a big event I am in tapering mode, relaxing and hydrating, yet as assistant race director for the San Dimas Stage Race (SDSR), which is a 3 day cycling race, I found myself with hardly time to swim bike or run except cycle to the printers, exercise my fingers on the keyboard, and answer last minute questions from cyclists.

Since my husband Al is the race director our home was turned into a warehouse with everything being sent to our home. I was also in charge of sponsorship and preems so there were boxes of merchandise everywhere!

The Saturday before the race I found myself on the road course with a broom and other members from the SCVELO club sweeping the course of debris and even cold patching parts of the road as the city did not have it in their budget. At the same time another group was delivering fliers and parking permits door-to-door to the residents who would be affected by the race. I felt like I was doing community service and most certainly looked the part as my friend Jodi and I patched up the road!

There were 850 cyclists signed up, home stays to find for certain pro teams, and out of town cyclists, as well as the race bible which needed completely going over. I spent Monday re-doing the race bible with the cash purses, sponsorship logos, an updated opening letter, and an interview with the past race directors as this was a mile stone event celebrating the 10th year of the race!

As race day approached the volume of work doubled, and on Wednesday evening we had a "packing party" as we filled 850 Hammer Nutrition bag with sponsor goodies including Hammer Gel! That took a whole night to do with the help of SC Velo club members. Along with the goodie bags, 850 envelopes had to be put together with race numbers, a race bible, and start time information for the time trial. A bit of panic set in when we realized we were missing numbers 900-999! They arrived just in time.

Thursday, the day before the race, saw registration take place, a managers meeting for the pro teams, an emergency printing of 100 race bibles, t-shirt pick up, and last minute preems to take care of. It made for a long day and a late night and then BOOM, RACE DAY!!

Day 1

Set up started at 6 a.m., as the first athlete went off at 9 a.m. for a 3.8 uphill time trial and our first calamity was no safety pins for the race numbers! We forgot to put them in the race envelopes

so I dashed back to the house to retrieve them. Needless to say we soon ran out of the pins as we left them on the check-in table and cyclists were just taking handfuls. (Quick tip if you ever need to buy these pins in bulk go to your nearest dry cleaner... better still, remember to put the pins into race packets!) Day one was soon over for the racers and I finally saw my bed at 1am after sorting out banners and washing HEED and water containers.

Day 2

Day 2, on 3 hours of sleep, I found myself at 4:30 a.m. in the blackness of early morning putting up fencing for the road race. We have good volunteers who unselfishly give their time to set up and break down the course, meanwhile the athletes are sleeping and dreaming of glory! The fencing is up, the hay bales are in position, the alienators are dividing the flow of traffic and volunteers are in position. I was so tired I tripped over some fencing and sported a huge gash on my left hand! The cyclists started filtering in to sign in those who had won Leader Jerseys or King of the Mountain Jerseys in their division picked up their jersey. That day was a long day for the organizers, there were a few crashes and even a broken collarbone! We had plenty of medics on the course and everything was taken care of smoothly and efficiently. When lunch time rolled around we had food coordinators take care of all volunteers out on the course.

When the pro men took off for their 84 mile race I decided to run the course in the opposite direction... I really needed to run! So I set off on what became a 10 mile loop as the security police would not let me run against the flow of traffic

see PLACES on page 45

PLACES from page 44

over Bonelli Dam despite my Assistant Race Director status. I ended up running an extra 3 miles through an off road section to get onto the course and wow was it worth it! What an amazing sight to see 150 pro cyclists duking it out for the yellow jersey, King of the Mountain points, Best Sprinter and Best Young Rider (Under 25).

When there were no more cyclists on the road, and all the racers were refueling for the final day on Sunday, the volunteers got to work cleaning up the race course. Our permit required the course to be given back to the city at 5 p.m.! Along the entire 7 mile loop we unclipped banners, picked up water bottles, gel wrappers, etc... I swear the road and park looked cleaner! I was exhausted from the day and came close to falling asleep while eating dinner that evening.

Day 3

The final day approached to overcast weather and rain! It is 4 a.m. and cold. I am functioning on 3 hours sleep and it's beginning to feel like a triple iron distance race! Today is the day that racers compete for preems, which means in the one mile loop they are going as fast as they can to win Hammer Gel, Endurolytes, Mavic tires, Profile-Design Bars, Polar CS400 monitor, Serfas tires, Simple Green products, Incycle gift certificates, Voler arm/leg and knee warmers to name but a few.

Today was also the childrens race, the mayor of San Dimas was there but because it was raining the Big Bird from Red Robin could not be there. The sun finally came out for the pro men who

raced full throttle for 75 minutes! It was exciting to watch the race that had been planned for 4 months finally reach its peak and the final podium is called! Despite cyclists wanting to race who had not made the time cut and riders complaining about the prize money, it had been a great success! The day is over and the cyclists having gone home... some with yellow jerseys, some with road rash, and hopefully all with a good experience!

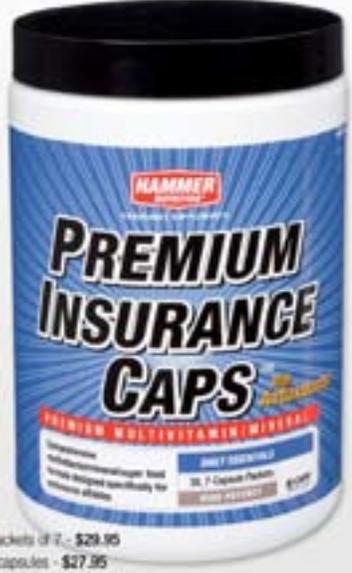
I race and I compete, but I have a completely different outlook on racing now. How easy it is for us as athletes to complain about a race, demand entry fees be refunded due to a variety of reasons, be rude to a volunteer because we are having a bad day, and grumble at the price of an event yet the bigger picture is how much time and effort has been put into staging the event, chasing down sponsorship, and recruiting a good race committee! Hay bales do not magically appear overnight, law enforcement is quite pricey, fencing, permits, council meetings, etc.all cost money. Porta Potties are put out on the course and cyclists are still found watering gardens or walls. They're disqualified as that can effect whether or not the city allows the race to go ahead next year! Yet the volunteers (in this case SC VELO) are the true heroes who unselfishly give their time to produce a great race! SO always thank a volunteer, respect the rules of the road and read the race bible. A week after the race we are still at it writing thank you notes to all sponsors, dealing with a few cyclists who demand refunds etc!! Even dare I say looking at ways to improve next year's race! And I can finally get back to doing what I love, training for ultra triathlons!

A pat on the back

I just got your company's monthly/seasonal periodical. WOW!! Nice job. Good articles and Hammer Nutrition certainly seems to understand the science behind their product.
- Jim G.

Thanks Jim, we appreciate the feedback!

Your performance foundation



30 packets of 2 - \$29.95
210 capsules - \$27.95
120 capsules - \$17.95

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Mark Tarr crosses the finish line in first place at the 2006 Two Bear Marathon.
Photo - Brendan Rothen
www.stumptownphoto.com

Come Run in Montana!

The Hammer Nutrition Two-Bear Marathon and Half Marathon

Author : Angela Nock

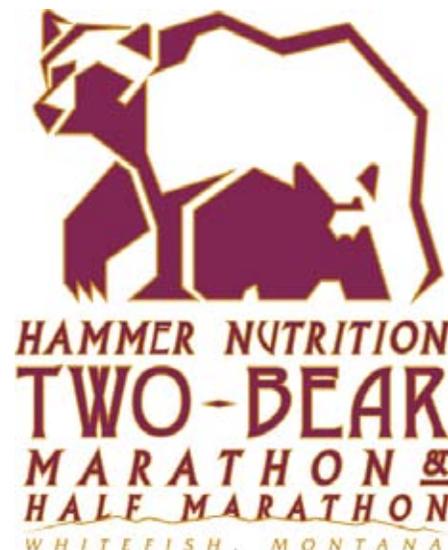
We are pleased to announce that Hammer Nutrition is the title sponsor for the 2009 Two Bear Marathon/Half Marathon right here in Whitefish, Montana! Our hometown marathon, which is a non-profit event, has grown in popularity since its inception in 2005 and in 2008 drew participants from 27 states and 4 countries! So, if you're a runner looking for a killer fall marathon

(1/2 trail, 1/2 pavement, with a total elevation gain of 4,600'), or you'd like a challenging 1/2 marathon, you ought to check this one out. While you're in town for the big event be sure to stop at our headquarters to say hello!

When - September 13, 2009

Where - Whitefish, Montana

Info - www.twobearmarathon.org



Ride in North Carolina

Sundog Cycling Camp

Author : Andy Stenberg

Founders Andy Stenberg's and Scott Baker's goal at Sundog Cycling Camp is to make every ride your best. We have carefully mapped out a balanced itinerary that captures the full essence of the mountains of Western North Carolina.

All participants will be lodging at our luxury mountain home for the duration of their stay. Unlike most traditional camps, SCC will be serving healthy gourmet meals that feature high quality protein with lots of fresh fruits and vegetables.

All rides will depart from the cycling house so there is no packing and unpacking necessary. Sundog Cycling

Camp will be focusing on cycling specific training but optional run and swim time will be available daily. The Sundog Cycling Staff is among the most knowledgeable in the business and we are committed to each and every member who comes to the camp. We understand that this is your training and vacation time, and we will help you see as much of this beautiful area as possible, on and off the bike.



Camp Features

- 5 day camps in the mountains of Western North Carolina
- One on one attention
- Riders grouped based on fitness level
- Luxury mountain home accommodations
- Bike assembly, service, parts, and maintenance as needed
- Physiological testing available*
- Massages available*
- Bike fittings available*
- Unlimited training and nutritional advice from qualified SCC staff
- SCC jersey for all participants
- Unlimited access to Hammer Nutrition products
- and more!

**Advanced reservation required*

Check us out at
www.sundogcycling.com
or call (828)293-1000 to
reserve your spot today!

2008 Hammerbuck\$ recipient Lorie Hutchison after her 4th place Badwater finish
Photo - Chris Kostman



Race Report

2009 Hammerbuck\$ winners... so far

Margaret Thompson

Race Name - USA Cycling Cyclocross National Championships
Race Location - Kansas City, MO
Finish - 3rd in 55-59 age group
Award - \$250 cash



Philippe Kozub

Race Name - 2008 USAT Halfmax Long Course Triathlon National Championships
Race Location - Boulder City, NV
Finish - 1st in 30-34 age group
Award - \$1500 credit



Martin Scates

Race Name - 2008 Ironman Coeur d' Alene
Race Location - Coeur d' Alene, ID
Finish - 2nd in 45-49 age group
Award - \$750 credit

Martin and Vicki Scates pose with Martin's Ironman trophy. Vicki had a good day herself, finishing 17th in the 35-39 division.

Though Martin placed in the 2008 Ironman, he was unaware of the Hammerbuck\$ program and did not submit his information until this year. That's why we consider him a 2009 winner.



Race for Hammer and get paid!

Over \$19,000 in cash and credit awarded to 25 winners in 2008. You could be next!



Complete info at [www.hammernutrition.com/buck\\$](http://www.hammernutrition.com/buck$)





Stephen gets a training weekend in with coach Brian Walton, Andre Noe, and Bob Roll.
Photo - courtesy of Stephen Armes

Race Report

Hammer athletes

Scuba Suzy

Those yummy Hammer Bars make a good snack between dives. I took them on the Sundiver this Sunday and am grateful I did!



Randy Olsen

Here is a pic from my recent Tuachan Duathlon overall win.



Jay Burke

Some friends and I went to race the Dawn to Dusk in Scottsdale, Arizona on Dec 6th and 7th of last year. As it ends up we did really well. I put the specifics below. I had all the boys in Hammer most of the time and we got a huge shoutout when we showed up to the podium in our gear. Thanks Hammer for the great fuel!

Results:

1st place Corporate
3rd place 4 person teams Overall
10th overall all teams

Riders: Jay Burke, Scott Nichols,
Scott Richards, Mike Dawson



Jim Perkins

On my way to a first place age group finish (60-64) and 400.7 miles at the 24 Hour Sebring Ultra. I had a great winning combination of a dedicated crew, Perpetuem, Hammer Gel, Endurolytes, and of course, Recoverite. Thanks Hammer, for pulling me through my 1st 24 hour race.



Carlo DeLong

A junior Hammer Ambassador.



Jeremy Dodds

I recently completed the Cowtown Marathon in Fort Worth, Texas. Conditions were tough with temps in the high 30's to start and only getting into the low 40's with winds of 20 to 25 mph.

This was my ninth marathon but it was my first following the Hammer Nutrition race protocol. I ate no breakfast allowing additional sleep time. I had a single Hammer Gel about 5 minutes before the race started and then one about every 20 minutes during the race to get approx. 270 calories per hour. I drank water about every 10 min. at the aid stations to get approx. 24 oz per hour. I did not drink any of the other product (a typical sugar based drink) that they had at the aid stations. I carried a flask of concentrated Perpetuem that I started using about an hour and a half into the race. I also took an Endurolytes, a Mito Caps, and a Race Caps Supreme at the .5, 1.5, and 2.5 hours marks.

Result: In the last 10 miles when other runners were slowing down, I was feeling stronger. Overall I ran a negative half-marathon split for the race and took over 4 minutes off my PR! I finished 12th out of 906 finishers (4th out of 90 in the 40-44 male age group) and crept closer to my goal of a sub-3 hour marathon with a 3:02:27.

Jennifer Van Allen

Just wanted to thank you for your great product! I came in first in the 24 Hour National Championship Run in McKinney, Texas using Hammer Gel and now I'm headed to the World Championships! It's a great product!

Laura Sophiea

Just wanted to touch base and let you know I had my first race of the season last Sunday at the Lavaman Triathlon in Kona. I had an incredible race... finished 11 minutes faster than 2008, had the 2nd fastest bike split of all the women (one pro was faster), finished 2nd amateur overall by 55 seconds and was the 5th overall woman!

Troy DeLong

I just thought I'd send you my results from a recent race. It was the Death Valley Trail Run 30K on Feb. 7th. I finished in a time of 2hrs., 16 min. and placed 5th overall and 2nd in my age group. Believe it or not, it was only 48 degrees and raining the whole time we were there.

Eric Sullivan

Just wanted to send you some photos that my support crew took from the 24 Hours of Sunlight (www.24hoursofsunlight.com) ski race this past weekend where I set the world record last year. I ended up winning again this year. Thanks for the great product that made it seem almost easy. I ate a lot of the Apple-Cinnamon gels and drank the Sustained Energy for a great combo that was quick and easy to get down. Thanks again!



Erika Proctor

I ran the SunTrust National 1/2 Marathon with Hammer Gel (Tropical) during the run and used Race Caps before the run and took 13 minutes off my time! If that isn't awesome enough, I felt energized the whole time-no cramping, no run-down feeling, no collapsing in a heap at the end.

Nicole Best - Germany

Having qualified for the Ironman Triathlon World Championships at this years Ironman Austria, I traveled to Hawaii's beautiful Big Island to take part in the world's most famous triathlon race. As dawn broke on Oct. 11th, 2008, all hell broke loose in the usually calm and warm waters in Kona Bay. The start of the race lived up to its billing as the world's biggest washing machine and was more of a fight than a swim. Despite swallowing more sea water than is really desirable, I headed off on the bike course feeling surprisingly strong. Out on the bike course it was unbelievably hot and strong winds made it difficult to hold on to the handlebars; nevertheless, 112 miles and 8 Hammer Gels later, I made it back to the transition zone, safe and sound, and headed off on the 26 mile run. The first 10 miles were hot, hilly, and very, very hard, but then the Hammer Gels kicked in and I got a good rhythm going which saw me overtake 245 people over the rest of the run. In the end, I was a daylight finisher (my main goal) with 30 min. to spare and finished 4th in my age group in a time of 10h 33mins. The next evening, I had the honour of taking the stage at the awards dinner to receive my trophy. Thanks to the support from Hammer Nutrition, it was a fantastically rewarding world championships for me.

Best wishes from Nicole Best
www.nicolebest.com





Race Report

Hammer athletes

Jimmy Dean Freeman

I've been running and competing in ultra-distance races since September of 2005, and marathons since 2002. I also happen to be a distance running coach. I thought for a long time that stomach issues were just something a distance runner had to deal with, as traditionally running + eating don't go well together. I had tried all of the major products on the market... GU Energy Gel®, Gatorade® Endurance sports drinks, Clif® bars, Clif Shot® gels and Bloks®, Powerbar® bars, gels and sports drinks. After about 20 marathons and 5-ultras (1-50k, 2-50 milers, and 2-100 milers), a fellow coach, Matt Armstrong, suggested I try Hammer products...



It started with Hammer Gel and Endurolytes, then expanded to Perpetuem, Race Day Boost, Anti-Fatigue Caps, and Liquid Endurance. Training in essentially desert-like conditions (Los Angeles, CA) most of the year, I noticed an immediate improvement. My next three races went like this...

- The 2008 Palos Verdes Marathon on May 5th (as a training run) - 3:03, my second fastest marathon, a negative split, no cramping in 80+ degree heat and on rolling hills, good for 2nd in my Age Group (30-34) and 6th overall, and

I still ran a tough 16-miles on the trails the next day feeling great

- The 2008 Bulldog 50k on August 23rd - 4:27, a 55-minute PR at that distance, on a brutal course with two 4-mile, 2,000-ft climbs up Bulldog Mtn in 75-85 degree heat, good for 3rd in my Age Group (30-39) and 6th overall
- The 2008 Rio Del Lago 100-miler on Sept 27th/28th - 19:49, a 6-hr, 38-min PR in, at times, 100 degree heat, 1st place in my Age Group (30-39), 3rd place overall!

To say that I've become a bit of a Hammer "evangelist" would be an understatement. I'm a proud and grateful user of Hammer products, and I'm expanding my upcoming performance fuels and

supplements to include Recoverite, Hammer Bars, and Premium Insurance Caps.

Thank you for doing what you do, how you do it. I am grateful for the very logic-based science that goes into your healthy, organic products. I'm not just a better athlete now (less than a year later), I'm a smarter athlete (I hope).

With deep gratitude,
Jimmy Dean Freeman
Jimmy@CoachJimmy.com

3 Disciplines

We sponsor all of longtime client Kenny Krell's triathlons/duathlons (3 Disciplines), including a couple of youth races he puts on. He recently sent us this photo from one of the kids races.



DO YOU WANT TO HAVE YOUR RACE REPORT PUBLISHED?

ATHLETES...do you want the Hammer Nutrition community to know what you're up to? Have a great, copyright-free photo you want to share? Send a short email to athleteupdates@hamnernutrition.com (please put Race Report in the subject line) about your recent accomplishments and we'll try to include it in our Race Report.

Photo note: please ensure that all photos submitted are high resolution at 300 dpi or at least 500 kb in size. Thanks!

Keith Rieger

Just a quick note to thank you for all your great products and support.

In addition, I wanted to let you know (thanks to Hammer Nutrition) all went well with my Desert Classic Duathlon - USAT Southwest Regional Duathlon Championship last weekend (www.desertclassicduathlon.com).

The race is a qualifier for the world duathlon championships, therefore it attracts a pretty strong field. Chris Foster won the men's pro event and Kim Loeffler won the women's pro event. I was fortunate enough to finish 6th overall amateur out of 450... 1st in my age category (M40—44) out of 33... and qualified for the world championships in Concorde, NC on September 26, 2009 (which I plan to participate in).

Sincerely,
Keith Rieger



Dan Black

Dan Black at the 6th Annual Seabrook Lucky Trail Marathon March 15, 2009 in Seabrook, Texas. Finished 3rd in age group 55-59, 18th overall.



Susan Prater - New Zealand

Many thanks, Steve, for your assistance with my fueling plan for the Wellington to Auckland 7-Day Challenge. I made the minor adjustments to my fueling plan as per your suggestions and it worked out perfectly. I was somewhat skeptical about doing the majority of the event just using HEED but I gave it a go and was really happy.

Thanks again,
Susan Prater



Arizona Hiking Shack

I wanted to thank you, Hammer Nutrition, for your sponsorship of the Phoenix Summit Challenge. Attached are a couple of photos taken at the summit of Shaw Butte (one of the seven summits), with a few of the participants helping to show their appreciation of Hammer Nutrition's support of the event.

A total of almost 800 folks participated in the event, with over 500 climbing all seven summits in one day, and the

remainder of the participants either doing the seven over two days or climbing four of out the seven summits in a day. The all access category had 18 participants who competed.

Again, many, many thanks for your generous support!

Sincerely,

Charles Kurre
Arizona Hiking Shack





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Feedback

Kathleen McCormick

For someone who is prone to saddle sores and chafing, I am extremely pleased with the protection that your new Seat Saver cream has to offer. I arrived at the February Hammer Camp in Tucson with less time in the saddle than I had hoped for to prepare for the mileage ahead, so I thought it a perfect opportunity to put your Seat Saver to the test. After 6 consecutive days of riding, 310+ miles, and 19+ hours in the saddle, I finished out the week with absolutely no saddle soreness, bruising, chafing, or irritation of any kind. Not only that, the product smells really good!

Thanks for saving my seat,
Kathleen McCormick
Alamo, California

Save your seat!

SEAT SAVER- All-natural chamois and anti-chafing cream



INGREDIENTS: Pure olive oil, shea butter, distilled water, calendula, yarrow, chamomile, comfrey, stearic acid, beeswax, zinc oxide, vitamin E oil, basil oil, clove oil, lavender oil, peppermint oil, and tea tree oil.

2 ounces - **\$12.95**

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