



ENDURANCE NEWS

August 2007 : **Issue 055**



The endurance athlete's comprehensive knowledge resource since 1992

Over 40,000 mailed quarterly!

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Replacement vs. Replenishment Revisited

We realize that we just discussed this topic in the previous issue of Endurance News, but it's a subject that we feel compelled to continue to discuss, because we don't want you to ever experience disappointing results or DNF due to the bad fueling information that popular endurance sports magazines continually espouse.

Pick up a magazine nowadays and you're sure to find articles written by a pro triathlete or cyclist, or some other fuel/supplement company-sponsored athlete, proclaiming to have discovered the keys to successful fueling. More than at any other time in the company's history-due largely to the proliferation

of these articles-we're receiving a substantially higher volume of phone calls and emails questioning whether or not the fueling recommendations that a certain athlete wrote about in a magazine is valid. Sad to say, most-to-all of the time the information is completely wrong and is, quite frankly, self-serving. And that's why we continue to proclaim, with greater zealousness than ever, that you not fall victim to these bankrupt fueling philosophies that recommend that you replace what you lose. Instead, we emphasize the importance of replenishing your body with what it can comfortably accept.

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NEW PRODUCT! Hammer Balm

For over 20 years we've been treating the athlete from the inside out, so to speak, with our superior line of fuels and supplements. We've helped tens of thousands of endurance athletes increase energy, improve athletic performance, and recover well. Providing superior products has always been a tenet of ours, so it's with great pride and excitement that we announce our first product intended for external use (dripping Hammer Gel down your chin does not qualify as external use): Hammer Balm, a triple-action transdermal muscle balm.

Hammer Balm penetrates deep into sore, tired muscles to reduce inflammation and alleviate pain. Early tests confirm that most subjects experience a 50%-75% reduction in pain within 20 minutes. Now that's some

potent muscle balm! A touch of clove oil gives Hammer Balm a pleasant scent, not the menthol-heavy fragrance so often found in other muscle balms.

This latest Dr. Bill formulation is an all-natural muscle balm made with premium therapeutic ingredients like MSM, ginger root, clove oil, and Arnica. A small, family run business in Washington manufactures Hammer Balm exclusively for us. A little Hammer Balm goes a very long way, so our one-ounce bottle offers much more relief than you might think at first. You can also try our quarter-ounce sample size, suitable for travel, too.



Two additional products, an all-natural foot powder and a hand sanitizer are in the pipeline. Look for their debuts in the next few months.

Welcome

From the office of Brian Frank

Reflection of Hammer headquarters. Photo - Angela Nock



Welcome to the 55th issue of Endurance News. It's the height of your racing season and we've got a ton of invaluable information for you in this issue. I'd like to extend

a special welcome to the thousands of new readers since the last issue. I trust that you will find this publication to be one of your most valuable resources for a long time to come, as our veteran readers have. Do note that you can download all 54 back issues in PDF format from our website by clicking on www.hammernutrition.com/en. Honestly, I don't think there is as comprehensive a resource that can be had for free, or any price really, anywhere on the internet. Big words for sure, but once you've read a few issues, I'm certain you will agree. Also, remember that you can receive Endurance News electronically for free as well by hitting the newsletter button on our home page.

In print continuously for 15 years and reaching 40,000 issues per quarter, EN is one of the longest running and highest circulation information resources in the endurance world. I say this not out of pride, but more so you'll know the stats on this publication and can appreciate the magnitude of this undertaking. We are now printing 48 pages in full color for your reading enjoyment. Since we are continually finding more content that we can squeeze into a single issue, you can expect that page count to grow in the future. Increasing from 4 to 6 issues per year is also under consideration.

One thing that I keep thinking is missing every time we put an issue to bed is a 'letters from our readers' page.

If you have feedback on the newsletter content that you'd like to share in upcoming issues, write to us by sending an e-mail to letters@hammernutrition.com. We'll sort through them, edit them for clarity and brevity and put the most cogent ones in upcoming issues. You should also use this e-mail address to send suggestions for articles that you'd like to see in upcoming issues.

As usual, this issue is chock full of interesting news that you will not likely be reading anywhere else. There is discussion of new Hammer products on the following pages, but there is so much more with well over 30 articles, that you might miss them if you don't read every page carefully. Of special note is the introduction of our Hammer Balm transdermal pain reliever representing a new category of products for Hammer Nutrition, which we will refer to as our "body care" line. Hammer Balm was developed by the not so retired Dr. Bill Misner, who has continued to be active and involved in new product development. His creative wheels never stop turning and we are elated to continue to partner with him and bring you the results of his amazing genius. Of course all of the Body Care products will be all natural and surprisingly effective, as you would and should expect.

Other articles of great importance for you to read carefully and share with as many athletes as possible is our "Replace What You Can Assimilate" fueling theory. In short, it's the only way to fuel successfully beyond 2 hours. Again, big words, but ones we can support with science (NO research has ever demonstrated successful replacement beyond 30 to 40%!) and thousands of success stories from athletes who failed miserably trying to use the alternate

strategy.

I continue to be mortified by the frequency and number of articles that appear in the sports media pedaling the baseless, opposing theory we refer to as the Replace What You Lose school of fueling. They all say pretty much the same thing - Some "expert" drones on about fluid loss, sodium loss and calories burned and then concludes by suggesting vaguely that you try to come as close as you can to replacing everything on a 1:1 basis. We've been calling BS for years on this subject and will continue to do as long as these ridiculous articles persist in other publications. The interesting, but not surprising, common element in these articles is their hesitance to give you any hard numbers to go by. We on the other hand, are not afraid to put those numbers out there for all to see - 28 ounces of fluids, 600mg of sodium and 280 calories per hour. These are predicted maximums for a 165 pound athlete while cycling. Truthfully, most athletes achieve their results with far less and calories usually have to be cut by 40-50% when running. As my good friend Bill Nicolai is fond of saying "it's not how MANY calories you can consume during an event, but how FEW you can consume without bonking or slowing down". Now ask yourself, why would a purveyor of fuels suggest you consume less unless it was the truth?

Besides increasing or decreasing % for lower or higher bodyweight, those are the numbers that will give you the best chance of success. Anyone who says otherwise either does not know what they are talking about or is trying to sell an all-in-one (fluid, sodium, calories) product. We offer much more discussion on the Replace What You Can Assimilate

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fueling theory in our other publications and on our web site. Please read as much as you can on this topic, the success of your big A race depends on it.

My last words on this fueling subject, for this issue anyway, is a call to all magazines to STOP printing this misleading and potentially dangerous information. The sooner they do, the sooner the DNF and post event medical tent visit rates will drop.

In the "you asked for it, so we did it" category is the new loose versions of our Premium Insurance Caps multi vitamin product. We will offer them in 120 count and 210 count non packeted sizes for greater convenience for those of you who do not prefer the daily packets. This will allow for easier moderating of daily dosages to fit your level of activity, current state of health, quality of diet, etc. This will also make it easier for your family members to use the products by taking between 1 and 7 capsules according to their needs. If you don't currently have all of your family taking this product, now would be a good time to get them started.

In May we reached a milestone of sorts with the addition of our 100,000th client. Number 100,000, if you are reading this, thank you for being you. Despite that somewhat large number, we continue to value and treat each and every one of you as the important individual that you are. Nothing less will ever suffice. That is why I personally monitor and reply to your suggestions and constructive criticism at suggestions@hammernutrition.com. If there is anything you think we could be doing better or are not currently doing at all, by all means, send me an e-mail and let me know.

Enjoy the read in good health,
Brian



PIC'S
Your performance foundation is now available in 3 sizes

Angela Nock

- **Superior overall health support**
- **Fill nutrient gaps in your diet**
- **More energy throughout entire day**
- **Better digestion**

Premium Insurance Caps (a.k.a. PIC's), Hammer Nutrition's comprehensive multivitamin/mineral/super food supplement, and one of the three Daily Essentials products, is now available in three sizes for your convenience! After many years of offering the product in one format-30 individually wrapped packets containing 7 capsules each (210 capsules total)-we've decided to expand your options. As mentioned in Brian's welcome letter just one column over, PIC's will continue to be available in this original version. However, after receiving lots of feedback from athletes who choose to split up the 7 capsules over two days, we now offer this great product in non-packeted 210-capsule and 120-capsule containers. With these non-packeted, "loose tablet" containers, the task of taking divided doses and/or fewer-than-seven capsules daily becomes much easier.

For those who are new to Hammer Nutrition supplements and want to give

this powerful multivitamin/mineral supplement a try, our 120-capsule, non-packeted container is the perfect "starter kit." At 7 capsules daily, this provides a 17-day supply; however, if only 4 capsules daily are necessary, this provides a full month's supply. For those of you who prefer the larger 210-capsule version-an amount that lasts a month or more, depending on usage-you now have two options.

One superb product, three convenient options... available now!

REAL ATHLETES : REAL RESULTS

Read what athletes are saying about Premium Insurance Caps!

"I have used many of your products through the years with great success, however recently I put them to the best test ever. I used the Premium Insurance Caps during Chemo treatments and never got sick, not even a runny nose! Thanks for making such great products."
Tom P.

"I truly believe in the product. I really think that the Premium Insurance Caps are the reason that I haven't been sick for over a year now."
Phil Z.

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Our Mission

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

Endurance News features insightful articles on diet, nutrition, training and 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 of Endurance News are available at
www.hammernutrition.com

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

From the Saddle of Steve Born

From the office of Steve Born

Athlete silhouette / Photo - Angela Nock



Welcome to the summer issue of Endurance News!

If based only on my travel schedule, there's no doubt we're hitting the

busiest time of the year. In fact, I'm due to hit the road as soon as I finish this column. This trip is to Sunriver, Oregon for the Pacific Crest Endurance Weekend, a series of races (mainly duathlons and triathlons) that we've been sponsoring for the past couple of years. Of all the great events I get to go to annually, this one is my favorite, not just because everyone at AA Sports always puts on such a wonderful event, and not just because it's held in such a scenic location, but also because it takes place in the same resort town where my parents live. It's always nice to be able to see my parents and enjoy some of Mom's home cooking.

A day or two after I return, I'll be off to New York to attend the 25th anniversary edition of the Tupper Lake Tinman Triathlon, an event we've sponsored for the past couple of years, but one that I've not attended until now. Michele Cote puts on a great race, and I'm very thankful for the invitation she has extended to me for this year's race. Despite the travel burden, it's one I'm truly eager to attend.

By the time you read this both these races will be over. July, however, should be another busy month of travel with one race, the ChelanMan Multisport Weekend, already confirmed on my

schedule. This is the first year we've sponsored the Total Health Events races, so it will be another exciting new event for me. I'll most likely also appear at the Valley Girl Triathlon in Spokane, WA. Now in its fourth year, Hammer Nutrition has been there from the start, and it's grown tremendously. Marla Emde has done a fantastic job with this event, and I'm hoping my schedule allows me to attend this year's edition.

Even though I'm not big on all the travel involved, I really enjoy being at these events. It's a great way to promote our mission and products, and I always enjoy having the opportunity to meet so many great people. As the season progresses, other events will come up on my schedule. If any happen to be ones you're racing in or attending, please find me! Meeting our customers is a very special part of my job.

The 8th edition of The Endurance Athlete's Guide to Success

The 8th edition of "The Guide" is just about complete. We've included metric conversions wherever necessary, which makes this resource even more user-friendly worldwide. The biggest change is the length of The Guide, now over 100 pages long, a good 30 pages longer than the current edition. The basic information hasn't changed, though: we want to inform endurance athletes how to properly fuel prior to, during, and after exercise. Since its humble beginning several years ago, untold thousands of athletes have come to trust The Endurance Athlete's Guide to Success to help them enjoy higher quality workouts and better race results. We promise to have the new edition out soon, but in the meantime, you can download a free copy of the current

edition at www.hammernutrition.com/guide.

Ultra Training, Courtesy of The Complex

After retiring from competitive ultra distance cycling a few years ago, my training mileage doesn't come close to the big numbers I used to put up. In fact, I can't really say that I'm even training anymore, though I still love riding. I've not had any major athletic goals in mind (other than not suffering too much on the Highline Hammer). Besides, what could top that crazy Double Furnace Creek 508 a few years ago? Plus, a lot of other great things happened to me, the biggest and best one being getting married.

Neither my wife, Cassandra (a two-time RAAM champion), nor I compete any more, but when warm weather comes, we start getting that urge to do something athletic goal-wise, if only to have something to focus on so that we can maintain some semblance of fitness. Neither of us will probably ever be "RAAM fit" again, but fat and lazy isn't exactly on our agenda, either. So, for this year's fitness challenge, we opted for the PAC Tour Brevet Week in Wisconsin, which began May 19. This is a weeklong series of rides designed primarily for cyclists attempting to qualify for Paris Brest Paris (PBP), a 1200 km event held every four years in France. In most parts of the U.S., riders have two or more weeks to complete the 200, 300, 400, and 600 km rides, but at the Wisconsin Brevet, it's all done in one week. Add 'em up-1500 km (930 miles) in one week. Ouch! I didn't even train that much for the Double 508!

Neither Cassandra nor I had any

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Angela Nock

Our race sponsorship will exceed 2000 events this year, but one that truly stands out is the International Cycling Classic, also known as Superweek.

This 17-day event, the longest-running multi-day bike-racing series in the U.S., has been held annually for the last 37 years throughout Wisconsin and Illinois. This year's schedule features spectator-friendly races on mile long criterium courses. Over 165,000 people cheered on the 5,500+ entrants last year. Now that's a big event!

You might get this newsletter after Superweek has started, but we hope that

you can check out at least some of the action. For more information, go to www.internationalcycling.com.

Here's the schedule:

Due to space limitations, we've listed just the locations of the race. Check out the Superweek website for complete race names.

7/13 Chicago, IL
7/14 Blue Island, IL*
7/15 Bensenville, IL*
7/16 East Troy, WI*
7/17 Hales Corners, WI*
7/18 Lyons, WI*

7/19 Milwaukee, WI*
7/19 Shorewood, WI*
7/20 Green Lake, WI*
7/21 Waukesha, WI*
7/22 Evanston, IL*
7/23 Hartford, WI*
7/24 Cedarburg, WI*
7/25 Green Bay, WI
7/26 Sheboygan, WI
7/27 Kenosha, WI
7/28 Milwaukee, WI
7/28 Milwaukee, WI
7/29 Whitefish Bay, WI

**National Racing Calendar (NRC) event*

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inclination to do the entire 1500 km, as we had no plans for France, and clearly we weren't in shape for that much riding. However, we did want to reconnect with longtime PAC Tour/RAAM friends Lon Haldeman and Susan Notorangelo, and we wanted to soak up the ambience of a challenging week to get the training blood flowing again. So on to Wisconsin we went.

Unfortunately, I just hadn't spent enough time on the bike even for our limited participation. Many work and personal obligations and the often obnoxious Whitefish weather just didn't afford me much saddle time. Instead, a good chunk of my training came while I was sitting at the computer, letting the Compex do its thing. I had never done more than three or four Compex sessions in a week, but in preparation for Brevet Week, I started at two 55-minute Endurance workouts per day and built up to four per day. I still find it hard to believe I did that much (or that I could spend that much time at the computer), but the darn thing really works your muscles!

With minimal on-the-bike time, but much time spent strapped to the Compex, we went to Brevet Week. Again, neither of us had any designs on doing the entire 1500 km but we did want to get some good quality miles in. Well, the first day was a 200 km ride-OK, I can manage that with no problems-but the second day was 300 km. Now, the last time I did over 300 miles in two days was more than a couple years ago. Amazingly, although my aerobic capacity was not quite up to par, my muscles felt really good and I was able to not just survive those two days, I actually felt pretty strong. Of course, I used the Recovery function after each of the rides (and more than once!), and that really helped. Seriously, the beneficial effects were quite noticeable. Along with a couple doses of Recoverite immediately following the rides, it made a huge difference in how my muscles felt.

Cassandra and I did 200 km of the 400 km and the 600 km rides, held later on in the week. I was pretty amazed with how strong I felt. For the week we totaled 900km (560 miles), prepared more with Compex training than on-

the-bike training! I've been using the Compex for quite awhile now, and I've always thought it's a pretty amazing piece of machinery. But this "mainly Compex" training, prior to doing more miles in a week than I've done in a long, long time, really opened my eyes to just how powerful it is. Of course, I don't recommend that you do all your training via the Compex, but when you're crunched for time and/or when the weather doesn't allow you to get outside to train, the Compex is an ideal way to work the muscles. I thought I was sold before, but now, after my Brevet Week experience, I'm even more convinced. I know this is just one experience, but if you've been hedging on giving the Compex a try, I'd like to encourage you to do just that... it really, really works!

I hope you enjoy the rest of this edition of Endurance News. Remember that we're here for you, so if you have any questions about any of the products, or if we can assist you, please contact us.

I hope you're having a great season so far!

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In a recent fueling-specific “Athlete Education Series” mailer that we sent out, we highlighted some of the advice these so-called “experts” are suggesting:

- 1.) Because you’re losing fluids during prolonged exercise and you can train your body to assimilate more fluids, drink as much as you can.
- 2.) Because you’re burning upwards of 700-900 cal/hr, and because you can train your body to process more calories, you should replenish calories in equal to near-equal amounts.
- 3.) Because you’re losing lots of sodium during prolonged exercise, you should replenish those losses milligram per milligram, up to 3000 milligrams an hour.

We cannot emphasize enough how absolutely incorrect these recommendations are and how disastrous the results usually are when following advice such as that. In fact, in 20 years of working with endurance athletes we’ve yet to find one who has achieved success following these recommendations.

The truth is that the human body is simply not capable of replenishing that which it loses in amounts that come close to those losses. We often quote Dr. Bill to illustrate that position:

To suggest that fluids, sodium, and fuels-induced glycogen replenishment can happen at the same rate as it is spent during exercise is simply not true. Endurance exercise beyond 1-2 hours is a deficit spending entity, with proportionate return or replenishment always in arrears. The endurance exercise outcome is to postpone fatigue, not to replace all the fuel, fluids, and electrolytes lost during the event. It can’t be done, though many of us have tried. The human body has so many survival safeguards by which it regulates living one more minute, that when we try too hard to fulfill all its needs we interfere, doing more harm than good. At an easy aerobic pace, the rate of metabolism increases from a sedentary state to a range of 1200-2000%. As a result, the body goes into “survival mode” where blood volume is routed to working muscles, fluids are used for evaporative cooling mechanisms, and oxygen is routed to the brain, heart, and

other internal organisms. Interestingly, it is NOT focused on calorie, fluid, and electrolyte replacement, as some of the “experts” advise.

Again, this means that your body cannot be replenished at the same rate that it becomes depleted. Yes, your body needs your assistance in replenishing what it loses, but that donation must be in amounts that cooperate with normal body mechanisms, not in amounts that override them. The good news is that your body already “knows” it is unable to immediately replenish calories, fluids, and electrolytes at the same rate it uses/loses them, and it has the ability to effectively deal with this issue. That is precisely why we don’t recommend trying to replace hourly losses of calories, fluids, and electrolytes with equal amounts; instead, we recommend a smaller replenishment donation, one that cooperates with normal body mechanisms.

Two Analogies That Help De-Mystify Fueling

In the introduction to an article that will appear in the 8th edition of The Endurance Athlete’s Guide to Success (which is happening soon; we promise!) we offer two analogies that we believe will help athletes understand faulty fueling - a barrel and gas tank - and although it’ll still be a little while before the latest edition of The Guide is available, we thought we’d include this information now, because we believe it will illustrate our position regarding replacement versus replenishment. First the barrel analogy:

Imagine a barrel of water with a tap at the bottom. Open the tap and stick a hose in the top of the barrel, filling it at the same rate that the water flows out the bottom. The input replaces the output. That works fine for a barrel, but our bodies are far more complicated than barrels. The water we drink doesn’t go directly to our pores to provide sweat to cool us. Carbohydrates don’t go straight down our esophagus to our muscles to provide energy. Instead, we have complex mechanisms that transport, distribute, break down, store, retrieve, and utilize the water and nutrients that we consume. It’s impossible just to plug in a hose and re-supply at the rate we expend nutrients and water. If we try to refuel thinking that our body is like a

barrel, and all we need to do is measure what comes out the tap and then adjust the input hose accordingly, we’ll soon be in big trouble. We’ll get oversupplied, disrupt our internal systems, and suffer physiological and performance consequences that range from merely uncomfortable nuisances, like stopping often to pee, to the rare, but fatal case of extreme water intoxication.

The second way to picture faulty fueling is the gas tank analogy. Your car has a gas tank that stores enough gas to run the engine for many hours. You can refill in a few minutes, and you’re set for another several hours of drive time. Some people try to fuel this way, but the human body does not come equipped with an internal fuel tank. We do have some storage capacity, such as muscle glycogen and body fluids, but we can’t slug down 500 calories and a liter of water in a few minutes and think that we’re good for an hour or more of exercise. Our tanks must be external (e.g., water bottles) and we must adjust our intake to our body’s intake capacity. We can only re-supply as much as we can process at a time, and that means the right amounts at the right time.

Our Recommendations

Hydration: We have found that most athletes do very well under most conditions with a fluid intake of 20-25 ounces (approx 590-750 milliliters) per hour. Sometimes you may not need that much fluid-15-16 ounces (approx 445-475 ml)/hour may be quite acceptable-sometimes you might need somewhat more, perhaps up to 28 ounces (approx 830 ml) hourly. Our position, however, is that the risk of dilutional hyponatremia increases substantially when an athlete repeatedly consumes more than 30 fluid ounces (approx 870 ml)/hour. If more fluid intake is necessary (under very hot conditions, for example) proceed cautiously and remember to increase electrolyte intake as well to match your increased fluid intake. You can easily accomplish this by consuming a few additional Endurolytes capsules.

Calories: Intake of 250-280 cal/hr, on average, is sufficient for most endurance athletes. Lighter weight athletes (< 120-125 pounds/approx 54.5-57 kg) may need less, while heavier athletes

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(> 185-190 pounds/approx 84-86 kg) may need slightly more. Experiment in training to determine your specific requirements, using 250-280 cal/hr as a base to work from.

Electrolytes: Electrolyte expenditure, and thus replenishment, varies tremendously between athletes, and it can also vary considerably for one athlete during the course of an event. Body weight, fitness level, weather conditions, acclimatization level, and biological predisposition all greatly affect electrolyte depletion and the need for replenishment. That's why the hourly Endurolytes dose can range from 1-6 capsules/hr. That being said, a good starting dose to consider is:

- Lighter weight athletes:
1-2 capsules/hour
- Medium weight athletes:
2-3 capsules/hour
- Larger athletes:
4-6 capsules/hour

Remember though, these are only suggested starting doses and the amount you need may be different, and may vary from hour to hour.

Back to the "Fueling For Success" Athlete Education Series piece

In the recent fueling-specific "Athlete Education Series" piece, we brought up two other "sure to ruin your race" bits of bad advice-again, suggestions that are usually recommended by a professional endurance athlete:

- Because you're going to be losing lots of sodium during the race, add extra salt to your food in the week leading up to the race.
- Because you're going to be losing lots of fluids during the race, hydrate constantly by keeping a water bottle with you at all times, drinking liberally.

Regarding these two particular points, we recently received the following email:

These very informational mailings (The Athlete Education Series) have been a nice surprise to receive, but I had a question on the latest "Fueling For Success" volume. There is a short section entitled "Sure to Ruin Your Race

Recommendations" that I could not find addressed anywhere else in the issue, and wondered if someone could shed a little light on them for me...

They were:

1. Add extra salt to your food in the days leading up to the race
2. Hydrate constantly by keeping a water bottle with you

I (Steve Born) replied to this client's questions this way:

Oftentimes we try too hard to help ourselves prior to an event, with one of our actions being "taking extra salt so I can top off my sodium reservoir." We know that's not necessary, simply because our diets are already sodium heavy; consuming additional sodium is counterproductive and will not enhance performance.

The same is true when athletes over-consume water/fluids ("constantly hydrating" as is written in the mailer) in the hopes of having extra fluids "on board" come race day. Yes, you do need to consume fluids, but far too often athletes overdo it.

A good practice to follow to make sure you're consuming enough fluids daily is to take your body weight and multiply it by .5 or .6-that'll give you the amount, in fluid ounces, that you should be aiming for on a daily basis. For a 180-lb athlete that would translate to 90-108 ounces of fluid daily. I believe that to do more than that is overkill and will not enhance your performance. In fact, you may very well be overly diluting your electrolyte levels in the blood (dilutional hyponatremia) by doing that, and that's definitely not going to promote enhanced performance.

So the reason we mention that hydrating constantly and drinking freely (liberally, without regard for how much you're consuming throughout the day) is not a good practice to follow is because, like most everything, if a little is good a lot is not necessarily better. Excess fluid intake (and the same is true with calories and salt/electrolytes) can have as many negative consequences as not consuming enough. As I'm fond of saying, give your body a helping hand, but don't kill it with kindness.

Summary

We are so passionate about providing you, our valued clients, with accurate, time-tested/proven, scientifically sound information regarding what constitutes proper fueling. Why? Because we want you to enjoy your training and racing, not wondering whether or not you're going to suffer from any number of unpleasant, race ruining, fueling-related maladies, courtesy of poor quality fuels and equally poor fueling advice. That's why we bring up this topic over and over; it's with your best interests in mind!

Whether you've been a client for many years or are reading this information for the first time, you can see that our recommendations are almost always (if not altogether always) less than what conventional wisdom and/or what some "athlete-now-expert" suggests. It might seem counterintuitive, but proper fueling does not mean, "replace what you use up," but "replenish what your body can assimilate and utilize." We want you to use only as much as your body can assimilate, and those amounts typically measure far less than what the "experts" propose. THAT'S proper fueling!

Now, coming from a company that makes fuels, it might seem strange that we're suggesting that you use less of our product, but that's exactly our point. Of course, we want you to use our products, but we want you to use them in the appropriate amounts. Bottom line is that no matter how good a supplement or fuel may be, if you're not using the correct amounts of it, you're not getting the best benefits possible.

So as your season continues, take to heart, keep in mind, and apply this recommendation-Replenish what your body can accept, not what it loses-and we guarantee you'll enjoy higher quality workouts and better race results.



The Universal Solvent

Water : Not only for internal use

Lowell Greib, MSc ND

Water is the most important and abundant substance on Earth and in our bodies. We repeatedly hear advice about the importance of hydration to keep all of our body's systems running optimally during prolonged exercise. This advice is always about our water consumption- not too much, not too little, but just enough to keep our insides functioning and sweat cooling us. However, water has a number of physical features that also make it useful in its external applications, and that's what I'd like to highlight in this article.

Just take a few moments to mentally check off some of these external uses: ice pack, hot shower, whirlpool, hot compress, soaking bath, refreshing plunge in a cold mountain lake, washing and cleaning wounds, and even the relaxing sound of rain or flowing water. All of these therapeutic benefits derive from water's physical properties.

Above freezing, water is fluid. In this state it provides maximum surface contact. That is why a hot, wet compress provides more relief than a hot, dry compress; you have much more surface contact with a wet medium. Likewise, putting a solid cold pack on a sore muscle is often just enough, but submersing the same limb, briefly, in ice water is quite another matter, and can offer much more therapeutic benefit.

In addition, water is an excellent heat conductor; it transfers heat about 25 times faster than air. You can tolerate a

dry sauna at 120°F, but you couldn't stay for a moment in a hot tub at the same temperature.

Using Water Therapeutically

For therapeutic purposes, I will define "hot" as 98°-104°F and "cold" as 55°-65°F. For home use, I recommend these ranges.

For the most part, heat is used to increase circulation and metabolism. Although it may seem counterintuitive, cold, when used properly, may also increase circulation and metabolism. It is usually the first-aid of choice after an acute injury, such as a sprain, to reduce swelling. When using cold, allow short applications followed by a re-warming period; ambient air will do just fine. This will allow for tissue to "flush" itself of some of the inflammatory metabolites. In chronic injury, where heat may be utilized, alternating hot and cold often

long cold applications may depress circulation. In certain circumstances, the depressive effects of long, cold applications may be warranted, however, one must also note the incompatibility between the circulatory and metabolic effects of long and hot. An increase in metabolism requires a corresponding increase in circulation to support it. Depressed circulation in an area of increased metabolism can damage surrounding tissue.

Therapeutic Cleansing

A simple bath or shower may yield several therapeutic benefits. We have the hygienic benefit of removing microbes and the sweat and dirt that they grow on. We feel better, and we're socially acceptable again. We feel relaxed and refreshed. We can make this ritual even more effective by using the above information.

For instance, many of us take a warm or hot shower at either the beginning or the end of the day, or soon after a workout. A simple addition to this daily

routine is to rinse yourself with cold water, about as cold as you can tolerate, at the end of each bath or shower. This short exposure to cold will stimulate systemic circulation and metabolism.

We can also use our shower or bath to help out our lymphatic system. In addition to producing immune cells, the lymphatic system removes excess water from body tissues, and absorbs

Table 1			
APPLICATION	DURATION	EFFECT ON CIRCULATION	EFFECT ON METABOLISM
Short hot	< 5 minutes	Stimulative	Stimulative
Long hot	> 5 minutes	Depressive	Stimulative
Short cold	< 1 minute	Stimulative	Stimulative
Long cold	> 1 minute	Depressive	Depressive

makes the best choice. A typical protocol might be up to five minutes of heat application followed by one minute of cold application. The alternating temperatures induce a "pumping" effect that can enhance therapeutic benefit.

Table 1 outlines the circulatory and metabolic effects of hot and cold applications:

Please note that both long hot and

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Angela Nock

It is estimated that on average, Americans throw away 3.5 pounds of trash each day, one third being packaging. That's over 425 pounds of packaging thrown out per person each year. That's a lot of trash!

Like many other companies, we attempt to package and present our products with a minimum packaging. For example, we help reduce waste by offering our most popular product, Hammer Gel, in a recyclable 26-serving jug. By using the jug with the 5-serving reusable Hammer Flask or the SoftFlask instead of packets, you cut down on the amount that you throw away. Think of it: one recyclable bottle vs. 26 pouches. We realize the convenience of the single-serve packets (all of our gels and most of our powder products are available in them); however, consistently using the

multi-serving containers can drastically reduce waste.

Another way to carry the gel is in the Gel-Bot fuel system that we sell. This further eliminates the need to carry multiple items (packets and/or flasks and water bottles) by combining the gel with your water, while keeping it separate, in the same water bottle. For more information on the Gel-Bot and SoftFlask, read the article on page 15.

In addition to reducing the amount of waste, another aspect of eco-friendly packaging is recyclability. All of our containers are made out of recyclable-friendly #2 plastic, so keeping them out of landfills is a breeze. When you're finished with your multi-serving container, just peel the label off and rinse it out.

We are also working on becoming more eco-friendly with our printing paper.

You may have noticed this year that you are receiving more mail from us, from the new Athlete Education Series to our ever-expanding Endurance News to the yearly catalog. As we grow and continue to provide you with unequalled product information, we are researching our options in the area of recycled paper.

This may not be as exciting to read as the latest fueling protocols, and it won't make you faster on race day, but how we treat the environment is something that affects us all. At Hammer Nutrition we take environmental protection seriously, and we encourage you to do the same. Together we can make a difference.

HOT TIPS

Quick access to Endurolytes

When you're out for a ride, consider carrying your Endurolytes in the "quick coin" pill holders, tucked under the leg of your bike shorts. It won't affect your pedal stroke at all; however, because the quick coin is quite noticeable it will remind you to take your Endurolytes consistently. Plus, you may find that it's easier to get to them instead of reaching around to the back pocket of your jersey.



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fatty acids and transports them to the circulatory system. Unlike the circulatory (blood) system, our lymphatic system is not closed, and relies on skeletal muscle for its circulation throughout the body.

We can assist our lymph's natural cleansing by externally "replicating" part of the internal pumping action that moves lymph. This process is called skin brushing. The simplest way to do this is to brush your skin toward your neck, where lymph drains into the circulatory system, with a natural bristle brush or sea sponge. This technique can be done either wet or dry. This brushing stimulates lymphatic flow as well as blood circulation, and also removes dead epidermis. This is important, because our skin is our

body's largest excretory organ.

As athletes, we incur metabolic stresses on a daily basis. Water can help relieve these, from the inside out and also the outside in. We have water to drink, heal, refresh, clean, relax, and stimulate us.

To your health, with water!

Lowell Greib is a naturopathic doctor and biochemist with an interest and expertise in sport medicine, injury prevention and athletic nutrition. He is the chief medical officer for Mahigan Medicine (www.mahiganmedicine.com) and operates private clinics in Huntsville and Orillia, Ontario, Canada. Lowell has competed in endurance sport for much of his life and now lends this expertise, clinically, to all athletes from weekend warriors to national team members. To contact Lowell, you can reach him at askthedoc@mahiganmedicine.com or toll-free at 1-877-624-4633.

PRODUCT SPOTLIGHT *Hammer Whey*

Ideal protein supplement for superior health & recovery

Steve Born



Protein powders sure are handy to help fill the gap between our optimal daily protein needs and our actual dietary protein intake. However, it's not so easy to shop for a protein supplement. If you walk into any health food store, especially one specializing in bodybuilding supplements, the dizzying number of protein powders available will blow you away. Once you get past the "shelf shock" and start reading the ingredient information on the container labels, you'll notice that most of the protein powders available are formulated with cheap casein (milk) proteins, whey protein concentrates, or a combination of both. In addition, most of these products contain carbohydrates and artificial flavors or sweeteners, some contain preservatives, and many of them entice you with insignificant amounts of vitamins, minerals, and auxiliary nutrients. All of these additives do little except increase the cost of the product and fool you into thinking that you're getting something worthwhile. Trying to buy just pure protein? Forget it!

Like many of you, we felt that to boost our protein intake we wanted clean, high-quality protein (duh!). For some reason, we just didn't take to cheap protein bolstered with sugars, artificial flavors, and a splash and a dash of who knows what. So, in response to many customer requests for "a high quality protein, and just protein with no other flavors, vitamins, or additives," many years ago we introduced Hammer Whey and Hammer Soy. Both of these contain the highest quality protein available, with no added carbohydrates, flavors, sweeteners, preservatives, vitamins, or minerals.

We want to focus in this article on Hammer Whey, our 100% whey protein

isolate powder. It is the protein for promoting optimal immune system health and enhancing post-workout/race recovery. Read on for some of the details that set it apart from its competitors.

Whey Protein Isolate vs. Whey Protein Concentrate

Perhaps the most important factor when selecting a whey protein is to determine whether it's made with whey protein concentrate, whey protein isolate, or a combination of both. The label will tell you what's inside the canister. What you want is whey protein isolate, not concentrate. Here's why:

Whey protein isolate checks in at a sturdy 90-97+% protein by volume, whereas whey protein concentrate runs only 70-80% protein by weight. Simply put, whey protein isolate is a purer protein compared to whey protein concentrate. Whey protein isolate is virtually lactose and fat free; many lactose-intolerant people can still use the isolate form because it contains only a minuscule amount of lactose.

A measure known as Biological Value (BV) also gives the nod to whey isolate. This measure refers to how well and how quickly your body uses the protein you consume. The BV scale rates the relative amount of a given nutrient the body actually utilizes. While both whey protein concentrate and whey protein isolate have high BV ratings (compared to soy, eggs, rice, and other protein sources), whey protein isolate achieves the highest BV rating, 154, while whey protein concentrate has a 104 rating.

Other Protein Measurement Standards

In addition to the BV rating system,

other standards that evaluate protein quality/effect also show whey to be a superb protein source. One of these methods, the Protein Efficiency Ratio (PER), while admittedly of limited application to humans (PER measures the weight gain of lab rats fed the test protein), still shows that whey protein ranks the highest, with a rating of 3.6 (soy protein has a rating of 2.1).

Another protein measurement is the Protein Digestibility Corrected Amino Acid Score (PDCAAS). Nutritionists who dismiss the PER because of its rats-only verification often use the PDCAAS for evaluating human protein requirements. According to this method, which utilizes an amino acid requirement profile derived from human subjects, an ideal protein is one that meets all of the essential amino acid requirements of humans. An ideal protein receives a rating of 1.0. Three protein sources-whey, soy, and egg-all have a 1.0 PDCAAS ranking.

No matter which ranking is used, whey protein comes out on top, with whey protein isolate being the best form of whey protein. Hammer Whey is 100% whey protein isolate.

Whey Protein Isolate: Extraordinary Glutathione Enhancer

Glutathione is a tripeptide consisting of the amino acids glutamic acid, cysteine, and glycine. It is one of the three endogenous (naturally occurring in the body) antioxidants, the other two being catalase and superoxide dismutase. Many researchers rate glutathione as the number one antioxidant. One well-known researcher stated, "Glutathione is present in nearly

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all living cells, and without it they can't survive . . . glutathione has major effects on health at the molecular, cellular and organ levels."

One of the most important steps we can do to improve our recovery is to enhance/optimize body levels of this important antioxidant, and one of the best ways to do that is by consuming whey protein. Whey protein contains excellent levels of all three of the amino acids that comprise glutathione, as well as high levels of the sulfur-containing amino acid methionine. The two sulfur-containing amino acids (cysteine being the other) are particularly important for proper immune system function and the body's production of glutathione. In addition, the amino acid glutamine has also been shown to help raise glutathione levels.

Hammer Whey vs. Hammer Soy

A comparison of glutathione substrates (per gram of protein)

Amino Acid	Whey	Soy
Cysteine	33 mg	9 mg
Methionine	17 mg	9 mg
Glutamic Acid	103 mg	138 mg
Glutamine	333 mg	10.5 mg

Adequate glutathione in the body will enhance your recovery and support optimal health. Hammer Whey's whey protein isolate is the ideal protein source for boosting glutathione levels.

Branched Chain Amino Acids (BCAAs)-Essential for Muscle Repair

Of the nearly two-dozen different amino acids required by humans, nine are classified as essential because they cannot be synthesized by the body and must be derived from external food sources. Among these nine essential amino acids are the branched chain amino acids leucine, isoleucine, and valine. The term branched chain refers to the molecular structure of these amino acids. Up to 75% of the body's muscle tissue is composed of these three amino acids, and they are directly involved in the tissue repair process. BCAAs are present in all protein-containing foods, with whey protein being the best source.

Hammer Whey vs. Hammer Soy

A comparison of BCAAs (per gram of protein)

Amino Acid	Whey	Soy
Leucine	100 mg	59 mg
Isoleucine	51 mg	35 mg
Valine	36 mg	36 mg

BCAAs-leucine, isoleucine, and valine-are three essential amino acids that the body requires for a number of important applications, including muscle tissue repair. No other protein source contains a higher concentration than Hammer Whey's whey protein isolate.

Glutamine: Amino Acid Extraordinaire

Glutamine is the most abundant amino acid in your muscles. Intense exercise severely depletes glutamine, which makes supplementation so important. Each scoop of Hammer Whey contains a whopping six grams of glutamine. This remarkable amino acid is essential for endurance athletes in supporting enhanced recovery and immune system function. Glutamine also plays a significant role in the glycogen synthesis process, and along with the branched chain amino acids, glutamine helps repair and rebuild muscle tissue. In addition, glutamine has also been shown to help raise endogenous levels of glutathione, which is intimately involved in immune system health, and is a key component for intestinal health. Lastly, glutamine contributes to growth hormone release. That was one of our "Hot Tips" in the previous edition of Endurance News and we expand on that in this issue (see the article "Hammer Whey Protein's Glutamine Component - hGH Boosting Nutrient").

For even more detailed and referenced information, please read Dr. Bill Misner's article "Glutamine: A Conditionally Essential Amino Acid with Remarkable Implications for Health and Performance," which you'll find on the Hammer Nutrition website.

Bottom Line

The bottom line on Hammer Whey is that it will take a whole bottom paragraph to summarize its virtues! A pure un-denatured whey protein isolate of the highest quality, Hammer Whey is 97.7% pure, and practically fat-free (0.5 g fat/100g) and carbohydrate-free (0.5 g lactose/100g). The whey protein isolate

in Hammer Whey delivers rich immune-enhancing beta-lactoalbumins and alpha-lactalbumins. Hammer Whey has a unique profile of highly bioavailable protein with immune factors, potent branched chain amino acids (BCAAs), lactoferrin, and immunoglobulins. Independent laboratory tests show the PDCAAS (Protein Digestibility Corrected Amino Acid Score) for the whey protein isolate in Hammer Whey is a whopping 1.14.

Now here's a real bottom line to remember, the dollar bottom line. Go find any other protein product on the market, whether it's mail order, at the health food store, the bike shop, or whatever. Do the math and determine the unit price for the protein in the container. Not price per ounce of product, but price per gram of protein that your body will actually use. That's the real price you're paying. Per gram of real usable protein, you won't find a better buy, or a healthier buy, than Hammer Whey.

For numerous benefits, including enhanced immune system function and optimized post-workout recovery, Hammer Whey has no equal among the plethora of protein powders on the market.



Premium Insurance Caps

Culprit in more frequent urination?

Steve Born and Bill Misner, Ph.D.



Dr. Bill and I were recently asked if either of us had heard any complaints from people about more frequent urination when taking Premium Insurance Caps (PICs).

Steve's reply:

In the seven years I've been here, this is the first time I've heard this complaint. I do know that when I take a handful of pills, including PICs, Race Caps Supreme, Mito Caps, and a few other supplements, that takes a good amount of water just to get them all down. I also drink more during the next few hours, significantly more water than when I forget to take my supplements. If there is an increased urination issue, it's an artifact due to increased water consumption, and not due to any component of my supplements.

I did a little searching and learned that only vitamin C had any reputation for increasing urination, and only in excess amounts. It's difficult, however, to assess what an excess amount is for an individual; some may find that 500 mg at once may be their limit while others can take several grams at once with no stomach distress or other potential side effects (such as increased urination) experienced. In other words, what one person may assimilate from vitamin C can be (and usually is) completely different than what another person's tolerance point may be.

The only mineral that I have heard of where excess amounts are said to cause frequent urination is calcium. Again though, what constitutes excess? That's difficult, if not impossible, to determine because everyone's assimilation levels may be different.

We formulate 500 mg of vitamin C and 250 mg of calcium in every 7-capsule packet of PICs, which is certainly well within most-to-all people's tolerance levels. These are the only two nutrients that I found information on where excess amounts may cause increased urination.

Dr. Bill's reply:

There are several causes for frequent urination, none related to the ingredients in Premium Insurance Caps. This reply starts with most suspicious from first to last:

*** METABOLIC GENERATION**
Endurance training metabolizes large amounts of muscle glycogen, producing energy, carbon dioxide, and water, up to 70 oz in 60-90 minutes. Unless you are profusely sweating, it can result in exaggerated kidney filtering, fluid voiding to maintain fluid/electrolyte homeostasis in the blood circulation. Eating or intake of multiple vitamins and minerals may raise the metabolism just enough to elevate fluid volume in the blood stream, resulting in turning on the kidney function to keep the system in balance.

*** MICRONUTRIENT IMBALANCES**
- Hypercalcemia (too much calcium) will cause an immediate frequent and voluminous urine voiding. If your diet is high in calcium, it is possible that the calcium in PICs may trigger a voiding response, though the only way you would know is to have your doctor perform a CBC blood lab to determine if you are slightly hypercalcemic.

*** OTHER PHYSIOLOGICAL OR PATHOLOGICAL CAUSES** - There may be other possible causes, such as caffeine, anxiety, stress, alcohol, normal aging,

bladder pathology, kidney pathology, nephritis, kidney stones, prostate problem, or undiagnosed diabetes. Diabetes typically causes frequent and voluminous urination.

*** DIURETIC SUBSTANCES** - Some drugs or drug combinations may cause frequent urination. These include diuretics, proleukin, aldesleukin, methyldopa and lithium interaction, aldomet and lithium interaction, and amodopa and lithium interaction.

SUGGESTED RESOLUTION - Try taking the PICs in divided dose, such as three capsules at breakfast, two at lunch, and two with the evening meal. Typically, too much fluid in the blood stream dilutes the blood electrolytes, which leads the body to instruct the kidneys by way of hormonal messengers to lower dilution of serum minerals. On the other hand, if some minerals are excessively high, frequent urine voiding will resolve imbalances. If your potassium is low (not eating enough fruit/vegetables), the absence in this mineral will also cause frequent urination.

Ask your doctor to determine if your blood electrolyte ratios are within the normal reference range and in balance with each other. Also get a fasting blood glucose level to test for diabetes.



Endurolytes

Questions and answers



Bill Misner, Ph.D.

Below are some FAQs about Endurolytes, the Hammer Nutrition electrolyte replenishment supplement:

- How many Endurolytes are recommended per hour of exercise? (In my case the exercise is running.)
- Is there such a thing as too many?
- What is the main purpose of Endurolytes?
- I get calf cramps. Would they help with cramping?

Dr. Bill responds:

Endurolytes replaces nutrients, primarily electrolytic minerals, depleted via sweat, repeated large muscle group contractions, and other physiological processes of prolonged exercise. Electrolyte depletion varies widely, with effective Endurolyte consumption ranging from 1 capsule/hr up to 8 capsules/hr. Typically, a fit athlete requires only about half the electrolytes of an unfit and unacclimatized athlete. Ninety percent of endurance athletes taking 3-6 Endurolytes/hour maintain normal electrolyte status. Of this 90-percentile group, 70% will do fine on 3-4 capsules per hour.

To determine your dosing needs, take training runs or rides, ideally in the heat of the day at about 75% of your event distance. I recommend starting with 3 capsules/hr, along with 200-260 calories and 24-28 fluid ounces of liquid. Symptoms of needing to take more Endurolytes would include fatigue, muscle spasms, cramping, nausea, and salt sweat stains. If you have no symptoms on a 20-mile, heat-of-the-day training run, then you should do fine on that dose for a full marathon. Century riders can test their dosing on a 75-mile ride in the heat.

Of course it is possible to overdo Endurolytes, just as it possible to over-consume any nutrient. Once you find your ideal dose, you will learn how to adjust it for weather conditions, intensity of exercise, etc. Because Endurolytes is designed to supplement, not replace, your electrolyte needs, it is very hard to inadvertently take too much to the point of doing any harm.

As for calf cramping, there are many causes of EIMC (exercise-induced muscle cramps); electrolyte imbalance or depletion is only one of them. To give this a good trial, take 3-6 Endurolytes a day for three days prior to your long training ride. If the calf cramps are due to lack of fitness, Achilles tendon tightness, or some other mechanical problem, then Endurolytes may not resolve the cramps. See the links below for more on this topic.

For more information regarding the Endurolytes formula, rationale, and cramping issues, look for the following articles on the Hammer Nutrition website:

“Electrolyte Replenishment”
www.hammernutrition.com/za/ECP?PAGE=ARTICLE&ARTICLE.ID=1274

“Muscle Cramps”
www.hammernutrition.com/za/ECP?PAGE=ARTICLE&ARTICLE.ID=777

“The Endurolytes Rationale”
www.hammernutrition.com/za/ECP?PAGE=ARTICLE&ARTICLE.ID=770

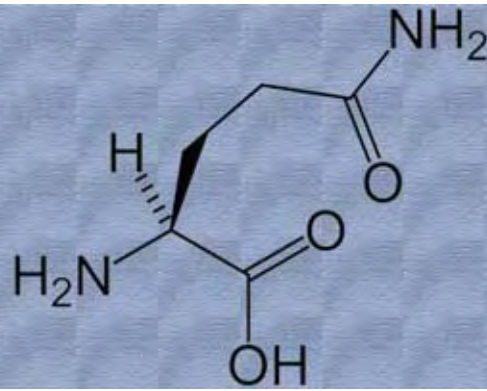
It's Not Just About the Salt!

120 capsules
\$18.95

150 powder serv.
\$18.95

Order Today!
 1.800.336.1977

HAMMER WHEY's *Glutamine* An hGH boosting nutrient



Steve Born

Q: I had a question about something printed in the latest Endurance News on page 2. It's in the Hot Tips section where it mentions elevating hGH by a possible 400% just by using whey protein. First, could you explain in more detail, how that can occur and also, are there studies that support that statement?

Steve: In a post of Dr. Bill Misner's that I have on file he writes, "Glutamine [2000 mg] taken in a fasting state [2-3 hours no food before or after dose] has been observed to raise serum hGH 430% above sedentary values." So it's primarily the glutamine component in Hammer Whey (which contains 6000 mg/scoop) that is responsible for the increase in hGH levels.

Some additional information that I found:

Glutamine is the latest amino acid to generate excitement as an hGH-releaser thanks to a 1995 study by Thomas C. Welbourne of Louisiana State University College of Medicine in Shreveport. Welbourne showed that glutamine raised growth hormone levels more than four times over that of a placebo. Even more exciting, age did not diminish the response, at least in this small study of volunteers, who ranged from thirty-two to sixty-four years. Glutamine is the amino acid that is most used by the body, particularly during times of stress. The immune system and the gut practically live on glutamine. If the body does not produce enough glutamine, muscle loss and immune dysfunction can occur. The gut atrophies, meaning nutrients of all kinds cannot be absorbed as well as before. A 1993 study in animals by Welbourne showed that glutamine

supplementation protects muscle mass and prevents acidosis, which occurs with strenuous exercise causing muscle breakdown.

According to Judy Shabert, M.D., and Nancy Erlich, authors of *The Ultimate Nutrient - Glutamine* [New York: Avery Pub. Group, 1994], supplementation with glutamine, especially in times of stress, would prevent muscle wasting. In a foreword to the book, Douglas Wilmore, M.D., of Harvard Medical School, points out that glutamine is a key to the metabolism and maintenance of muscle, is the primary energy source for the immune system, and is essential for DNA synthesis, cell division, and cell growth, all factors that are enhanced by hGH.

Dr. Bill: The 1995 Welbourne paper established the anabolic effect from glutamine, while several other papers establish its meaningful contribution to immune system, glycogen storage rate, and lean muscle mass growth. The amino acids glutamine and glutamic acid are typical of a glutamine-enhanced Whey protein powder, an excellent source of protein, immune enhancers, and anabolic growth hormone release.

Glutamine is the monoamide of glutamic acid. When in the presence of the enzyme, L-glutamine aminohydrolase, glutamine is split into glutamic acid and ammonia. Glutamate is the salt of glutamic acid. Glutamic acid and glutamate are used interchangeably. One important point is that the conversion from glutamine to glutamate is enzymatically limited; the deaminate enzyme is required to change glutamine to glutamate. Enzymatic conversions tend to be self-limiting; the body may not have enough enzyme present at any

given time to make toxic amounts of glutamate. Once again, no one knows for sure on this point, and differences between individuals may be significant. Glutamine stimulates hGH release most when taken in its free-form derivative in 2-4 gram doses. Glutamine-enhanced whey protein may also stimulate hGH release, but to a lesser extent than the former. Other amino acids have been suggested to stimulate hGH release when they are not competing with other amino acids in their same class.

Acidic Class: Aspartic Acid, Glutamic Acid

Basic Class: *Arginine, *Ornithine, Lysine

Large Neutral Class: *Tryptophan, *Phenylalanine, *Tyrosine, Methionine, Histidine, *Leucine, *Isoleucine, *Valine

Small Neutral Class: Asparagine, *Glutamine, Proline, Serine

** Suggested by some sports scientists that when taken as free-form single amino acid supplements will elevate hGH or anabolic hormone levels.*

I advise loading glutamine, after exercise, at the rate of a minimum two grams to a maximum of eight gm/day during a ten-day taper prior to an endurance event. Why? Glutamine elevates growth hormone levels and enhances muscle glycogen stores. Research supports supplementation with either pure glutamine or a glutamine-enriched product.

Increased Plasma Bicarbonate and Growth Hormone After Oral Glutamine Load

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An oral glutamine load was administered to nine healthy subjects to determine the effect on plasma glutamine, bicarbonate, and circulating growth hormone concentrations. Two grams of glutamine were dissolved in a cola drink and ingested over a 20 min. period, 45 min. after a light breakfast. Forearm venous blood samples were obtained at zero time and at 30 min. intervals for 90 min. and compared with time controls obtained 1 week earlier. Eight of nine subjects responded to the oral glutamine load with an increase in plasma glutamine at 30 and 60 min. before returning to the control value at 90 min. Ninety minutes after the glutamine administration load, both plasma bicarbonate concentration and circulating plasma growth hormone concentration were elevated. These findings demonstrate that a surprisingly small oral glutamine load is capable of elevating alkaline reserves as well as plasma growth hormone. [Welbourne 1995]

Effect of Oral Glutamine on Whole Body Carbohydrate Storage During Recovery From Exhaustive Exercise

The purpose of this study was to determine the efficacy of glutamine in promoting whole body carbohydrate storage and muscle glycogen resynthesis during recovery from exhaustive exercise. Post-absorptive subjects completed a glycogen-depleting exercise protocol, then consumed 330 ml of one of three drinks: (1) 18.5% (wt/vol) glucose polymer solution, (2) 8 g glutamine in 330 ml glucose polymer solution, or (3) 8 g glutamine in 330 ml placebo, and also received a primed constant infusion of [1-13C] glucose for 2 h. Plasma glutamine concentration was increased after consumption of the glutamine drinks (0.7-1.1 mM, $P < 0.05$). In the second hour of recovery, whole body nonoxidative glucose disposal was increased by 25% after consumption of glutamine in addition to the glucose polymer (4.48 ± 0.61 vs. 3.59 ± 0.18 mmol/kg, $P < 0.05$). Oral glutamine alone promoted storage of muscle glycogen to an extent similar to oral glucose polymer. Ingestion of glutamine and glucose polymer together promoted the storage of carbohydrate outside of skeletal muscle, the most feasible site being the liver. [Bowtell et al., 1999]

Conclusions

Oral supplements that appear safe for increasing natural anabolic hormones during strength training include glutamine, alpha-ketoglutarate, ketoisocaproate, ZMA [zinc monomethionine aspartate], and perhaps 5-HTP [(5-hydroxy-tryptophan)]. Supplements of 5-HTP may increase serotonin synthesis. Colostrum and whey protein supplements have been suggested and shown in limited studies to raise immune system biomarkers, with implications of elevated anabolic hormone levels.

Dr. Maher stated, "hGH-precursors, secretagogues and releasers need to be cycled. This is because the pituitary needs time to recoup its enzyme and co-enzyme systems. With use of hGH-releasers, the pituitary is under-used and can be exhausted..."

References

- 1.) Welbourne TC, Increased plasma bicarbonate and growth hormone after an oral glutamine load. *Am J Clin Nutr* 1995 May 61:5 1058-61.
- 2.) J. L. Bowtell, K. Gelly, M. L. Jackman, A. Patel, M. Simeoni, and M. J. Rennie; Effect of oral glutamine on whole body carbohydrate storage during recovery from exhaustive exercise, *Journal of Applied Physiology*, June 1999; 86; 6: 1770-1777.

Gel-Bot Fuel Systems

We're excited to announce a new addition and a redesigned product to our comprehensive soft goods line. Since the beginning of the year, we've been carrying the ingenious, flask-in-a-bottle Gel-Bot fuel system. With the convenience of carrying your gel in the centrally located Energy-Core, you can dispense either water or gel depending on the position of the valve.

Now available is the Gel-Bot Cap. The Cap fits perfectly on our Specialized-made Hammer water bottles, giving you the same benefits as the complete bottle, but with the option of using the Hammer bottle that you already own.

Another item that we offer is the revolutionary SoftFlask. The SoftFlask has been available since January, but recently underwent a redesign. It's made of soft, flexible medical-grade urethane that allows you to get every last bit of gel out. The SoftFlask also features a unique bite valve that makes it easy to use with one hand, a must when you are training or racing.

Check out these clever products and all of our other soft goods offerings online!



Clockwise from top : Gel-Bot Cap - \$11.95, Gel-Bot 24 oz. fuel system - \$15.95, Gel-Bot SoftFlask - \$10.95 (SoftFlask with Hammer logo will be available the end of August. Current SoftFlasks have polka-dot design)

Power meters, heart rate monitors or trained awareness?

Jim Bruskewitz



As training with a power meter on the bike gains in popularity, proponents and detractors of this measurement tool trade their arguments as to its usefulness. Meanwhile, long-time heart-rate monitor aficionados listen intently, wondering if some light will come from the heat. The pros and cons of heart rate monitors and power meters are bandied about, sometimes with a good deal of passion, but do we really need to choose sides? Are these two mutually exclusive tools, or just different ways of measuring, each with its own story to tell about our fitness? For that matter, do we even need to use any technogizmo to keep up with “Overspent Jones” on our rides?

Surely you’ve heard someone say, “If you aren’t training with power, you aren’t training.” Many feel that without calibration, they won’t push themselves hard enough to make the gains that they should. Certainly having a goal wattage (joules per second or energy over time) can keep you working at a certain level while letting you know if your energy output is staying constant and not falling off as you fatigue. If you’re ready for the work that the goal wattage requires, that’s great--then get down to business. If the goal requires too much work given your current level of fitness, then you’ve misplaced your goal. The power meter is still as powerful a tool, but you’ve misused the tool.

Misusing a training tool is not unique to power meters; you can do it just as easily with a heart-rate monitor. Many factors affect heart rate, including chronic states of fatigue or vigor. Few people realize, however, that maximum heart rates drop as chronic fatigue increases. Training at a specific heart rate can pinpoint different physiologic markers, like anaerobic threshold, on

different days. As a result, training at a set heart rate to promote a particular physiology can miss the intended mark.

Heart rate increases with escalating workloads, but there is a dampening effect. It takes up to a few minutes for HR to reach a steady state after you have achieved a steady workload. You can overshoot an intended workload if you are unaware that the heart rate lags behind an increasing workload. Those that have discovered power know that you can observe the changes in the work you are doing instantaneously with a power meter. That can be a good thing. However, a chart of power output for a workout session, or even one hill in a ride, can look like a polygraph when the subject tells a big fat lie. In order to better decipher all the information a power meter delivers, people generally smooth the data, reminiscent of the dampening effect the heart rate monitor records as the workload changes.

Using these measuring devices over time can deliver some valuable information. Measuring the energy you are able to sustain for varying amounts of time will give you a very good idea of your current level of fitness. Repeating these measures will track your fitness over time. This kind of information can be invaluable in piecing together a training plan that adjusts for your strengths and weaknesses and develops the kind of race specific fitness you need at the right time.

Whenever I consider the strengths and shortcomings of various measuring devices, it occurs to me that elite world-class athletes have a well-developed sense of perceived exertion. Research on the Borg Perceived Exertion Scale reveals that even unaccomplished

individuals can accurately sense when they are working Somewhat Hard, Hard, Very Hard, etc. My work with athletes has led me to believe that quite a few of them have trouble with pacing, that is, maintaining correct perceived exertion over the distance of a race or a workout. A main benefit of training with power meters and heart rate monitors is that the athlete can rely on an external measuring device to help out where perceived exertion information fails. The idea here is that we can learn while training what it should feel like to run a 10k or marathon, ride a 40k time trial or a century ride, or race a 1/2 or full Ironman event when aided with measuring equipment. In my mind, the best way to race these events is without monitoring devices. Learn what is needed with measuring devices when training. Don’t let a metric tell you when to pick it up or slow down if you have a firm grasp on perceived exertion and can listen to your body as your energy ebbs and flows throughout long events. And please don’t take an “either this device or that device” approach to training with meters and monitors. Why not use both devices to help you monitor your output? Get all the important information you can. You’ll only be faced with asking the right questions before you collect the information to help you answer them. Have fun with it, and I’ll see you out there.

Jim coaches triathletes online, is an Associate Lecturer at the University of Wisconsin-Madison’s Department of Kinesiology, and loves to train and race for all the marbles.



Visit us in Canada and Kona

Brian Frank

Attention all triathletes! If you're going to be at Ironman Canada or the Ironman World Championships in Kona, as a competitor or a spectator, then you'll want to read this.

We are renting a house in both locations and we'd like for you to join us. Here are the details.

Ironman Canada

The house is located at 601 Victoria Drive which is just 2 blocks off the race/ bike course and only 5 blocks from the start/finish line. The house will be open August 22-25 from 10AM-5PM daily. Stop on by to discuss race strategies, fueling protocols or just to visit with myself and Darren Thompson, our

Canadian distributor.

Ironman World Championships - Kona

For the World Championships, we've rented the "Turtle Gate House" right on Alii Drive for the week prior to the race. Come by to hang out, fuel up and get to know each other. We'll have tables set out all day with fresh, local fruit and other healthy snacks to compliment the full array of Hammer products that will be available. I'll be there to go over or fine tune your race day fueling strategy, answer questions and provide support as needed. The house will be



open Monday, October 8th through Friday, October 12th from 9AM - 5PM and is located at 78-6640 Alii Drive, 4.5 miles south of town.



Even if you are not competing in either race but you happen to be in the area, stop by... we'd love to meet you!

2007 Race Across America in the books!

This year's edition of what is considered the world's toughest endurance contest -- an event Hammer Nutrition enthusiastically sponsored again this year -- was taking place while we were putting the finishing touches on this edition of Endurance News. Therefore, we'll have more coverage (and hopefully an interview or two) in the next issue.

For now, though, we'd like to congratulate the following Hammer fueled riders and teams who were able to complete this epic and arduous 3042-mile coast to coast cycling race:

Men's Solo Division

Jeff Oatley - 7th - 10 days, 21 hours, 59 minutes (10:21:59)

Brett Walker - 9th - 11:11:02

John Jurczynski - 14th - 11:22:14

David Jones - 15th - 12:01:15

John Spurgeon - 16th - 12:02:11

Two-Person Male Division

Team R.A.C.E. / BMO Fountain of Hope - 2nd - 8:04:46

Two-Person Female Division

Team Phoenix (Janet Christiansen, Nicole Honda) - 1st place - 8:18:57
NOTE: Janet and Nicole finished in 5th place overall in all the two-person divisions (men's, women's coed)

Four-Person Male Division

Team Sixty Going Hard - 9th place - 7:03:11

Eight-Person Team

Team Primo - 6th place - 6:15:10

If there are any riders/teams who's names we didn't include in this list,

please let us know so we can recognize you in the next issue of **Endurance News!**

HOT TIPS

Proper protein amounts

Is your body receiving enough protein daily? Once it was believed that 1/2 gram of protein per pound of bodyweight was sufficient. Today's standards, however, increase that figure to about 2/3 to 3/4 grams of protein per pound of body weight. To find out how much you require, multiply your weight in kilograms (bodyweight in pounds divided by 2.2) by 1.4 to 1.7, depending on your exercise intensity. This gives you the amount of protein (in grams) you should consume on a daily basis.

More is *NOT* Better

Rebuttal articles for a high sodium electrolyte supplement and a high sodium diet

Photo - Andrew Duhan

Steve Born

Unfortunately, there are still some “experts” who recommend high doses of sodium during exercise (via a specific product they produce/recommend, salt tablets, or salty foods) and we continue to receive emails from athletes who have followed the advice of these “experts.” These athletes try to replenish their sodium losses in amounts equal or close-to-equal of what their body is losing and instead of having better workouts or races, they experience a number of performance-ruining problems, mainly involving stomach discomfort and water retention.

This section of the newsletter emphasizes our rational behind a low-sodium electrolyte replenishment supplement and a low-sodium diet.

At the beginning of Dr. Bill Misner’s article, “The Endurolytes Rationale,” he writes:

“Why should the body be exposed to a minimal repletion electrolyte dose during extreme losses? Hypothetically, electrolyte absorption should occur under the body’s radar, without triggering a cascade of hormonal signals that alter excretion rate by the kidneys. This hypothetically supports for taking the low sodium model as opposed to a higher sodium electrolyte. It needs to be emphasized that substrate repletion is never completed during high metabolic aerobic expense above sedentary state. Glycogen/glucose, electrolytes, fluids, and numerous other substrates are lost faster than they can be replaced during exercise.”

“To suggest that a substrate must be replaced at or near the rate it is lost, is to suggest that 1-liter water, 2000 milligrams sodium, and 700 calories per hour must be consumed. We have observed that athletes who consume only 50% of this amount are more likely to have problems than those who consume 1/4 of the lost metabolites during ultra endurance exercise.”

“There is a point in time at which the body cannot replace losses from exogenous sources. Overdose of a single electrolyte at its repletion rate may lead to other imbalances triggering other systemic reactions that may lead to further problems that could inhibit performance. This suggests adding small dose electrolyte before detectable overdose triggers hormone-activated mechanisms further impeding natural outcome and performance progress. Aldosterone

levels control the rate of sodium recirculated in the human body.”

What Dr. Bill writes is the very definition of our “Less is better than more” and “Replenish what your body can comfortably accept and assimilate, not what it’s losing” message. During exercise you simply cannot replace body losses of fluids, calories, and electrolytes at the same rate that your body is depleting them. Fortunately, the body knows this and has built-in mechanisms that help remedy this imbalance of “loss versus replenishment” amounts.

Although “The Endurolytes Rationale” article is quite technical, we encourage you to give it a thorough read as it will explain why we include “only” 100 mg of sodium chloride (salt = 40 sodium + 60 mg chloride) in each capsule of Endurolytes. But it’s not just about sodium during exercise, it’s also about sodium intake in your daily diet as well.

Starting on the following page, we are reprinting an article that appeared in a past issue of Endurance News and which also appears on our web site regarding whether or not a high sodium diet helps or hinders performance. As you’ll see after reading both articles, when it comes to sodium replenishment during endurance exercise, more is not necessarily better. To requote Dr. Bill (paraphrased), over the past 20 years we have observed that athletes who take in roughly 25% of what their body loses (fluids, calories, sodium/electrolytes) are less likely to run into problems than athletes who consume amounts that reflect 50% or higher of what their body loses. Therefore, the focus **MUST NOT** be on what the body is losing but rather what it can accept and assimilate from your fuel/food donation.

We’ve said it many times before but by following this recommendation we know you will experience better results in your workouts or races.

To view Dr. Bill’s “The Endurolytes Rationale” article in it’s entirety visit www.hammernutrition.com/za/HNT?PAGE=ARTICLE&ARTICLE.ID=770.

High Sodium Diets - Do they inhibit endurance performance and health?

Sodium makes up about 2.6% by weight of the Earth's crust making it the fourth most abundant element overall and the most abundant alkali metal. Sodium normally comprises 0.15% of body weight or a total of 95 grams of Sodium (mainly from Sodium Chloride). Sodium is necessary for regulation of blood and body fluids, transmission of nerve impulses, heart activity, and certain metabolic functions. Table salt is 39% sodium and 60% chloride molecules. Sodium is required for life, but over-consumption can increase the risk of health problems, including high blood pressure, in those individuals who are genetically predisposed to hypertension. Sodium is one of the primary electrolytes in the body. Too much or too little salt in the diet can lead to an electrolyte disturbance, which can cause severe, even fatal, neurological problems. Too little sodium or diluting blood serum sodium is a life-threatening emergency, while chronic overdose above 2300 milligrams per day may increase blood pressure. Elevated blood pressure is regarded as one of the characteristics of progressive cardiovascular disease. Thus, too little sodium or too much sodium are mutually harmful to both heart health/efficiency and endurance performance [1-7]. A sedentary adult can reproduce normal sodium serum levels consuming between minimal doses required to maintain health in a sedentary subject is 200-500 mg per day. Consumption of 12,000 mg (12 grams) or more of sodium per day is regarded as toxic. The average western diet contains 2.3-20 grams of Sodium per day. In 70 diets computer-analyzed from actual food-intake lists of athletes and non-athletes 1996-2006, endurance athlete consumed between 6000-8000 mg sodium per day. However, aerobic exercise in the heat may spend a whopping 2000 milligrams sodium per hour during evaporative cooling from profuse sweating. It is hypothesized that it is the rapid changes in serum sodium levels, which the body is not adapted, (sodium losses more than sudden increase), that produce serious performance-inhibiting consequences. The athlete who is unconditioned and not acclimatized to high fluid & electrolyte losses will predictably suffer performance deterioration due to a

low serum sodium or hyponatremic event. Research reports fit-acclimatized athletes need only 50% of the sodium required to maintain serum sodium levels as do unfit-unacclimatized subjects [8-9]. The more fit and the more trained & heat-exposed, the less sodium is required.

There are, however, other factors that may influence sodium requirements between subjects, further explaining why one person may require 1-3 Endurolytes/hour while another requires 6 per hour. Research implies that dietary sodium overdose may increase the risk of widening individual variations. A study of 1500 subjects reported that those who eat the most salt tend to have the highest blood pressure. The higher the blood pressure, the harder the heart works to sustain blood flow. The harder the heart works, the sooner onset of fatigue is generated. This study that reported an association between salt overdose and elevated blood pressure selectively involved men and women aged 16-64. They found that as daily salt intakes rose from 1600 mg/day to 9200 mg/day, so did blood pressure. A rise in salt consumption from 2300 mg/day to 4600 mg/day led to a whopping 7.1 mmHg rise in systolic blood pressure for women and a 4.9 mmHg rise for men [10]! Dietary sodium over- or under- dose may also explain why more individuals have problems the longer the event. A study was performed on 36 athletes during a three- to four- hour triathlon and 64 athletes at an ironman race, which lasts between nine and 15 hours. No athletes were sodium deficient after the shorter race, but 27% were sodium deficient (hyponatremic) following the ironman heat. An average of 17% of the ironman participants required medical attention, most for hyponatremia (low or diluted serum sodium) (11).

How The Body Controls Serum Sodium

Aldosterone is a hormone that controls the rate of sodium circulated in the human body. Aldosterone is synthesized by the adrenal cortex. When sodium levels dip too low, aldosterone is released, stimulating the kidney tubule cells to increase re-absorption

of sodium back into the blood. Normal serum or plasma levels of aldosterone are dependent on the sodium intake and whether the patient is upright or supine. For males 6-22 ng/dl is normal, while 4-31 ng/dl is normal for females. High sodium intake will suppress serum aldosterone, whereas low sodium intake will elevate serum aldosterone. The reference intervals for serum (plasma) aldosterone are based on normal sodium intake. High aldosterone levels occur in response to stress, renal dysfunction, adrenal cortical over-use, or pregnancy. If aldosterone is excessive, serum and tissue levels of sodium will be excessive.

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HOT TIPS

Elevating hGH while you sleep revisited

In the previous issue of Endurance News we discussed the benefits of taking whey protein prior to bed to help elevate hGH levels by as much as 400% (*read the original Hot Tip below*). The key for this to be successful is to take Hammer Whey in water only, as carbohydrates will hinder the process. Note that Hammer Whey contains no added carbohydrates and no flavors or sweeteners so it's going to be somewhat bland tasting. However, the benefits derived are anything but bland!

From Endurance News 54

Elevating Human Growth Hormone (hGH) levels is the surest way to enhance athletic performance and shorten recovery time. This is why some athletes resort to risky injections. To safely raise hGH levels without risk to your endocrine system, try this - just before bed, take 1 scoop of Hammer Whey protein in 4-6 ounces of water, not juice or milk as those carbs will hinder the process. This practice may safely raise hGH levels while you sleep by as much as 400% compared to the usual nightly spike. That's enough to have a noticeable effect on anabolic, muscle building/maintaining activity in the body, and that's a good thing.

Approaching The Mid-Point

Balance ambition with intuition

Al Lyman, CSCS

July marks the mid-point of the season for many dedicated endurance athletes. This period is both an exciting and precarious time as many of us can look back on months of training and preparation that started near the end of 2006, and are also looking ahead at many more weeks of build-up before our season comes to a close with our last event. With so many training hours completed and yet still to come, the key question we must all ask is: will the goal oriented driven mindset that we consider to be our greatest strength become our biggest weakness?

Intuition : Your Weapon For Success

Intuition is defined as “understanding without apparent effort, quick and ready insight seemingly independent of previous experiences or empirical knowledge.” For a highly motivated endurance athlete, I think of intuition as common sense, experience that creates a higher physical and mental awareness, and gut instinct. We have all been in situations where our intuition - that “little voice” inside our head, was speaking to us loud and clear, telling us that something we were doing was either right or wrong. For example, if you feel a sharp pain at the start of a workout that might signal an impending injury, would you stop immediately or forge ahead hoping you can work through it? At the same time, trusting your intuition can also mean letting go and being willing to take a risk, having faith. Very often we can have breakthrough performances when we least expect it because we trusted that inner voice, ran from the gut, and took a chance.

Training Smart

Perhaps the most important thing I do for the athletes I coach is give them permission to rest and even to take a day

off! In an effort to make a connection between my written plan for them AND what will ultimately serve their needs the best, I routinely tell them to train smart. I believe training smart – behaving intuitively - is the opposite of training with an obsessive, compulsive, rat-race mentality. Training smart means being sensitive to the feelings and signals your body is constantly sending as you go through the day to day training process. Training smart means acting on what your gut is telling you is the best thing to do.

At the same time, training smart doesn't mean instantly giving up on a workout if you are simply a little tired. Every endurance athlete knows the need to occasionally push through feelings of fatigue in order to improve and prepare for challenging events in the future. My point is, while we know that more work and hard training is sometimes what is necessary, an unbalanced and overly rigid approach will usually produce the opposite effect we desire: reduced performance, a general malaise and fatigue, irritability, and even illness and injury.

Training smart means putting aside your ego, pride, and peer pressure and establishing a pure connection between your mind, body, and spirit that allows you to remain healthy and on a path toward your best possible success.

Process Oriented vs. Result Oriented

The risks and challenges we face arise because our inner drive and desire to achieve sometimes leads us to be so focused on an end result (such as the number of weekly miles in a training log or a hoped-for finishing time in an upcoming race) that we rigidly follow some pre-conceived path, forget to listen to our body, and end up making

a mistake. Your body is an individual organism and not a functioning machine. How you feel on a daily basis is based upon your sleep patterns, nutrition, personal and work related stress, yesterday's training, and even the weather. While a training plan can be an excellent tool to help you progress, it can't always anticipate what kind of stress you might be experiencing in your life or anticipate how fast you will recover from a previous training session. A scientific approach can only be effective when it is acted upon in conjunction with your own intuition. It is usually easy to know after the fact if we did something we shouldn't have. You need to be aware of your own limits and realize the answers aren't always on a piece of paper.

Balance In All Things

Breakthroughs in fitness result when we balance work and rest, when our lives are balanced, AND when our diet is balanced. Everything you do as an endurance athlete is limited by how you eat and your body's ability to recover from previous training. How do you know if you are pushing too hard or not enough?

- If you are experiencing serious doubt about starting a workout, then consider leaving it out altogether.
- If you are feeling lazy or your enthusiasm is diminishing, that usually means that you need more rest, not more work!
- Trusting your intuition also applies to your diet. What kinds of foods help you feel and look better and recover faster? What kinds of foods have the opposite effect?

Make it a habit to take a long relaxed warm-up into your training sessions and

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Characteristics Of Reduced Performance Associated With Sodium, Fluid, & Calorie Imbalance

Of the endurance athletes reporting symptoms of severe sodium imbalance (between 1996-2006) following an endurance event, the following individual characteristics were observed:

1. Consumed from diet above 6000 mg sodium per day.
2. Consumed above 30 fluid ounces/ hr.
3. Consumed above 300 calories per hour.
4. Did not train in the same heat or humidity as the event.
5. Did not train above 60% of the event distance in hyperthermic conditions.

Characteristics Of Resolution Of Symptoms Associated With Sodium, Fluid, & Calorie Imbalance

In 100% of those who reported resolution of performance-inhibiting symptoms, the following individual characteristics were observed:

1. Increased electrolyte intake from Endurolytes between 3-6/hour.
2. Consumed between 24-28 fluid ounces per hour.
3. Consumed 250-280 calories per hour.
4. Trained 2-3 weeks in the same heat or humidity as the event.

High Sodium Health Consequences

Limiting sodium is recommended since research supports that chronic consumption of more than 2300 milligrams per day may contribute to Congestive Heart Failure (CHF), Hypertension, Muscle Stiffness, Edema, Irritability, Osteoarthritis, Osteoporosis, Pre-Menstrual Syndrome (PMS), Liver disorders, Ulcers, and Cataracts. The American Heart Association (AHA) says that healthy American adults should eat no more than 2,300 milligrams of sodium a day. This is about 1 teaspoon of sodium chloride (salt).

To illustrate, the following are sources of sodium in the diet.

MEASURE	AMOUNT
1/4 tsp salt	575 mg sodium
1/2 tsp salt	1,150 mg sodium
3/4 tsp salt	1,725 mg sodium
1 tsp salt	2,300 mg sodium
1 tsp baking soda	1,000 mg sodium

What High-Sodium Foods Should Be Limited?

The following foods are high in sodium and should be limited in the diet: Meat, Poultry, Fish And Other Meat Substitutes, Luncheon & Cured Meats, Processed Turkey/Chicken, Ham, Bologna, Salami, Bacon, Canadian Bacon, Corned Beef, Pastrami,

Liverwurst, Frankfurters, Sausages, Dried Meat, Dried Fish, most Dairy, Processed Grains, Cereals, Soups, Snack Foods, Processed Vegetables, Spices, Condiments, Sauces, Food Additives, all Canned Meats. It is Prostaglandin E2 overproduction from eating too much salted animal meat that induces the kidneys to retain excessive quantities of sodium. Other dietary manipulations to lower sodium are respectfully listed on the PAMF website. (13)

Conclusion

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. It only takes a few hundred milligrams every 15-20 minutes in the hottest environment to sustain aerobic pace. This assumes that fluid intake does not exceed 30-fluid ounces per hour or that calorie consumption exceeds 300-calories per hour.

References

Available upon request.

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listen to what your body is telling you. From that point forward, let momentum and intuition override any compulsive drive to push the envelope when it doesn't feel right.

During this key mid-point in our season, it is imperative that we make smart daily decisions about our training that will help keep us healthy, happy, and progressing toward our season ending events with energy and enthusiasm. Commit to listening to your own inner voice, and reap the rewards with your best season-ending performances ever!

Coach Al Lyman, CSCS, is the owner of www.Pursuit-Fitness.com, a coaching company for endurance athletes. Besides being an Ultrafit Associate and certified with USA Triathlon, USA Cycling, and the NSCA, he is the creator of Runner-CORE, a NEW fast, effective, time-saving program for triathletes and runners of all levels. For more information and tips: go to: www.Runner-CORE.com. Email: coachal@pursuit-fitness.com

More can be better... When you're ordering products



Product	Price	Discount
Hammer Gel	\$18.95	3 @ \$16.95 ea
Endurolytes	\$18.95	3 @ \$16.95 ea
Endurolytes Powder	\$18.95	3 @ \$16.95 ea
Sustained Energy (30-serving)	\$49.95	4 @ \$44.95 ea
Hammer Whey	\$24.95	4 @ \$21.95 ea
Hammer Soy	\$21.95	4 @ \$18.95 ea
Liquid Endurance	\$22.95	3 @ \$19.95 ea
Anti-Fatigue Caps	\$17.95	3 @ \$14.95 ea
Energy Surge (formerly ATP 100)	\$19.95	2 @ \$17.95 ea
Phytomax	\$24.95	3 @ \$22.95 ea
PSA Caps	\$24.95	3 @ \$22.95 ea
Race Caps Supreme	\$54.95	3 @ \$51.65 ea
REM Caps	\$19.95	3 @ \$17.95 ea
Super Antioxidant	\$39.95	3 @ \$34.95 ea



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ATHLETE SPOTLIGHT

Judy Abrahams

An amazing Alaskan athlete

Judy Abrahams and friends at the 100km mark of a 400km day.
Photo - Tom Schmidt

Steve Born

Our Spotlight Athlete for this issue is triathlete/cyclist/ultracyclist/runner Judy Abrahams from Anchorage, Alaska. Judy has been a Hammer Nutrition client and sponsored athlete since 2003, and she has had several successful races during that time. Last September, when she normally would have written to us to renew her sponsorship, she wrote instead to tell us that she had incurred devastating injuries on a training ride. Seeing that she wouldn't be competing for some time, she had graciously suggested that we forego her sponsorship for 2007. We rejected that suggestion, keeping Judy's sponsored athlete status intact. We're delighted to report that Judy is not only making a remarkable recovery, but she's actually planning on competing in the Fireweed 400, a Hammer-sponsored ultra cycling race in mid July. Recently, I had a nice chat with this remarkably talented and inspirational athlete...

Steve: Judy, if you don't mind talking about it, just what happened?

Judy: The accident happened on September 18th while out on a training ride on one of our beautiful fall days here in Anchorage. I was headed down a steep hill at 40 mph when a car decided to pull out in front of me from a side street. I hit my brakes to try and avoid hitting the car. I don't remember what happened after that. From reports, my bike endo'd and I landed on my head, then back, and it was pretty ugly after that. Luckily I never hit the car, but my bike did once it detached itself from me. Not sure what hit me in the face, but I lost four front teeth and had to have a bone graft on the upper jaw (severely crushed bone) so that they can put in permanent implants sometime this year. I shattered both bones in the lower leg just above the ankle joint. I had to go

in for emergency surgery that evening, as they couldn't get a pulse in my foot. They were able to stabilize the fibula (which was in three pieces) with a plate and were able to save my foot. I had to wait for swelling to go down until they could get in and stabilize the tibia, which was in about five pieces. They installed an external fixator on my leg, a device with two screws into the upper tibia and one through the heel, all connected externally with carbon rods, to hold it in place instead of casting it. I had the tibia surgery two weeks later, when they put in two plates and also had to do a bone graft to help fill the gap from the fracture.

After a brief hospital stay with the second surgery, I was finally able to return home and begin the recovery process. I wasn't able to put weight on the leg for three months, and I was told it could be up to nine months beyond that for complete recovery. I couldn't eat solid food after the accident. I had to let the bone graft and stitches in the gum heal before I could start to eat semi-solid and mushy food. Between the loss of teeth and the nausea from the pain meds, I lost about 20-25 lbs in three weeks. Not fun! I was bruised and battered, but happy to be alive and lucky to "walk" away from the incident.

Steve: Judy, that is one harsh accident. Give us a little history of what was involved in your rehab over the past few months.

Judy: While I had the external fixator on, I really couldn't do much other than some core work and some upper body weights. I started doing that a couple times a week after I got released from the hospital from my second surgery. Once the fixator came off, I started going to physical therapy twice a week. There

was a lot of manual manipulation to try and break up the scar tissue to help get the range of motion back in my ankle. The physical therapist also started to give me other exercises to do at home in conjunction with what my cycling coach would have me do. The nice part of the whole deal is that my PT and my cycling coach are good friends; they are bound and determined to get me going again and back to where I was before! I was able to start swimming again once the wounds healed from the extraction of my fixator. In mid November, the doc gave me clearance to start riding on the bike with no resistance. The PT was happy with this, and my coach put together a workout scheme with weights and the bike to get me started again.

Just before Christmas I was allowed to start putting weight on my leg again. That was a more painful process than I anticipated. At that point my coach was able to start putting resistance into my workouts and got me rolling again with some good tempo and steady state sessions in the bike workouts. I lifted at least once a week, but I was riding about five times a week on the Computrainer. I did my first half-century trainer ride on New Year's Eve, getting to re-join my training friends for the now annual New Year's Indoor Century, a wacky new tradition with some friends. With that, my coach started upping my time on the bike. I was lifting in the gym maybe once a week and swimming once or twice a week. It felt so good to spend time on the trainer that I really wanted to focus my time on that and get my cycling legs back under me. I worked my way up to an indoor century ride with friends on January 25, and that felt really good.

During this time I was seeing the PT twice a week. She continued to work

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on my range of motion and breaking up the scar tissue in the joint. She also has been working with an electro-stimulation unit to help try and re-train the muscles in my leg and foot to work properly again. The foot mechanics have gone out the door after the accident and it's been an interesting road trying to get those working properly. She's also used a bit of ultrasound to help break up the scar tissue, help to calm the regeneration of the nerves, and to help with some tendonitis issues that would occasionally flare up. The plates in the leg have been wreaking havoc on the tendons, so a lot of times I've had to stop exercising to let the pain subside and let the tendons settle down.

It's been kind of like a game of cat and mouse on the recovery; chasing away the pains, while still trying to push the limits of the joint. My PT also has got me back on the treadmill with the aid of a weight removal harness. I have worked my way up to 40 minute walking sessions with 40 lbs removed from my body weight. We've attempted jogging with the harness and increased weight removal, but that's been a somewhat painful process as well. We've worked our way up to two 5-minute jogging sessions with 70 lbs removed without too much pain. I can definitely feel a little discomfort, but it's not pain that I can't tolerate.

From what I can see and feel, my cycling coach and PT have done a GREAT job getting me back up and going with a good joint effort. I did a test on the bike trainer in early March, and my power numbers are just a little shy of when I started working with my coach about a year prior to the accident. My endurance is coming back quickly, and I'm able to get through longer rides, still a little slow, but make it through them pretty well.

Steve: In the emails I received from you, it always seemed like you were upbeat and positive. Did you really keep your spirits up throughout the whole ordeal?

Judy: I have been pretty positive about things through the recovery. I realized that I was incredibly lucky to have had the "minor" injuries I sustained. So many other people

don't get an opportunity to walk away from these types of accidents. I'm the lucky one. I also realized that having a negative attitude wouldn't help me recover; it wouldn't help my body heal. If I don't take this opportunity to be thankful and positive about all that I've been given in my life, then I'm doing a great disservice to those who aren't as lucky as I was with these types of accidents. Now I make a GREAT hockey player for Halloween when I take my flipper (false front teeth) out!! And the plate on my tibia helps to keep my socks from falling down! :)

Steve: Were you taking any supplements or doing anything special to help you in the recovery process?



*Judy relaxes with the fixator
Photo - Tom Schmidt*

Judy: The Premium Insurance Caps were extremely helpful in the initial stages of recovery when I wasn't able to eat a whole lot. It was my one sure way to get vitamins and nutrients into my body to help it heal. Tissue Rejuvenator has been helpful for me to maintain what remaining cartilage is in my ankle joint. It's one thing my PT stresses that I take every day. The Compex Sport unit has been extremely helpful in so many ways. I didn't own one until the accident.

I stunned my doctors by completing an indoor century ride in February, riding with resistance on the trainer. My doctor never had anyone do a century ride after going through the surgery I have. It speaks volumes to your products and having a healthy body going into accidents and utilizing your products post-accident.

Steve: Now that it's mid to late June, how are you doing? Are you still considering doing the Fireweed 400?

Judy: Things are progressing as well as I could hope for at this point. I have had several setbacks with cases of tendonitis (thanks to the plates) and other pains as we continue to push the limits of the ankle.

My cycling is coming along, and I'm very close to being where I was last year before the accident. My power and endurance improve each week. I still hope to complete the Fireweed 400 in July, and I think I may be on track for that, barring any other setbacks. I just completed 400km of riding this past weekend, and it felt incredibly good. My power and HR were great throughout the ride and I only started to feel fatigue about the last 10 km. I'm feeling

stronger and faster with each ride, so I think I'm on track to finish Fireweed.

Steve: What future goals do you have?

Judy: Well, if I qualify for RAAM from Fireweed, then I think that's the next goal! Right now it's a matter of taking it day-by-day and month-by-month for my goals. I realize that my lifestyle has changed dramatically, and I can't really do what

I used to. However, there are still so many fun things that I CAN do, and that really keeps me going. There's always exploring more of Alaska with sea kayaks, spending more time with my brother and his family, and lots of other things to enjoy.

My priorities have shifted quite a bit, but I can't say that's a negative thing. It's just a new path for me to travel in the journey of life.

Steve: You've had some excellent results over the past couple of years. Can you give us a list of your top accomplishments?

Judy: Competing in Ironman world Championships in 2005 in Kona and having the second fastest IM time in my career is a definite highlight for me (finishing 25th in my age group). Completing the Fireweed 400 on a tandem bike that same year was a great accomplishment (we set the record that still stands for that event). Winning

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Vitamin B6

A necessary nutrient

Steve Born & Bill Misner, Ph.D.

You may have noticed that several Hammer Nutrition supplements and fuels contain vitamin B6 (pyridoxine). Here are the exact doses:

- Premium Insurance Caps - 100 mg/7 capsule packet
- Mito Caps - 5 mg /capsule
- Liquid Endurance - 5 mg/teaspoon (5mg/15ml)
- Endurolytes - 6.6 mg/capsule
- HEED - 4 mg/scoop
- Recoverite - 2.4 mg/scoop

We received several questions about why we include B6 in so many products. In fact, one medical doctor wrote us asking (paraphrased):

Why do you put vitamin B6 in almost every one of your products? It is known that 50 mg per day is the highest (totally safe) permitted dose for long time usage. Vitamin B6 may have some toxic effects, like disturbances in coordination and it may influence neurotransmitters (dopamine).

Here are our responses to this question and the topic in general:

Steve Born:

According to Dr. Michael Colgan in Optimum Sports Nutrition (New York: Advanced Research Press, 1993), the minimum amount of B6 needed for toxic overdose is 500mg/day taken for months:

The third nutrient to receive a media thrashing for purported toxicity is vitamin B6. Taken in large amounts (500 mg to 5 grams) for months or years, vitamin B6 does cause severe nerve damage [1, 2]. These huge overdoses are usually self-administered by women who have read popular articles on the

use of vitamin B6 to treat premenstrual syndrome.

In The Real Vitamin & Mineral Book 4th ed. (New York: Avery Publishing Group, 2007), Dr. Shari Lieberman and Nancy Bruning (who designed/developed the Optimal Daily Intake standard) wrote, "For optimum general health, the basic Optimal Daily Intake for vitamin B6 is 25-300 mg for men and women." They suggest dosages for specific conditions such as 100-500 mg for anxiety, 50-300 mg for asthma, and 100-500 mg for emotional or physical stress, a category certainly inclusive of endurance athletes.

As for toxicity, they offer this advice:

B6 is relatively nontoxic, but some problems with the nervous system have been reported. This occurs only with huge doses of 2,000 to 6,000 milligrams of B6 daily, although there are isolated cases of toxicity with smaller doses. These side effects appear to be reversible when the dosage is discontinued.

In addition, the following was reported in the International Journal for Vitamin and Nutrition Research 58 (1988): 105-188:

There are many reports stressing the absence of toxic side effects of vitamin B6 at doses up to 500 milligrams. In the strictly scientific sense, no casual relationship between pyridoxine [vitamin B6] and neuropathy has been demonstrated. It would appear that long-term administration of up to 200 milligrams daily may still be considered safe.

I also found this in my files, from Dr. Bill:

Pyridoxine (B6) Upper Tolerable Intake Level (UL)

The Food and Nutrition Board of the Institute of Medicine established an upper tolerable intake level (UL) for vitamin B6 of 100 mg per day for adults (Institute of Medicine. Food and Nutrition Board. Dietary Reference Intakes: Thiamin, riboflavin, niacin, vitamin B6, folate, vitamin B12, pantothenic acid, biotin, and choline. National Academy Press. Washington, DC, 1998). In humans, a 100 mg dose will produce a plasma peak in 2-hours with a subsequent half-life of 8 hours. Add to this equation, exercise-induced fluid loss of the water-soluble vitamin B6 from energy expenditure, there are no toxicity issues with less than 20% of the upper ODA (a.k.a. ODI) therapeutic dose. Toxicity effects associated with Vitamin B6 may begin to manifest in isolated hypersensitive subjects when amounts greater than 500 mg per day are supplemented.

Vitamin B6 peaks in plasma in about two hours after ingestion, with a half-life of eight hours. Take into account B6 losses both from fluid (urine) and from exercise energy expenditure, and you can see why the Optimal Daily Intake dose is in the range of 100-500 mg daily. This is why we include 100 mg in every 7-capsule packet of Premium Insurance Caps and a conservative amount of 6.6 mg in each capsule of Endurolytes.

My position reflects that of Drs. Colgan, Lieberman, and Misner. Vitamin B6 is a water-soluble vitamin, rapidly depleted during times of physical stress. B6 is a readily dissipated vital nutrient with a short-life span; we're

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my age group at Ironman Brazil and qualifying for Kona. Getting inducted into the Athletic Hall of Fame for my college diving career at Colorado School of Mines. Second place overall at our local Eagle River Triathlon (I'm really not good at sprint distance tris, so I really like that one). Second fastest Alaskan Woman in the Mayor's Midnight Sun Marathon in 2005 (winning my age group and I think 7th place overall).

Steve: Of those races, is there one in particular that stands out as your favorite? If so, which one is it and why is it so special to you?

Judy: My favorite has got to be the Ironman World Champs in Kona in 2005. The atmosphere there is one that just can't be duplicated anywhere else. I had my mom and college diving coach there for support. He was the one that got me started on my nutrition and HR training, and that was truly special. I was with the TriTravel tour group, and those folks were the best. So much fun and support through it all! They are a FANTASTIC group of people. Everything just seemed to come together for me in that race. I had some down points, but overall it was an excellent race and I was just so happy to finish and then to finish before sunset! I was only 30 minutes behind the other two guys from Alaska, and that felt great. I had as perfect of a day as I could have with that one.

Steve: Unless it's the same race as you mentioned in the previous question, is there a race where you felt that "everything is clicking and I feel on top of the world?" Please tell us what that race was and what the experience was like.

Judy: Although the Kona race was a good one, I didn't quite have the run training I should have had going into it (wheels started to come off at 14 miles, as that was the longest run I had done going into it). So I think my IM Brazil race was the one where everything just clicked. I felt really good on the swim and was so happy that I scouted out the

swim before hand, picking out the right landmarks. The bike ride felt good, even with some strong headwinds. It was a fast and fun bike course. The run was where it really clicked, as I was able to negative split it. I paced myself well for the first 20km, which had most of the hills, and then kicked it in with each successive 10km. I passed the next woman in my age group with about 5km to go, kicked it hard and was able to win my age group! If I didn't have that energy going into the final km, then I wouldn't have made it to Kona. I also met up with a GREAT group of folks



while there in Brazil who were awesome at keeping me going throughout the race and heaps of fun to be around. I had a GREAT time and those folks are just fantastic!!! I don't know if I would have had as good of a race as I did without meeting and being around them.

Steve: We've all had races that we'd like to forget about (boy, don't I know that feeling!). Is there a race you've done where nothing went right?

Judy: My first Ironman, Ironman Australia in 2003. Getting elbowed in the eye during the swim and kicked in the ribs. Massive mechanical problems on the bike, suffering from the heat on the run. It was definitely a learning process that I don't want to go through again. I don't know that I want to forget about that race though, as it was my first IM and I had a GREAT time while there in Australia. I just would rather forget about the stupid mistakes I made through it.

Steve: When your training was (and will again be) at peak volume, what does a typical training week for you look like?

Judy: When I was doing IM's, on my peak volume weeks I would be running about 40-50 miles, riding about 10 hours and swimming about three hours. Now that I'm really just cycling, going into Fireweed my peak weeks are 15 hours or more on the bike.

Steve: What Hammer Nutrition supplements and fuels do you use regularly? What's your daily supplement regimen look like?

Judy: On a daily basis I take Mito Caps, Race Caps Supreme, Premium Insurance Caps, Phytomax, and Tissue Rejuvenator. On training days I add Xobaline and Super Antioxidant. I'm hooked on Perpetuum with Hammer Gel for my race/training fueling and sometimes throw in a Hammer Bar. I tend to eat the Hammer Bars like candy some days... Yum!

Steve: Having gone through what you have, are there any suggestions or special advice that you can give to other athletes who may be struggling with injuries, including those who haven't gone through an extreme injury like you have?

Judy: Don't let it get to you. There's nothing you can do about the past; just take things day by day, enjoying the small successes. Realize and take advantage of the down time with other activities that you enjoy. Be thankful for the down time and all the things you still can do. Know that your fitness will come back; just be patient with it. LISTEN TO YOUR DOCTORS; THEY KNOW WHAT THEY'RE TALKING ABOUT!

Steve: Judy, thanks for taking the time to talk today and for sharing your insights... you're a true inspiration. All of us at Hammer Nutrition want to wish you the very best as you come back stronger than ever. Please keep us posted.

Dietary Protocol Reduces Elevated Cholesterol

All you ever wanted to know and more

Bill Misner, Ph.D.

An old friend recently experienced a severe heart attack. This active 42-yr old lean construction contractor gives the appearance of a healthy-fit person. He often teased me about eating too much like a rabbit (modified plant food diet) than the menu he preferred (the American “butter-dairy-meat-potatoes diet”). His code-3-brush with death motivated him to ask for a diet protocol to resolve his life-threatening elevated cholesterol condition. He also reported that he had suffered the loss of several family members from elevated cholesterol related premature heart attacks. I then wrote a plant-based protocol, which he followed precisely for 60 days. I recently received the following encouraging report:

“I just received my checkup blood labs report and my cholesterol level went from 265 down to 124. I have lost -15 lbs. so far but I need to do more exercising, as it is hard to do when I come home exhausted from working hard all day. The doctor said that I must have been eating a whole lot better (including medication) to get such a significant drop in my cholesterol level. I have been eating a lot more fish, whole grains, fruits and vegetables and only had red meat twice in a month, quite a switch for me. I feel pretty good...”

This is a description of the Protocol advised:

REDUCING CHOLESTEROL

Elevated serum cholesterol levels are known as Cholesterolemia. The first set of suggestions is from diet then some of the others are from supplements that may cost more than they are worth. Approximately 30% of the body's cholesterol content is derived from

dietary sources, however the body absorbs 50% of dietary cholesterol - the remainder passes through the body unused and is excreted (via the bile). Current guidelines from the National Cholesterol Education Program recommend that people keep total cholesterol to 200 mg per deciliter or less and HDL (good) cholesterol well above 35, with more being better. Among cardiologists there is growing acceptance that the goal for HDL should be even higher. Total cholesterol, LDL (bad) cholesterol, and HDL are important for there is increasing evidence that the ratio of total cholesterol to HDL is the critical factor for preventing heart disease. Cardiologists now suggest that a more healthful goal for HDL should be 45 for men and 50 for women, with a ratio of total cholesterol to HDL of approximately 4-1. Although the strategies for raising HDL are limited, EXERCISE will increase (good) HDL-levels. In general, soluble and insoluble fiber intake will positively influence decreasing bad LDL's while increasing the good HDL-cholesterol. Cholesterol is utilized to make cell walls and all hormones, hence the liver makes those levels to help you respond to the environment within and without your being. If a high meat, high processed food diet is causing LDL elevation, then there are several ways to reduce LDL's by adapting dietary interventions.

Approximately 20-30% of the total cholesterol values come from diet, while the other 80% of your blood lipid values come from your liver's response to internal biochemistry. Cholesterol is found only in animal foods (meats, seafood, eggs, dairy products)... THERE IS NO CHOLESTEROL IN PLANT FOODS. When human cholesterol levels are too high, it may be due to consuming

too much animal/dairy high-cholesterol and high-saturated fats. Small minorities have high levels because their body genetically produces too much cholesterol. A number of studies have shown that vegans or near-vegans have much lower total cholesterol and lower Low Density Lipoprotein (LDL) levels than meat eaters. It is the LD Lipoprotein that transports cholesterol to the artery walls, where it forms plaques that narrow the arteries. Therefore, it is desirable to have low LDL levels as well as low total cholesterol. Vegans have lower total and lower LDL cholesterol levels than lacto-ovo vegetarians. However, even lacto-ovo vegetarians have lower cholesterol levels than meat eaters. This difference is due to diet because it exists even when largely vegetarian Seventh Day Adventists are compared to similarly clean living, but meat-eating Mormons.

There is now interest in the cholesterol-lowering potential of SOY PROTEIN. A review of 20 studies involving patients with high cholesterol showed that in 60% of the studies, average cholesterol was dramatically improved when soy protein was substituted for animal protein in the diet, with improvements ranging from 10% to 34%.

FIBER is the digestive-resistant part of plant food that passes through the stomach and intestines pretty much intact. One theory holds that SOLUBLE FIBER, found in fruits, vegetables, and beans, inhibits the absorption of fats. That, in turn, reduces the amount of “bad” cholesterol that gets into the blood. Fiber also slows [blood] clotting. Another possibility is that people who eat more fiber eat less food overall, because fiber

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makes you feel fuller quicker. Those in one study with the highest fiber intake had the lowest fat consumption. More than 200 studies credit fruits and vegetables with protecting people against heart disease and various cancers, but no one knows exactly how this happens. Vitamins may play a key role. Fiber also protects against colon and breast cancer, helps control diabetes, suppresses the appetite, and controls constipation. In the case of colon cancer, it sops up bile acids, which are thought to contribute to tumors. Fiber also hurries the gastrointestinal journey of cancer-causing substances, such as compounds produced by meat cooked at high temperatures and byproducts of intestinal bacteria. The less time these things spend in the gut, the less harm they can do. Hence, filling up on fiber can reduce cholesterol levels, according to a recent study of 250 men and women with high blood cholesterol. This study showed that 10 grams a day of PSYLLIUM, a fibrous material, when combined with a low-fat, low-cholesterol diet, can reduce harmful cholesterol by as much as 5%. That reduction translates into a significant 10-15 percent reduction in the risk of heart attack, according to the study's authors. It is thought that psyllium lowers cholesterol by removing bile acids, which are converted into cholesterol, from the body. Other foods, such as OAT BRAN & SOY PROTEIN, can also reduce cholesterol levels. Foods high in soluble fiber include oat bran, oatmeal, beans, peas, rice bran, barley, citrus fruits, strawberries and apple pulp. Insoluble fiber doesn't seem to help lower blood cholesterol. But it's an important aid in normal bowel function. Foods high in insoluble fiber include whole-wheat breads, wheat cereals, wheat bran, cabbage, beets, carrots, Brussels sprouts, turnips, cauliflower and apple skin. I recommend at least 30 grams of fiber per day ideally from soluble sources. From only 2 tablespoons Oat Bran [0.414 ounce] you are getting 1.8 grams of fiber, mostly soluble fiber. I put this in to show the value of oat bran as giving you 1/15th of your fiber requirement and where you can get more from other fiber-rich food choices for healthy-lowering serum cholesterol.

Cholesterol inhibitors in GARLIC identified significantly decreases cholesterol production in liver cells.

Researchers from Pennsylvania State University suggest 3 chemicals - S-allyl cysteine, S-ethyl cysteine and S-propyl cysteine - decrease cholesterol production in rat liver cells by 40 percent to 60 percent. Using fresh garlic extracts, researchers also found that another group of compounds inhibited cholesterol synthesis by 20 percent to 35 percent. High levels of low-density lipoprotein (LDL), or "bad" cholesterol, can lead to heart disease and stroke. It may help if you are eating fish 2-3 times per week and eliminate/limit other lean meat sources. It may also help to take DHA/EPA Salmon Oil made by Carlson's, an essential fatty acid supplement. Lowering cholesterol is important using dietary alterations such as gradually increasing dietary vegetables, fruits, and high fiber whole grains or fiber supplemental Psyllium and Garlic. Restricting the level of processed foods, red meat, dairy, and high-glycemic index carbohydrates will further assist you in controlling excessive cholesterol levels and triglycerides.

What you do with diet effects $\pm$ 20-30% of your blood lipid cholesterol totals.

CHOLESTEROL-ELEVATING FOODS

FOOD	CHOLESTEROL (mg per 100 grams - 3.5 ounces)
Brain - Sheep	2,200
Egg - Yolk	1,500
Eggs - Chicken	550
Kidneys - Sheep	375
Liver - Sheep	300
Caviar	300
Butter	240
Lobster	200
Heart	150
Shrimp	125
Crab	125
Cream	109
Cream Cheese	103
Veal	90
Lamb	70
Turkey (leg)	75
Parmesan Cheese	68
Beef, Pork, & Mutton	65
Chicken	60
Ice Cream	45

CHOLESTEROL-LOWERING FOODS

Modified Vegetarians have remarkably less Cholesterol from consuming the following foods:

1. LOW-FAT LIVE-CULTURED

- YOGURT can lower total serum Cholesterol by -30% by facilitating the conversion of Cholesterol to Coprostanol in the Colon (due to the Hydroxymethyl Glutarate content of Yogurt).
2. OATS lower total serum Cholesterol by washing away Bile Acids in the Gastrointestinal Tract that would otherwise be converted to Cholesterol (due to the Beta Glucans content of Oats and Oat Bran). OAT BRAN lowers total serum Cholesterol by washing away Bile Acids in the Gastrointestinal Tract that would otherwise be converted to Cholesterol (due to the Beta Glucans content of Oats and Oat Bran).
 3. BANANAS (especially green, unripened Bananas) cause serum cholesterol levels to fall by up to -33%.
 4. FISH OILS reduce the absorption of dietary Cholesterol and reduce the synthesis of Cholesterol within the Liver. Fish Oils that lower serum cholesterol are Docosahexaenoic Acid (DHA) & Eicosapentaenoic Acid (EPA) SALMON OIL (2-4 grams per day).
 5. LECITHIN (10.5 g per day) powder lowers elevated serum cholesterol levels (by approximately -33%). 10.5 grams is about two teaspoons.
 6. OLIVE OIL lowers total serum Cholesterol, by preventing it from entering the bloodstream (due to the Cycloartenol content of Olive Oil).
 7. FLAX SEED OIL lowers total serum cholesterol levels (due to the high content of Alpha-Linolenic Acid in Flax Seed Oil). Flax Seeds (20 grams per day) lower total serum Cholesterol levels by up to 9%.
 8. CAROB lowers total serum cholesterol levels by -15%.
 9. APPLES lower total serum cholesterol levels (due to the Apple Pectin content of Apples). Pectins lower total serum Cholesterol levels by binding to Cholesterol, causing its excretion.
 10. GREEN TEA lowers total serum cholesterol levels. EGCG content lowers total serum cholesterol levels.
 11. CHILLIS lowers total serum cholesterol levels (due to the Capsaicin and Dihydrocapsaicin content of Chillis).
 12. GRAPEFRUIT lowers total serum cholesterol levels (due to the Grapefruit Pectin content of Grapefruit).
 13. ARTICHOKE LEAF lowers total serum cholesterol levels. Globe Artichoke lowers total serum cholesterol levels (due to the Cynarin content of Globe Artichokes).

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Gary Pennington

In November of 2005 we introduced you to a group of Christian cyclists in Uganda who needed support. With the help of our friends at the International Christian Cycling Club (IC3), we provided the group with road bikes, supplies, clothing, and other necessary items to help them further their ministry. Our combined efforts have shipped over 3,000 pounds of goods to assist the team. In the latest round of support, Pastor David returned from San Diego to Uganda with 25 boxes stuffed full of cycling related items desperately needed for his church. Currently, the team has 12 riders, and they hope to expand its membership if bikes and other gear can make it into their hands.

The team is part of Pastor David Ssebuufu's Oasis of Life church (www.oasisoflifeministries.org) in Jinja, Uganda. The church has about 1,000 members, and the numbers are growing rapidly, thanks to outreach ministries like the cycling team. In many small towns throughout Africa and much of the third world, churches like the Oasis of Life Church help people meet not only their daily spiritual needs, but also their day to day needs, by supplying food, education, and sometimes shelter.

The team's public image is growing throughout Uganda and Africa, and is a source of pride for the people of Uganda. Several months ago the Chairman of the International Olympic Committee visited Uganda, and the team paraded with the Chairman's motorcade as he toured Uganda.

The team regularly competes in races in Uganda and in neighboring countries to help spread the love of Jesus Christ to a region that has been plagued with war, famine, and disease for so many

years. In June, the team is participating in the nine-day Tour of Rwanda that showcases riders from other African nations. Last year, Asuman Geesa, the team's leader, finished second in the race and was then invited to participate in the World Championships in Austria. More recently, he was selected as Uganda's Cyclist of the Year.

We are honored and gratified to support them in their mission in a part of the world so desperately in need. It's been exciting to watch this team grow over the past few years, and we will continue to support them going forward. As you can imagine, the needs of the team and the ministry offer abundant opportunity for generous contributors. If you would like to find out how you can help, please contact Gary Pennington (the U.S. liaison for the church) or David Ssebuufu.

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(619) 808-3232

David GM Ssebuufu
(davidssebuufu@gmail.com)

Also, visit these websites for more info, pictures, and videos of the team:
(www.christiancycling.com)
(www.socalchristiancycling.com)



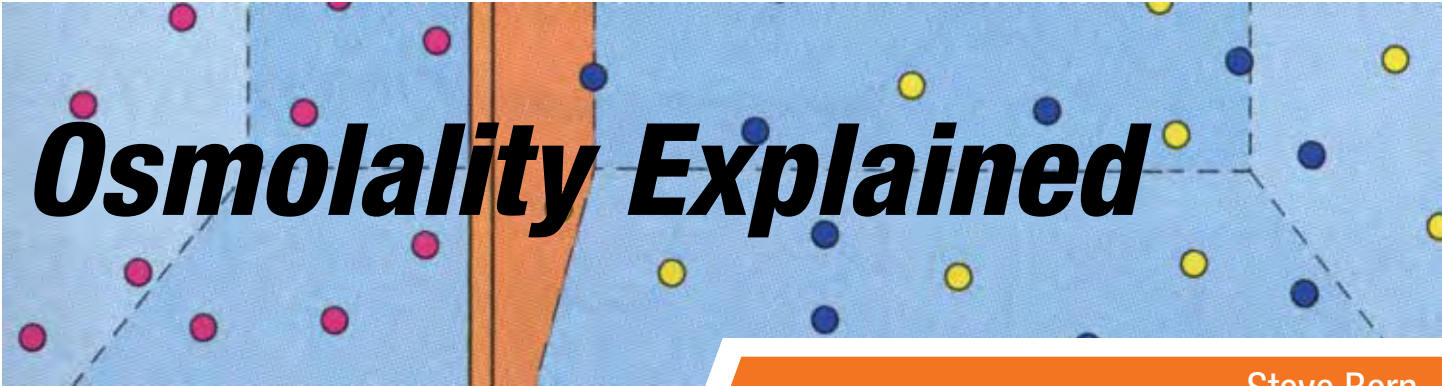
Riding through the streets of Jinja, Uganda
Photo - David Ssebuufu



Riding through the streets of Jinja, Uganda
Photo - David Ssebuufu



Asuman Geesa
Photo - David Ssebuufu



Osmolality Explained

Steve Born

In our product literature, we often use the term “osmolality,” as this is a crucial factor when formulating (and consuming) an energy gel or drink mix. It also comes into play when discussing hydration. Customers frequently ask, “What is the definition of osmolality?” Let’s give a “close enough for our needs” definition.

You might guess that osmolality might be related to osmosis, and you’d be right. Osmolality is a measure of concentration, specifically the concentration of a solution’s dissolved particles, or solutes, that can permeate a cell membrane and thus contribute to osmotic pressure. Osmolality is a measure of the concentration of these particles. In humans, only a handful of small molecules and ions, such as sodium,

chloride, glucose, and urea account for almost all osmotic activity. We are most interested in glucose because the absorption of that molecule determines energy flow in the body.

With respect to human physiology, we can define three categories of osmolality:

Hypotonic = less than 280 mOsm
Isotonic = between 280-303 mOsm
Hypertonic = greater than 303 mOsm

Hypotonic refers to the situation when the concentration of solutes outside the cell is lower than inside the cell; this results in a movement of water into the cell that could lyse (burst) the cell.

Isotonic indicates equal osmotic

pressure inside and outside the cell. If a solution is isotonic, there is no net movement of water.

Hypertonic is when the solute concentration outside the cell is greater than inside. This leads to a net movement of water out of the cell, eventually causing plasmolysis (the cell shrivels).

Why do we care so much about osmolality? Among other things, it determines how much energy your body can process and use. Cells regulate their internal milieu through osmosis, so osmolality becomes a very important physiological concern in many ways. Glucose must enter into muscle cells to

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14. **ORANGES** lower total serum cholesterol levels (primarily due to the Pectin content of Oranges).
15. **PEARS** lower total serum cholesterol levels (due to the Pectin content of Pears).
16. **STRAWBERRIES** lower total serum cholesterol levels (due to the Pectin content of Strawberries).
17. **SHIITAKE MUSHROOMS** lower total serum cholesterol levels (due to the Eritadenin content of Shiitake Mushrooms).
18. **ALMONDS** lower total serum Cholesterol levels (due to the Oleic Acid content of Almonds).
19. **PECAN NUTS** lower total serum Cholesterol levels (due to the Beta-Sitosterol content of Pecan Nuts).
20. **FENUGREEK SEEDS** lower total serum Cholesterol levels.
21. **PSYLLIUM SEED HUSKS** can reduce total serum Cholesterol levels by

- 15% (due to the Psyllium content of Psyllium Seed Husks).
22. **CARROTS** 200 grams raw carrots lower total serum cholesterol levels by an average of -11%.
23. **CELERY** can lower total serum Cholesterol by -7%, even at low doses (due to the 3-n-Butyl-Phthalide content of Celery).
24. **GARLIC & GARLIC OIL** lowers total serum cholesterol levels. Aged Garlic Extract lowers total serum cholesterol levels (by approximately -7%).
25. **TURNIPS, SWEET POTATOES, RUTABAGA, ONIONS, AVOCADO, CABBAGE, BARLEY GRASS, HAWTHORN (BERRIES), INDIAN GOOSEBERRY, and SOYBEANS** have also been shown to lower serum cholesterol levels.

Conclusion

Endurance athletes are not invulnerable to diet-induced elevated cholesterol

levels. A variety of foods from this list is recommended to be consumed on a regular basis. Each food suggested is supported by a variety of research papers reviewed. This does not imply to consume all these foods in one day, but choose a variety of foods high in fiber with some healthy fats from fish, fish oils, or nuts. Fiber intake should be between 30-50 grams/day and fatty acid oils should be above 3 grams per day to be effective. Taken instead of the butter, dairy, meat, potatoes “American Diet”, a weight loss of around 12-15 lbs may occur within 8-12 weeks. Later your body will compensate for this and the weight loss will cease. Hydration with fluids, added to avoiding processed foods, dairy, high fat meats, and processed packaged sugars is imperative.

References

Available upon request

Look Back in Time to See the Future -

And beat Father Time!

Tony Schiller

A tip I've given a thousand times to endurance athletes is keep a journal of your training and racing. Your personal story deserves to be preserved and archived for historical and nostalgic purposes. It's uplifting to pull it out on a rainy day and find chapters in time when your own feats make you shake your head in awe, "Wow, did I actually do that?"

I'm still fond of several college highlights including "the streak", a 1000+ day stretch in the late '70s without ever missing a single day of running. Revealed in the journal are story-classics depicting the zeal needed to keep that streak alive: like the early departure from keggers solely for the purpose of stumbling through the required 5 miles before the midnight deadline. Or the first transition run, a horrid 5-miler after a sugar-induced bonk during a 125 mile untrained ride home for summer break (you guessed it, bike miles didn't count in the streak).

While it's fun to reminisce about what you could once do - like 26-straight 100+ mile weeks preparing for the '84 Olympic marathon trials, or the 700+ total number of swims, bikes and runs completed as a pro in '89 - in later years those numbers highlight peak benchmarks for trend mapping, and when placed onto a time continuum to the present, they present an accurate projection for the future.

OK, maybe that's a sobering site, but the truth will set you free. If the thought of realizing you may in the near future not be able to do what you can do now, doesn't motivate change, then try this one: you could be on a path not just to going slower, but to not being able to go at all. Ouch. So look at your own time continuum to see if the future looks promising, or does it go

flat line way too soon?

Doing this exercise revealed my own flat line and helped me make some changes, like admitting it was not ok to run myself into the ground chasing a short term goal. To me, no race is worth premature immobility and forced early retirement from racing. That's an outcome many baby boomer endurance athletes have already experienced.

But it doesn't have to be all-or-nothing. You can still be fast and still enjoy high-volume training. You just need to listen to your body and apply these 3 rules:

1) Pain doesn't produce gain... at least not pain of a joint, muscle or body part. Like an out-of-true wheel that only gets worse the more you ride it, your body needs you to stop and true it, not keep pushing through pain as if it's just par for the course.

2) Strength and Flexibility training can't be nice "add-ons". I challenge any imbalanced and inflexible athlete out there to replace 2-hours of aerobic work a week with strength and flexibility training. You'll be shocked by the results in just 6-8 weeks.

3) Recovery is King. Go hard - just don't forget your body needs longer recover times than it used to. Hard training only benefits your body through recovery that allows you to go to a new and higher baseline.

If like me you struggle to adhere to these rules, maybe it's time to consider advice I received about two years ago.

Though always a faithful believer in the Hammer products and the wisdom of Brian Frank, when he pitched me on the

benefits of owning a Compex Sport, I was as skeptic as they come.

"Come on", I said, "an electrical stimulator can do all that?" H explained how it was a lot more than that, and intrigued, I was still unsold while my list of nagging body parts got longer, especially a pair of seizing calves and a worsening high hamstring. So figuring it'd probably be returned for a refund after the 30-day trial, I gave it a whirl and have been a loyal Compex user ever since.

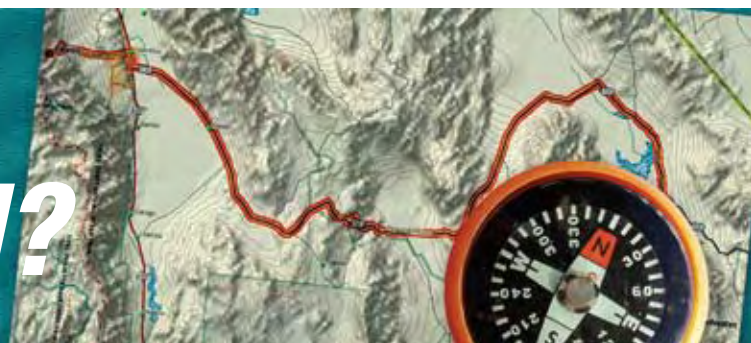
While still not seen in the weight room much, I make sure to get regular sessions in on the Compex strength and endurance programs. It shows as I'm riding stronger this year than in a long time. It's also easier to do easy stretching routines because my body isn't always hurting. The calves are great - knock on wood - and the decades long worsening hammy is gradually releasing and the long stride is flowing again. Best of all is using the Compex for recovery. The sessions work. I think the technical term for it is, "they blow the junk out of your legs after a hard workout so you can more quickly go hard again."

For me, as the ailments of father time pile on, it's a great relief (and competitive advantage) to know I have a machine waiting to be used at my convenience which will help keep my body feeling and performing like a younger man. I expect it to be a part of my daily routine for years to come.

Like many long-term Hammer customers, Tony Schiller has helped raise the bar for what master's competitors should be able to accomplish. He holds his own against top athletes half his age. Tony is a corporate motivator and the director of one of the world's largest triathlons for kids. Check it out at www.miraclekidstriathlon.org

Adventure Racing Dead?

Hardly!



Steve Born

I honestly can't remember where, but I do recall reading a magazine article recently with a headline something like, "Is Adventure Racing Dead?" Based on the number of adventure races we're sponsoring this year, our answer is that it's most certainly alive, and doing very well, thank you.

We're honored to sponsor many adventure races annually, and one of those is the "No Sweat 30 Hour Adventure Race," staged by Austin, TX based Too Cool Racing. Robyn Cantor, one of Too Cool's directors, recently emailed me with a great photo from last year's race and gave some information about this year's epic adventure race.

The race, slated for August 25-26, promises to be even cooler than ever before. Set at the nearly 5,000 acre Parrie Haynes Ranch, just an hour north of Austin, the course features miles of single track, beautiful hill country navigation, a cool, crisp river, and high and low rope elements. Teams will get USARA expedition points as well as 30 hours to finish what has traditionally

been a grueling, highly competitive race. With temperatures that can soar over 100°, only teams properly trained, hydrated, and fueled (which means that they will have their Endurolytes in hand!) will finish. Amenities include air-conditioned cabins, pre-race dinner,

and post-race brunch. Too Cool offers their patent-pending "skip point" for this race, in which teams that bring canned goods for the food bank get credit for one check-point skip. For more information, go to www.adventureracingtexas.com.



The winning team at last year's "No Sweat 30 Hour Adventure Race" is all smiles.

continued from page 29

be used, but it first must be absorbed in the gut.

If the osmolality of your sports drink deviates from body fluid levels of 280-303 mOsm, it will be delayed from absorption until gastric organs can either add more fluid or the electrolytes necessary to correct the osmolality of body fluid or blood serum level.

Simple sugars match body fluid osmolality when consumed in concentrations not exceeding 8%. Complex carbohydrates match body

fluid osmolality at concentrations as high as 20%, which means that your system is able to digest a greater volume of calories from complex carbohydrates than it can from simple sugars. This is one of the primary reasons why Hammer Nutrition uses complex carbohydrates only; none of the Hammer fuels contain any simple sugars. It is also why we recommend that you avoid fuels containing multiple carbohydrate sources and avoid combining fuels containing simple sugars with Hammer Nutrition fuels. Unless you're going at a very leisurely pace of 50%-55% of max HR, the combination of various

carbohydrates won't empty from the stomach, leading to decreased energy production and a variety of stomach issues.

Consuming more than 8% simple sugar solution or more than 20% of a complex carbohydrate maltodextrin solution increases the risk of hypertonic solution-inhibited performance, such as gastric stress, muscle cramps, nausea, and stomach shutdown. Eating too much solid food, rich simple sugar solutions, or too high electrolyte volume can create a hypertonic solution environment in the gut.

Nate's Corner

Nate Llerandi



Nate Llerandi. These two are ones that I think are still quite applicable even though they date back up to 5+ years!

*Steve's Note:
Per usual, I sometimes dig waaaaaay back in the "Tip of the Day" archives, the email posts I keep on hand from longtime sponsored athlete/coach*

Mid-Summer Blues - Keep it Fun!

I don't know about you, but mid-summer I always hit a lull in motivation. I've been very concentrated on training hard for several months and I've done my first two races. Everything is going extremely well-better than planned-yet I'm losing a little bit of steam.

A week's vacation at the beginning of July really helped. I trained a little bit, but nothing structured. I instead concentrated on enjoying my surroundings rather than focusing on where my HR was or how long/far I was going. It was a refreshing break both mentally and physically. My focus is somewhat renewed and I'm ready to attack the rest of the season.

Take time to smell the roses. Use recovery days to back away from the inherent structure and work more on enjoying the workout. Look for sights you've never noticed before because your nose is to the grindstone. Try out new training routes.

When our focus gets so honed during

the race season, it's easy to get too focused. Sure, a structured, well thought out, super-focused plan will yield great gains and prepare you well for racing. But it's that same plan that can run you down mentally (not ANOTHER anaerobic track workout!!!).

If you feel this happening, take a refreshing step back and institute a transition week. Work out less (about 50%) and do so in disciplines you don't normally do (roller blading, swimming, hiking, what-have-you). You'll be amazed at the therapeutic affect of such a week; you'll be even more surprised at how much fitness you DON'T lose.

Don't Sweat the Small Stuff. It's All Small Stuff.

You've heard this saying before. And it's true. Too many athletes sweat everything. They can't get out of their own way. And it's not to the betterment of themselves or their pursuits.

Every decision does not need to be monumental; to ride indoors or outside for a given workout; to run alone or with a group; one helping of pasta at dinner or two; should I have dessert or shouldn't I. The list is endless.

Contemplating what we do to ensure we are doing everything we can to better ourselves as athletes is one thing, and it's OK to do this. But to spend every waking moment focusing on all of this is overkill... in a bad way. Once the horse is dead, beating it further only makes it more of a bloody mess; it ain't any deader.

There is another saying. You can only have one Master. So, if you choose to focus your energy on your training and

the associated niggling, little details, then other facets of your life-like family, your work, any religious beliefs you may/may not hold, hobbies, etc.-all take a backseat... all of them. Decide what is most important in your life and make that your central focus. All other facets will fall into place behind that central focus and, you'll find, not to their detriment.

When your priorities are in order, everything "clicks" and the machine that we call Life hums along like a purring kitten. But, throw things out of whack by focusing a lot of attention on the most inconsequential of details and you'll throw a wrench into the well-oiled machine. Then, everything breaks down.

So, next time you're wondering if you should buy this piece of equipment or that one, or maybe that other one-oh, geez, what should I DO?!?!?-slap yourself in the face and take a deep breath. Is deciding between a 36g, 46g or a 60g water bottle cage really of monumental concern? You'd be surprised how many athletes think it is.

Enjoy the pursuit. Focus on what you're doing while you're doing it and then let it go. Move on to something else. Don't sweat the small stuff. You'll enjoy your training more, you'll enjoy your life more, and you'll get more out of every facet of life.

HOT TIPS

Extending Compex pad life

Prolong the life of your Compex pads and increase the conductivity by using electrode gel, which is available at any medical supply store.

Website Enhancements

...and more to come



Mandy Nardy

By now you have probably noticed some of the minor cosmetic changes that we've implemented on the website. Our goal, in addition to providing you with a positive experience, is to remain consistent with our current print media efforts.

One of the biggest visual updates was to integrate the "badge" for our primary brand and logo. The badge is the latest logo to come out of our creative corner. It's bold, and I have been dying to get it on the web since Angela came out with it earlier in the year. The crank (we love the crank, don't you?) will remain a part of our company look. This year we are celebrating our 20th anniversary, so we updated the crank with a banner. You will see it throughout the site, as a secondary symbolic trademark. In addition to the website "signage", we have updated the colors, layout, and some details. We hope you find these updates refreshing and easy on the eyes.

Moving on to the technical side of things, we have several projects in the works to upgrade our service to you and provide a more interactive website.

These projects include:

Website-Point of Sale Integration- Integrating our two main systems is a huge undertaking, but this project is underway, and we expect to have a portion of the site integrated directly with our Point of Sale (POS) system by the end of the summer. You will be able to do and see more through the website than you do now. This includes accessing customer records, referral points earned, order history, and order details. Integration will also provide Hammer a better means to manage inventory and offer promotions and discounts, like the ones you receive in the mail.

Personalized Content- You probably haven't noticed, but we've been collecting visitor and purchasing data for the last two or three months. Through the use of cookies, we have begun to store all kinds of information that will help us to make your website usage more automatic. You can expect to see some personalized messages, auto-filled forms, and saved contents in the shopping cart.

Don't worry about confidentiality, though. None of this information goes anywhere but our office, and it's the same customer information we have

from you anyway. Sometimes the net can be a scary place regarding personal information, but at Hammer Nutrition we value the privacy of your data as much as we value your health.

These are but a few of the enhancements coming your way. We hope you find these additions seamless, and we will continue to look for ways to improve our services. As always, we encourage you to send us your thoughts and suggestions. You can contact us by phone, mail, or through our online form at <http://www.hammernutrition.com/feedback>.

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On Top Of The World

Dave Rasmussen

Climbing to the top
Photo - Dave Rasmussen

On May 23rd, Dave Rasmussen, Whitefish resident, Hammer Nutrition client, and talented cinematographer, reached the top of the world as part of a medical climbing expedition. Hammer Nutrition was proud to support Dave on his quest. Below is an excerpt from an email he sent after summiting Everest.

When I was at K2 Base Camp in 1999, I interviewed a very experienced mountaineer from Poland. He told me the mountaineers in Poland have a saying, "The summit is in base camp," meaning of course that a climber shouldn't be overly excited on reaching the summit. There's still a descent to make. Many mountaineers have reached the top of a mountain only to die on the way down. Once back in base camp, the summit can be celebrated. Now that I am back in base camp, I can share with you that I have summited Everest.

To summit Everest from the South side, in Nepal, you launch off from Camp Four at the South Col, the highest pass in the world at 26,000 feet. To get to Camp Four takes weeks of climbing and acclimatizing but once that is done, the basic program is to leave Base Camp, climb through the Khumbu Icefall, pass by Camp One and go directly to Camp Two. This is day one. Camp Two is located at the base of the massive rock pyramid that forms Everest. Camp Two is also at the base of the Lhotse Face. Lhotse, the fourth highest mountain in the world, rises up to the southeast of Everest and forms the right hand ridge of the South Col.

So, on the first day of our summit trip, we arrive at Camp Two. Day two is a rest and filming day. On day three, we climb the steep ice/snow Lhotse face for several thousand feet to Camp Three, located on some snow and ice "bulges" on the steep face. At Camp Three there is nothing to do but sit in your tent and get used to the

thin air. The tents are cut into the slope so that the only space you have to "walk around" is a very narrow space behind your tent and about three feet on either end. You are literally confined to an area about as big as a mid-sized car. With clear skies and no wind, the temperature in our tent rose to 108 degrees. Nobody thinks about it being that hot at over 23,000 feet, but it does happen and it is not comfortable.



On day four, we climb higher up the steep Lhotse Face until we cut to the left and traverse across the face to a rock feature called the Yellow Band. We climb up over the Yellow Band and continue an upward traverse to the base of a large rock outcropping called the Geneva Spur. From here it is a fairly easy quarter mile walk that puts you into the South Col, home of Camp Four.

Many people carry on to the summit on the evening of the day they reach the Col. But we have science to do. The climb from here is laid out right before our eyes. We can see quite clearly what we have

to do to get to the top. We can see it, but as of yet we cannot perceive what it will mean to our bodies to actually do it.

We do science at the South Col on days five and six. Science that has never before been done at this altitude. Science that



Photos clockwise from top : BBC producer Graham Hoyland crossing a ladder near the top of the Khumbu Icefall (about 19,000 feet), night shot in base camp (17,500 feet) of my tent with 6713 meter (22,024 foot) peak Lingtren in the background, Dave on the summit (8850 meters, 29,035 feet) on the morning of May 23rd



will hopefully someday help sick people at low elevations.

By 8:00 PM on day six we are all gathered outside our tents. The wind is howling and we are putting on crampons, filling water bottles with hot water,

continued on page 35

continued from page 34

zipping up our down suits, putting on mittens, and adjusting our oxygen regulators to between two and two and one half liters per minute flow. By 9:00 we start walking away from our tents. This is now for real: we will try to climb to the top of the world.

There is a bench to climb right out of Camp Four. Once on that bench, the angle steepens and you climb at a fairly high angle up a snow chute with the goal of reaching the "balcony". The balcony is nearly halfway from Camp Four to the summit and is a good workout. There are fixed ropes that you use to assist you in climbing. It is dark and we are climbing by the light of our headlamps, but I never had to route-find because I simply followed the ropes.

The second feature to reach after the balcony is the South Summit. The climbing is similar: steep snow with occasional rock following the fixed ropes. By the time we got to the South Summit, we could see by the early morning light and the world -- now all below us -- is too incredibly beautiful to describe. We can see now that it will not be long before we stand on the summit. This put an "encouragement" in our blood! (Perhaps it put air in our lungs!)

I need to back up a little to the subject of the fixed ropes. Each year a group of Sherpas, usually supported by the bigger expeditions, fix ropes along the route to the top of the mountain. These ropes provide both a climbing aid and protection for all who climb. The problem is that the old ropes from years past are never

removed. New ropes are simply added to the route each year. There are places where many old ropes come together: new ropes tied into old ones, broken ropes tied together to make a continuous line, ropes looped in such a way as to inevitably get caught in your crampons. It is a mess.

Unfortunately the top is similar. There are prayer flags strung everywhere. They create a terrible trip hazard, and climbers had to be careful not to get them caught in their crampons. For some reason, people have a habit of carrying some memento to the top of Everest and leaving it there. From this perspective, the summit was a real disappointment. Something so beautiful and special tarnished by inconsiderate man in a way that is no different than industry polluting a stream, lake or ocean.

But there is the bright side. The beauty I mentioned that I cannot describe. I will not try except to say that when in Everest Base Camp, you spend all your time looking up at the mountains that surround you. But now, on the top of Everest, you look down, way far down. And all those big towering mountains are but small bumps and hills and ridges that creep and flow and poke way down below you.

I think I will leave it at that for now. We got to the top and we had to get down. We did. Rather than talk about going back down, I would like to leave you with the thought of being on the top with the world stretching out far in every direction, with everything down below. It was wonderful.

From high places,
Dave

2007-2008 Tucson Hammer Camps



In the last issue of Endurance News we told you about our first Hammer Camp held in Tucson, Arizona. Response to the 2007-2008 camps has already been great but there is still space available. All of these camps will

be held at the Cycling House facility featuring our signature gourmet healthy meals, 5 star service, full sag support, pro domestiques, on site massage, Compex demos, endless supplies of Hammer fuels and supplements, and plenty of tasty 53x11 Coffee products.

Camp # 2 – December 4th - 9th

Pre-Christmas, post season, de-stress camp. Steve Born and Brian Frank will be hosting a completely unstructured event. Coach Jim Bruskewitz will be on hand to provide coaching as needed. Daily rides will range from 3 to 8 hours at conversation pace, with wide route variety and major emphasis on scenic and beautiful landscapes. There will be plenty of one-on-one time with Steve and Brian throughout. Pool time and runs will be offered as well.

\$225/day = \$1,125 per person.

Camp #3 – January 15th - 20th

New Year's Resolution base miles camp. Long daily rides with extra miles for anyone who wants them. Limited run and swim coaching will be offered. One-on-one goal setting and nutrition/fueling strategies.

\$250/day = \$1,250 per person

Camp #4 – February 15th - 20th

Structured format with one-on-one coaching and nutrition/fueling guidance, goal refinement and objective evaluations. Many attendees from our inaugural camp are planning to return, so this one will fill first.

\$300/day = \$1,500 per person

For more information or to reserve your slot in any of these camps, go to www.hammernutrition.com/camps

From the Archives

Bill Misner, Ph.D.

QUESTION : My question regards MSG. We are trying to avoid products with MSG. All of our readings tell us that maltodextrin and whey protein are on a “not definitely but likely to contain MSG” list. Since HEED’s and Recoverite’s largest ingredient is maltodextrin, do you have any information on whether the type or source of the maltodextrin Hammer Nutrition uses contains MSG? Also, does the whey protein listed as the second ingredient of Recoverite contain MSG?

ANSWER : Thank you for this question; I applaud customers who read the literature and monitor their intake of potentially harmful substances. I communicated to confirm this reply with Davisco Foods, Dupont Protein Technologies, and Grain Processing Inc. There is NO Monosodium Glutamate (MSG) formulated in any Hammer Nutrition product. Based on chirality of select carbohydrates and amino acids formulated in Hammer Products, the L-

& D- forms determine how the molecule rotates originally in nature, i.e. in the plant. Hammer Nutrition formulated carbohydrates & amino acids are NOT synthetically altered NOR flavor-enhanced with monosodium glutamate.

Carbohydrate-Enhanced Products

Maltodextrin long chain glucose polymers may be manufactured from potatoes, tapioca, rice and a number of tubers, all of which are considered naturally processed carbohydrates with a high glycemic index. The chirality of Hammer Nutrition’s corn maltodextrins are NOT structurally altered, they rotate the same direction as found in the original plant source.

Protein-Enhanced Products

Hammer Nutrition DOES NOT formulate MSG in any of their soy-enhanced products. The Soy Protein Isolates are the latest experimental calcium enriched proteins isolated from

the soybean. Glutamine is formulated in Hammer products that contain Whey Protein Isolates. Please note that Glutamine is readily converted to glutamate in the stomach or in an acidic beverage. This may be a consideration for individuals who experience allergies or have a sensitivity to the amino acid, glutamate, or its compounded relative, monosodium glutamate.



Bill Misner, Ph.D.
Director of
Research & Product
Development
Emeritus

The Cycling House has it nailed. I couldn't have asked for anything more out of this experience. The house provides the ideal atmosphere to ride, improve your fitness and learn new training techniques.
-Amanda R.

Absolutely exceeded my expectations. I'd do it again in a heartbeat.
-Tom E.

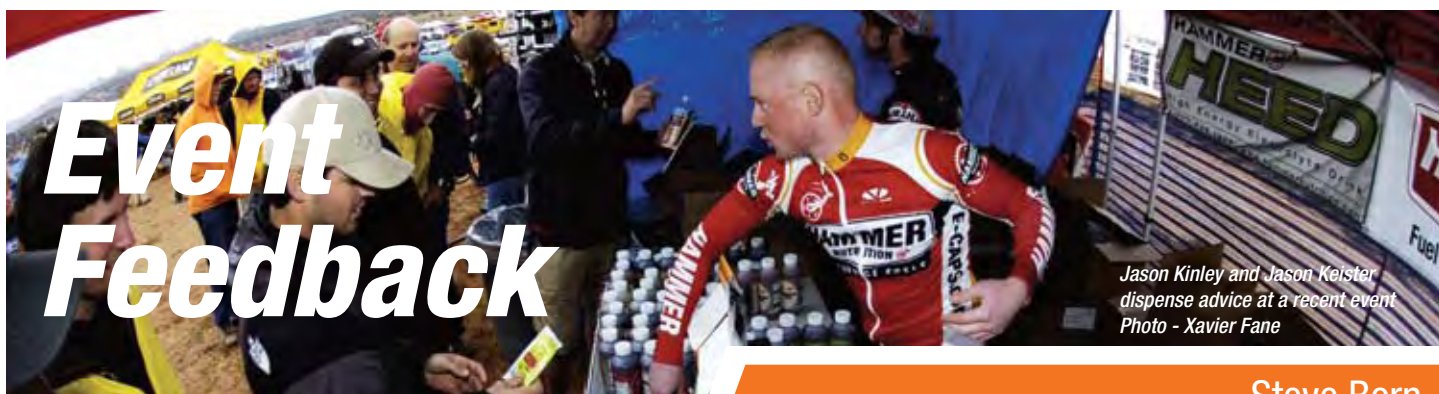
Book your reservations before September 30th & receive 15% off!

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HOT TIPS

Concentrated Fuel

Consider making Perpetuem or Sustained Energy in a super concentrated pancake batter-like consistency. Because the mix contains an insignificant amount of fluid, it doesn't count towards fulfilling your overall hydration needs; you'll do that from a separate source (water bottle, hydration system, etc). As a result, because your fluids and calories are separate, you're able to keep track of your intake of both with greater precision.



Event Feedback

Jason Kinley and Jason Keister dispense advice at a recent event
Photo - Xavier Fane

Steve Born

As most of you know, we sponsor a lot of races annually. When I first started working at Hammer Nutrition, we sponsored roughly 100 races every year. Since that time, that number has grown astronomically and we are now at (or exceeding) 2000 sponsored races... amazing!

We get some very nice feedback from the race directors as well, which we wanted to share with you...

"Thank you again for being a sponsor for the 13th annual Wheels of Thunder Classic Bicycle Race, May 12, 2007, in Golden, Colorado.

The Colorado Spoke (chapter) of the International Christian Cycling Club belongs to the American Cycling Association (ACA), and as a member we are required to promote at least one race per year. Over the years we have continually met our obligation to ACA, and in the process the Wheels of Thunder Classic has become one of the most popular races in metro-Denver.

The day started early for our fifty plus volunteers, as the first of ten race groups started at 8:00 AM, and the final race group at 5:20 PM. It was a fabulous day and this year's race saw a record 564 racers attend.

During and after each year's race we receive numerous compliments about what a great race Wheels of Thunder is, and how well organized it is. This year was no exception. I heard through the grapevine that one team makes this their primary race of the year and brings upwards of 50 folks (racers and support).

We do some unique things at Wheels of Thunder that make it so popular: our

famous pasta lunch, this years addition of Gold, Silver and Bronze medals that where awarded to the top three finishers in each race group, and most importantly we begin each race with a prayer.

We want you to know that none of this success can happen without generous sponsors like you."

Josh Taylor
Promoter-Wheels of Thunder Classic

"We had a great event! Most everything was as good as it could get. Let there be no question that we could not have done this without the support of Hammer and all the product that you had sent. At the end of the day we had just under 400 folks from 27 states, a few pros and one guy who is on the Marine Tri team who came in from Japan! I did my best to get Hammer all of the exposure I could. We had 200 signs made for the course, all had the Hammer logo - we also had shirts - all with the Hammer logo. We put the Hammer banners on the fences around the bike racks.

Again - let there be no question that I could not have done this without the support that Hammer has given the Rockman Triathlon. I look forward to your support for our 2008 events."

Chip Griffen -Race Director
RockMan 1/2 Iron Triathlon

"I received the shipments for all of our recent races, and just wanted to thank you for getting them to us so quickly. Your sponsorship to our club has been very generous and we are doing what we can to spread the word about your product."

Phillip VanLandingham - Race Director

Tornado Alley F-1 Duathlon

"Thank you! Thank you! Thank you! With your support and generosity, the 3rd Annual Virginia Run Sprint Triathlon was a huge success this year. The race was eagerly anticipated by our sell-out crowd; registration opened January 1st and we were sold out by January 9th... a tribute to our sponsors, supporters and volunteers from the past two years. Because of your participation this year:

- *Our triathletes and their families had a great time - smiles and high levels of energy were in abundance*
- *We were able to spotlight "Iron Jon," our Special Olympic triathlete competing for his second year*
- *We more than doubled our donation from last year to Special Olympics! In 2006, we raised an amazing \$7,000; in 2007 we are already over \$14,000 and still counting!*

Thank you for your generosity, time and consideration - you made a difference. We hope you will consider being a part of the team again next year."

LJ White & Shandra Richardson
Co-Founders/Co-Race Directors
Fins, Wheels, Feet Racing, Inc.

"I received the order for Du Draper Twice yesterday. I am so excited to have you guys on board with this event and TRI-OKC. I am sold on your products and will not use anything but Hammer Nutrition products either personally or as an RD. Thanks. You guys are great."

Bret Sholar
Race Director - Du Draper Twice



Bill Nicolai

Fellow Hammer Nutrition fans: I've been using Hammer products for 19 years. In that time, I've raced in over 100 triathlons (including four iron distance), plus numerous marathons and ultra cycling events. One of the beginning members of our triathlon club asked me for some suggestions; the article below is my advice to her. It's a simple distillation of what I have learned in my quest for healthy and effective nutrition and hydration. The folks at Hammer asked me to share my views with you and, of course, I'm happy to do so, and I hope you find it useful. - Bill

When doing ultra distance races such as a half Iron distance triathlon, nutrition, hydration, and electrolyte balance play a significant role, which can seriously affect your results. The suggestions below will help maximize the benefits of your training workouts and for the race itself. Likewise, the post-race and post-workout calorie and protein replenishment is important to maintaining fitness and building endurance.

The best work on the subject is a booklet called The Endurance Athletes Guide to Success written by Steve Born of Hammer Nutrition. This resource contains several informative and easy to understand articles regarding hydration, calories (what types of fuels to consume and how much), electrolyte replenishment, the necessity of protein, how to optimize recovery, and more.

Here is a link to the download: <http://www.hammernutrition.com/guide>

I will give you a very brief summary of the essentials:

20-25 ounces of fluid per hour. There

may be times when 16-18 ounces will be completely sufficient, while an intake of 2-3 ounces more than 25 oz/hour is only necessary in extreme conditions. For the most part, however, you want to keep your fluid intake within 20-25 oz/hr to avoid hyponatremia.

Supplemental electrolytes in a balanced mix should be taken at a level appropriate to the heat, humidity, and personal metabolic characteristics of the athlete. Two Endurolytes per hour is a base level, then increasing with heat. I take two or three every half hour on hot days. With your lower body weight, start with one per hour and increase up to four as needed.

Consume 200 to 260 calories of fuel per hour. Unless you are a large athlete (approx 190+ lbs), more than this will not help. For the Half Ironman bike, mix a three-hour bottle consisting of four scoops of Sustained Energy plus three ounces of Hammer Gel for flavor, or six scoops of Perpetuem. Sip approximately 20% of this bottle each half hour on the bike, augmented by an appropriate amount of plain water from another source. A two-hour amount carried in a fuel belt will suffice for the run. If you need more fuel, supplement with packets of Hammer Gel.

Fuel should consist of complex carbs, no simple sugar. For training or events over three hours, your intake should contain about 15% of the calories in the form of easily metabolized proteins to avoid protein catabolism. Do not consume any of the gels or sports drinks offered by many events on course, unless they are products from Hammer Nutrition. These products usually contain loads of simple sugar and the electrolytes contained are in an improper

concentration. Taking these products will likely make you sick. Avoiding them will help you pass the competition that use the products provided.

Recovery post race or workout should consist of about 200-300 calories of a carb/protein intake in a 75/25% ratio consumed within 45 minutes of the cessation of exercise.

Hammer Nutrition makes a suite of products that enable this protocol. For your fueling use I would recommend Hammer Gel and Perpetuem. For electrolytes I would use Endurolytes. For recovery I like to make a shake using their whey protein added to an Odwalla juice smoothie. Recoverite also works well. You can find write-ups on all these products on the website.

In addition to the articles in The Endurance Athlete's Guide to Success, you'll find other useful information at these links:

15 Simple Ways To Improve Your Athletic Performance Right Now

www.hammernutrition.com/za/ECP?PAGE=ARTICLE&ARTICLE.ID=2227

113 Ways Sugar Can Ruin Your Health

www.hammernutrition.com/za/ECP?PAGE=ARTICLE&ARTICLE.ID=287

Fructose is No Answer For a Sweetener

www.hammernutrition.com/za/ECP?PAGE=ARTICLE&ARTICLE.ID=2263

continued on page 39

Compex

A revolutionary training device

Jason Kinley and Joe Arnone hammer it out at the 2006 Highline Hammer
Photo - Angela Nock



Jason Kinley

As you are in the thick of training and racing, you're always looking for any advantage you can get. The Compex is that advantage and extends above and beyond just using the Active Recovery program. We've given you a lot of information for off-season use, but in-season use, with the Endurance and Resistance programs, is just as beneficial. The Endurance program is designed to be the equivalent of 2.5-3 hours of riding while the Resistance Program is similar to riding up long, sustained climbs.

The most common reason for an athlete to use the unit in-season is because they have missed a traditional, physical workout. In place of that workout, you can use the Endurance or the Resistance Program, based on what training is needed. However, in replacing a traditional workout with the Compex workout, you miss the opportunity for the two-a-day workout; your traditional workout, followed by running a program on the Compex. For example, if you have hill workouts on Tuesdays and Thursdays, you can then run the Resistance Program AFTER your traditional workout. You can also combine the Endurance and Resistance

programs on the same day if you were supposed to do a long training session, with sustained climbing.

The reason for running these two-a-day workouts is to enable your body to tap into the unused muscle for training and racing. Once you begin to stimulate the dormant muscle fibers with the programs on the Compex, your body can then recruit them when you are training and racing because they no longer require as high of a stimulus. This means continued use with the Compex leads to higher continual muscle fiber availability.

Now that you are convinced you need this unit during the in-season for reasons other than Active Recovery, you should take a look at your race calendar. If your first A race is more than 4 weeks away, it's time to take your training to the next level with the Endurance and Resistance programs. In this window of time, until you are 4 weeks out from your A race, take the Endurance and Resistance Programs up to the highest intensities you are able to tolerate comfortably. Once you reach 4 weeks out, you can continue to use the Endurance and Resistance Programs, however you want to plateau the intensity for full

recovery. For example, if you are using the Endurance Program in your training at level 5 and 30 mA's when you reach 4 weeks from the event date, you will continue at that level and intensity throughout that week. The following week, three weeks out, decrease the intensity on Endurance and Resistance by about 20% and continue that same decrease all the way to the week of the event. Once you are to the week of the event, you will still run the programs, but very minimally, just to keep the muscles firing. The intensity the week of the event would be around 10-12, based on the above intensity.

The most important point to remember is that there is NO wrong way to use the Compex. If your "A" race is in September you still have plenty of time to prepare with the Compex by running the Endurance Program two to three times a week and the Resistance Program twice a week. Using the Compex all the way up to the race will only further enhance your results and increase your enjoyment. Remember to train smarter, not harder and using the Compex will accomplish both.

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Simple Sugars and Complex Carbohydrates - An Incompatible Combination

www.hammernutrition.com/za/ECP?PAGE=ARTICLE&ARTICLE.ID=2890

Why We Use A 3:1 Ratio In Recoverite

www.hammernutrition.com/za/ECP?PAGE=ARTICLE&ARTICLE.ID=2724

Post-Exercise Meal: Carbs Alone or Carbs + Protein?

www.hammernutrition.com/za/ECP?PAGE=ARTICLE&ARTICLE.ID=4786

I'm sure this simple program will get you properly on track for your upcoming Half Ironman.

Best,
Bill

HOT TIPS

Mixing Race Day Boost

To eliminate clumping and allow Race Day Boost to dissolve more completely, consider mixing each teaspoon serving in 3-4 ounces of warm/hot water. After the powder dissolves consume immediately, followed by 2-4 ounces of fruit juice or carbohydrate beverage like HEED.

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unlikely to overdose and more likely to come up short. In addition to its role in over four-dozen enzymatic reactions/ processes involving the metabolism of carbohydrates, protein, and fats, B6 is also required for coenzyme Q10 biosynthesis, CoQ10 being one of the most important substrates for energy production. For athletes, active people, or for those with specific health conditions, such as those that Lieberman and Bruning list, I believe the Optimal Daily Intake amounts are merited.

Dr. Bill Misner:

Amongst endurance athletes water soluble B vitamins-B1, B2, B3, B6, Folate, and B12-are depleted proportionately to caloric expense. I hypothesize that 90% of all endurance athletes are deficient in B vitamins. My research confirms this statement with the subjects whose diets from food alone

were analyzed.

B6 Deficiency

Too little vitamin B6 or deficiency state occurs in certain subsets of the population. Individuals with a poor quality diet, persons over age 40, or those whose intake is inadequate for B6 for an extended period may benefit from taking a vitamin B6 supplement. Endurance athletes fit several subsets due to high carbohydrate and body fat expenditure during exercise.

How much B6 is too much?

Too much vitamin B6 can result in nerve damage to the arms and legs. This neuropathy is usually related to high intake of vitamin B6 from supplements, but it is reversible when supplementation is stopped. According to the Institute of Medicine, "Several reports show sensory neuropathy at doses lower than 500 mg per day" [1].

They established an upper tolerable intake level (UL) for vitamin B6 of 100 mg per day for all adults [1]. If 100 mg is a safe upper dose for a sedentary adult requiring 2000 calories per day to maintain lean body mass index, would not 100 mg B6 or more be rational for an endurance athlete requiring 4000 calories per day to maintain lean body mass?

For further discussion of this question, kindly review "Dietary Supplement Fact Sheet: Vitamin B6" published by the Office of Dietary Supplements [2].

References

[1] Institute of Medicine. Food and Nutrition Board. Dietary Reference Intakes: Thiamin, riboflavin, niacin, vitamin B6, folate, vitamin B12, pantothenic acid, biotin, and choline. National Academy Press. Washington, DC, 1998.

[2] Office of Dietary Supplements, NIH Clinical Center, National Institutes of Health. "Dietary Supplement Fact Sheet: Vitamin B6" <http://ods.od.nih.gov/factsheets/vitaminb6.asp#en12>

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ENDURANCE FUELS
& SUPPLEMENTS

2007 PRICE LIST & ORDER FORM

Endurance Fuels

Hammer Gel Jug	\$18.95	3 @ \$16.95
Hammer Gel Single Serving	\$1.15	
Hammer Gel Pouch Sampler	\$9.95	
Hammer Gel 12 Pouch Box	\$12.95	
Hammer Gel Flasks	\$1.50	

Flavors : Apple-Cinnamon, Banana, Chocolate,

Espresso, Orange, Unflavored, Raspberry, Tropical, Vanilla

Hammer Bar	\$2.49	
Hammer Bar 12 Count Box	\$29.88	

Flavors : Almond-Raisin, Chocolate Chip

HEED - Single Serving	\$1.49	
HEED - 32 Serving	\$18.95	

Flavors : Lemon-Lime, Mandarin, Unflavored

Endurolytes	\$18.95	3 @ \$16.95
Endurolytes Powder	\$18.95	3 @ \$16.95
Sustained Energy - Single Serving	\$2.49	
Sustained Energy - 8 Serving	\$15.95	
Sustained Energy - 30 Serving	\$49.95	4 @ \$44.95
Perpetuem - Single Serving	\$2.29	
Perpetuem - 16 Serving	\$21.95	
Perpetuem - 32 Serving	\$39.95	

Flavors : Orange-Vanilla, Unflavored

Recoverite - Single Serving	\$2.29	
Recoverite - 32 Serving	\$44.95	
Recoverite Shaker	\$4.95	
Hammer Whey - 24 Serving	\$24.95	4 @ \$21.95
Hammer Soy - 24 Serving	\$21.95	4 @ \$18.95
Liquid Endurance	\$22.95	3 @ \$19.95

Endurance Supplements

Anti-Fatigue	\$17.95	3 @ \$14.95
Appestat	\$29.95	
Boron	\$14.95	
Chromemate	\$9.95	
Digest Caps	\$12.95	
Energy Surge (ATP100)	\$19.95	2 @ \$17.95
Mito Caps	\$24.95	
Phytomax	\$24.95	3 @ \$22.95
Premium Insurance Caps - packets	\$29.95	
Premium Insurance Caps 210 Count	\$29.95	
Premium Insurance Caps 120 Count	\$17.95	
PSA Caps	\$24.95	3 @ \$22.95
Race Caps Supreme	\$54.95	3 @ \$51.65
Race Day Boost	\$14.95	
REM Caps	\$19.95	3 @ \$17.95
Super Antioxidant	\$39.95	3 @ \$34.95
Tissue Rejuvenator	\$24.95	
Xobaline 30 Count	\$12.95	
Xobaline 90 Count	\$29.95	

Carlson's Salmon Oil 60 Count	\$7.95
Carlson's Salmon Oil 180 Count	\$19.95
i-Flora	\$24.95

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Kits

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\$69.95 You save \$8.64

1 jug of Raspberry Hammer Gel, 8 pouches of Hammer Gel, 6 Lemon-Lime HEED packets, 6 Mandarin Orange HEED packets, 3 Recoverite packets, 1 bottle of Endurolytes, 1 Quick Coin, 1 Flask, 1 Waterbottle and a Fueling Handbook

Long Course Starter Kit

\$79.95 You save \$9.44

1 jug of Raspberry Hammer Gel, 8 pouches of Hammer Gel, 6 Sustained Energy packets, 6 Perpetuem packets, 3 Recoverite packets, 1 bottle of Endurolytes, 1 Quick Coin, 1 Flask, 1 Waterbottle and a Fueling Handbook

Hammer Gel Sampler Kit

\$9.95

One pouch of each flavor. Nine total.

Hammer Powder Sampler Kit

\$9.95

One packet each of Recoverite, Sustained Energy, Perpetuem, HEED Lemon-Lime, HEED Mandarin Orange, and an Endurolyte trial packet (6 capsules)

Daily Essentials Kit

\$99.95 You save \$9.90

1 PIC, 1 Race Caps Supreme, 1 Mito Caps

3 Month Daily Essentials Kit

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Basic Power Cranks	\$899.00
X-Lite Power Cranks	\$1049.00

Compex Sport*	\$899.00
Compex Fitness Trainer*	\$499.00

Compex Replacement Electrode Pads

Small Pads (2" x 2" - 4 per pack)	\$9.95
Large Pads (2" x 4" - 4 per pack)	\$9.95

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12 packs for \$99.95

You save \$19.45. Mix & match sizes as needed.

24 packs for \$179.95

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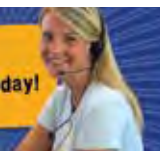
Leadwire (Set of 4)	\$19.95
Battery pack	\$39.95

*Each Compex unit comes complete with 1 set of 2"x2" electrodes, 1 set of 2"x4" electrodes, leadwires, user manual, training planner CD, the electrode placement booklet, battery charger, and a carrying case. Pricing subject to change, please call or go online for best pricing.

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Short Sleeve Jersey w/pocket	\$34.95		xs-2xl
Womens Short Sleeve Jersey w/pocket	\$34.95		s-xl
Sleeveless Jersey w/pocket	\$34.95		s-2xl
Long Sleeve Jersey w/pocket	\$49.95		xs-2xl
Long Sleeve Summer Weight Jersey	\$49.95		s-2xl
Wind Vest	\$44.95		s-xl
Wind Jacket	\$59.95		s-xl
Thermal Vest w/pocket	\$59.95		s-xl
Thermal Jacket w/pocket	\$89.95		s-xl
Cycling Shorts	\$39.95		xs-2xl
Womens Cycling Shorts	\$39.95		s-xl
Cycling Bibs	\$44.95		s-xl
Cycling Skinsuit w/pocket	\$79.95		s-xl
Arm Warmers	\$29.95		s-xl
Giordana Winter Cycling Gloves	\$34.95		s-2xl
Giordana Cycling Gloves	\$19.95		s-2xl
Hammer Socks	\$4.95	White/Black	s-xl

Pretty In Pink Cycling Clothing

Short Sleeve Jersey w/pocket	\$34.95		s-xl
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Cycling Shorts	\$39.95		s-xl
Arm Warmers	\$29.95		s-l
Socks	\$4.95		s-xl
Giordana Cycling Gloves	\$19.95		s-xl

Voler Tri Clothing

Mens Tri Top w/pocket	\$39.95		s-xl
Mens Tri Short	\$34.95		s-xl
Mens Tri Skinsuit w/pocket	\$69.95		s-xl
Womens Tri Shimmel w/pocket	\$29.95		s-xl
Womens Tri Short	\$34.95		s-xl
Womens Tri Skinsuit w/pocket	\$69.95		s-xl
Womens Sport Top	\$19.95		s-l

Multi Sport/Running Gear

Singlet	\$19.95	White	s-xl
Trail Shirt w/pocket	\$19.95	White	s-xl
Cool-T	\$19.95	White	xs-xl
Mens Running Shorts w/pocket	\$29.95	Grey	s-xl
Mens Running Shorts w/pocket	\$29.95	Red	s-xl
Womens Running Shorts w/pocket	\$29.95	Grey	s-l
Womens Running Shorts w/pocket	\$29.95	Red	s-l

Patagonia

Mens Capilene 1 T-Shirt	\$36.00	White	s-xl
Mens Capilene 1 Crew	\$38.00	White	s-xl
Mens Capliene 2 Tank	\$30.00	White	s-xl
Mens Strider T-Shirt	\$40.00	White	s-xl
Mens Vitaliti Pique Polo	\$55.00	Blackberry	s-xl
Womens Capilene 1 T-Shirt	\$36.00	White	s-xl
Womens Capilene 1 Tank	\$32.00	White	s-xl
Womens Strider T-Shirt	\$40.00	White	s-l

Headwear

Euro Style Cycling Cap	\$8.95	Red	os
Mesh Race Ready Cap	\$12.50	White	os
Ventilator Hat	\$14.95	Red	os
Winter Beanie	\$17.95	Black	os
Halo Headband	\$12.95	Black/White/Blue	os
Halo Headband II	\$12.95	Black/White/Blue	os
Halo Protex	\$21.95	Black/White/Red	os
Halo Anti-Freeze	\$16.95	Black	os
Flex-Fit Baseball Caps	\$14.95	Black	s/m-l/xl
Watch Cap	\$8.95	Black	os

Casual Wear

Short Sleeve Tee	\$9.95	Red/Chestnut	s-2xl
Youth Short Sleeve Tee	\$9.95	Red	xs-m
Long Sleeve Tee	\$12.95	Red	s-2xl
20th Anniversary Tee	\$12.95	Slate	s-2xl
Organic Cotton Retro Tee	\$12.95	Natural	s-2xl
Women's Tee	\$12.95	White/Blue	s-xl
Hooded Sweatshirt	\$29.95	Grey	s-xl

Accessories

Hammer Gel Flask	\$1.50		
Double Clip Flask Holder	\$7.50		
Bike Mount Flask Holder	\$12.95		
Large Water Bottle	\$2.50		24oz.
Small Water Bottle	\$2.50		21oz.
Pink Water Bottle	\$2.50		24oz.
Recoverite Shaker	\$4.95		25oz.
Gel-Bot Fuel System	\$15.95		24oz.
Gel-Bot Cap	\$11.95		
Gel-Bot SoftFlask	\$10.95		5.5oz.
Quick Coin	\$0.75		
Tattoo	\$0.25		
Hammer Gel Decal	\$0.50		
30x60 Hammer Gel Banner	\$20.00		
5-Gallon HEED Cooler	\$29.95		
Hammer Pint Glass	\$4.50		16oz.

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53x11 T-Shirt	\$18.00	Natural	s-xl
Coffee Mug	\$9.95	Black/Yellow	15oz.

Bookstore

Guide To Success Handbook	\$1.99		
Treat Your Own Neck	\$9.95		
Treat Your Own Back	\$10.95		
Sugar Blues	\$6.99		
Food Is Your Best Medicine	\$6.99		
Water : The Shocking Truth	\$8.95		
Healing Back Pain	\$13.99		
Endurance Nutrition DVD	\$29.95		

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International Race Report

Hammer Athletes Around The Globe

Each issue we give our U.S.-based athletes a chance to write in and share their race results with the Hammer family. We thought it only fair that we extend the same courtesy to our international athletes. We are after all, one big family!



Reto Waeffler - Switzerland

On June 10, 425 'gorillas' headed to the starting line in San Francisco for the first Great-Gorilla-Run to benefit the world's last remaining mountain gorillas. One of those gorillas, professional Swiss triathlete Reto Waeffler, sported the Hammer tri-top (check out the pictures) and was the lead primate when it came to catching the banana.



Rafael Martinez - Spain

Hello Hammer!,

I have already gone to 3 events and I have finished them. So I am very happy because they were very hard.

1. MTB-Duathlon.

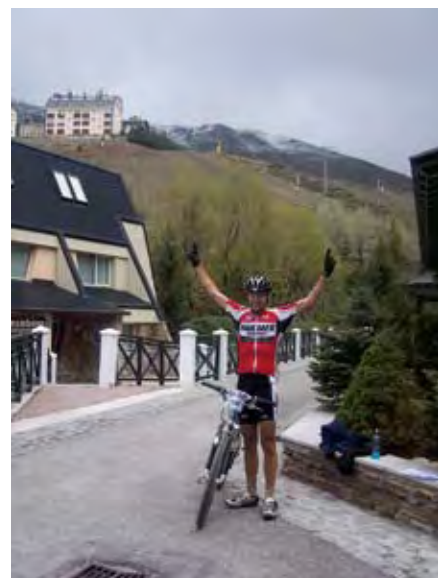
80kmMTB+18kmRun+8kmMTB. It was incredibly hard. Too hot. My first Duathlon. I suffered a lot. I finished EXHAUSTED. I spent 8:45hours.

2. MTB Marathon. 107km. Start at 2.200m altitude and finish there also. I finished over 35minutes faster than past year. A complete success for me. I couldn't believe how good I recovered

after 2 weeks from the duathlon. Recoverite did a good job!

3. Half-Marathon. My first half-marathon and one of the hardest in Spain. With steps of 14% as maximum. I spent 1:58:45h. I am very very satisfied. Tissue Rejuvenator has helped me a lot. I finished with a big hurt in a joint in my knee and I have recovered very well from Sunday. Recoverite after the race and I feel now very very well.

Rafael



Adrian Brennwald - Switzerland

Adrian Brennwald has had a stellar season so far. Starting in May with a win at the Intervall Duathlon (1:33:23,0), a win at the WM Double Ironman (20:17:17) just 3 weeks later and most recently a win at the Pilatus Triathlon (1:44:50,2). Way to go Adrian, that's impressive!



Swiss athlete Adrian Brennwald
Photo - Kerri Lanfranchi



Hammer Athletes

Laura Sophiea

I wanted to give you a quick update on my two races so far this season and to let you know what I am doing next. I raced a sprint called the John Tanner Triathlon in Atlanta on 4/28 and placed 2nd overall female. Then I went to California 5/5 and raced Wildflower Long Course Tri. I won my age group, broke the existing record by 20 minutes and placed 13 overall female! It was an awesome race, toughest 1/2 ironman I have ever done yet so well organized! My products worked so well! I took an Espresso Gel 15 min. before the swim, I used 4 scoops of Perpetum for the bike along with 4 Espresso Gels and water, and I used 4 Espresso Gels on the run. I finished strong, took my Recoverite and Tissue Rejuvenator and felt recovered enough to do a track workout on Wednesday!

June will consist of Blackwater Eagleman half ironman and USAT Nationals in Oregon. I will keep you posted.

Thanks again, I am truly appreciative of all you have done for me and my racing!

Laura Sophiea



Laura appears on one version of our catalog this year!

Alfredo & Juliana Valdes

I am a proud Hammer sponsored athlete. I use your products in my triathlon training and racing as well as promote use of your products through my triathlon coaching business (I am a USAT Level 1 Certified Coach). Your products are responsible for my strong finishes in all my races as well as helping me stay injury free. My family travels with me to all my races and my little girls always have Hammer tattoos throughout their bodies when spectating at my races. Attached is a photo of my 7 year old daughter, Juliana, with her Hammer tattoo which she wore when competing in her first triathlon race - the Meek-N-Mighty triathlon - in St. Petersburg, Florida.



Alfredo R. Valdes

Alex Woodward

Congratulations to Alex Woodard on a superb start to his season. On May 6th he won his Age Group and finished 3rd overall Alabama Coastal Triathlon (Olympic distance). Just two weeks later at the Memphis in May Triathlon (Olympic distance), Alex finished 3rd in his age group and 70th overall out of 1800 competitors. Then, on June 2nd, Alex won his Age Group and finished 2nd overall (out of 350 competitors) in the Heatwave Triathlon (Olympic distance).

Sal Castro

In April I suffered an Osteochondral Fracture of the femur. I thought I was going to be out for a long time but I started taking Tissue Rejuvenator and it really helped speed up the process of bone growth. I want to thank Hammer Nutrition for their support and last weekend at my first race back, I placed 3rd in my age group (14th overall, out of 600) at the Redondo Beach Sprint Triathlon. Pretty good for taking two months off of running!

Sal Castro

Mark Simons

June 17th was the inaugural race for the Hy-Vee Triathlon (Olympic distance) in Des Moines, IA with the age group race in the morning and then the men's and women's ITU races in the afternoon. I had a solid race and felt good using Hammer Gel before the race and HEED on the bike. Recoverite after the race. Lots of good competition at this race with the top spots separated by <1-2 minutes. Out of 1700+ competitors I placed 13th overall and 3rd (of 138) in my age group.

Mark Simons

Kelly Bradbury

I just completed the Squaw Peak 50 Miler - it was HOT!- but I took Endurolytes every hour, Race Caps Supreme every few, and mostly ate just Raspberry and Tropical Hammer Gels with a bit of fruit from aid. I finished 4th for females, and 35th overall with about 250 runners. Your products helped me to finish as it was a tough day mentally for me! I improved my time on this race by 1 hr 20 minutes. THANKS!

Kelly Bradbury

Joe Cursey

Decided to really get serious about training so joined forces with Wenzel Championship Coaching and reunited with coach Safier, who coached me ten years ago. High volume training where recovery has to be there. Thanks to Recoverite and the other Hammer supplements I am having a great come back at 68!

Joe Cursey

Steve Meyer

At the Chile Challenge Mountain Bike Race (Mountain States Cup), I took 3rd of 17 riders in the Men's Expert 40-49 class in the Cross Country, and 1st of 10 riders in the Men's Expert 40+ short track. I'm currently 1st overall in the Mountain States Cup Men's Expert 40-49 "Endurance" series (XC, STXC, and HC) and 1st overall in the Men's Expert 45-49 Cross Country category in the National Mountain Bike Series. I'm currently the top ranked expert mountain bike rider of all ages in Colorado, 10th in the nation for all expert ages, 1st in the nation and Colorado for the 45-49 Men's Expert age group. I've achieved these rankings by getting on the podium at all of the NMBS and MSC races held so far in 2007.

Steve Meyer

Christine Isakson

My coach and I decided since Nationals are at the end of this month I could go and do this event (Escape from Alcatraz) if I was careful and felt OK. I planned to enjoy the day. I qualified last year and have dreamed of this for years. Out of 2000+ competitors I placed 82nd overall, and placed 16th out of 175 competitors in my age group. I was so proud to wear the Hammer logo and spread the word! The Hammer products I have been using this year have ROCKED!!! I have been placing in the Top 5% in most of my races, and hope to make the cut for Worlds at Nationals this year. I would not be performing this well without Hammer. I am AMAZED with Recoverite and it's ability to help heal...I am forever a believer. The Hammer Soy is great on the gut, and the Digest Caps help too! Oh yes...the DVD is awesome too!!!!

Christian Isakson

Mary Ford

Thought you might get a kick out of our "red dress" selections on this year's AIDS LifeCycle ride. The products were terrific and helped make the week a great one! 7 days of cycling - 570 miles travelled from San Francisco to Los Angeles. Next challenge: the Death Ride - Hammer products will be coming with me on that one too!

Mary



Scott McArthur

Thanks for your interest. The ride was superb. About 48 miles with the first 25 flat/rolling, the next 15 all up with about 3000 feet of gain, the last 18 all down and fast, top speed about 40.

I used Perpetuem all the way and it worked well. At the top I ate a Hammer Bar while the others ate chili or grilled cheese at the Mountain House (yuk).

When we started the ride the temp was about 70 and at the finish it was about 95. The ride is known as the Mountain House or Dry Creek ride not far from Visalia, CA.

Modestly, I will have to say I kicked butt on the ride. I finished in great shape and came home to do chores for

my wife, while the others I understand relaxed with Budweiser.

I am a believer, your stuff is great and the educational material you furnish along with it is extremely helpful. I am studying it carefully and hopefully I will be a better rider for it.

By the way, I am 68 years old and the guys I ride with are 20 years younger. I can't tell you how much pleasure it gives me to bury them.

Thanks again for your interest and your products.

Scott McArthur

***Become a
world-famous
athlete!***

Okay, so maybe 'world-famous' is a bit of a stretch but we do want to include YOU in our 2008 catalog, other printed materials or on our website. Round up those awesome action shots of you doing what you do and send them to anock@hammernutrition.com. Please put PHOTO SUBMISSION in the subject line and include the name of the race and any photographer information in the body of the message, copyright-free photos are preferable. You just may find yourself representing Hammer in the printed world so start practicing that signature...you're gonna need it for all the autographs!



Hammer Athletes

Geoffrey S. Baker

The beauty of Hammer products is that you can mix and match every product to customize your fueling regime for your specific race day needs. I did just that this past weekend (June 9, 2007) at the Laurel Highlands 70 Mile Ultra Run in southwestern Pennsylvania. I had one of the best races of my running career.

After trying many products in the line, I developed my Hammer recipe for success. Your amounts can and will vary; experiment in training.

I took no solid food for the entire race, and nothing off the aid tables except water for my mix. (I was in and out of the aid stations within 30 seconds!) I stashed Ziploc baggies containing two scoops of orange flavor Heed and a heaping teaspoon of Hammer Soy in my backpack. I carried two hand held water bottles, one contained Heed, the other plain water. Aid stations were a little over two hours apart. I would drink the Heed first, making sure to finish it at the one-hour mark, and then switch over to plain water supplemented by shots of Hammer Gel from a flask. I used six

Endurolytes per hour and one Anti-Fatigue Cap per hour.

This is the first race I've used the AF Caps, and all I can say is wow, what a difference! My legs felt great the whole race. Usually after an ultra, stairs are not an option for several days. I had no stomach upset for the entire race and consistent energy throughout. The day after the race it felt like I did a medium training run instead of 70 miles of technical, rocky single track. What a great feeling to have your fueling and hydration dialed in. Thanks to Hammer for all the super advice!

By the way, I finished overall in 25th place with a time of 17:17:26

Geoffrey S. Baker

Congratulations, Geoffrey, on your superb race and for sharing your "nutritional recipe for success" with us. The Laurel Highlands Multimedia Slide Show can be found at <http://tinyurl.com/2sqpyw> and the race website is at <http://www.laurelultra.com/>

Steve Kinley

I wanted to take a moment and update you on my racing season results so far. I have not done as many races this year as in the past, focusing instead on the National Ultra Endurance MTB Series (NUE) plus some local races as fillers. I finished second at Cohutta, second at Mohican, and last weekend placed third at the Lumberjack. I'm still looking for that first win but I have been close. I am either in first or second overall in the series, depending on how they are calculating the results. In the only local

race I have done so far, I raced in the Expert class for the first time and placed second.

Thanks for all the great products you are producing. Hammer Nutrition products have helped me to keep going while other racers have fallen by the wayside.

Lincoln Murdoch

Wow... at 50 yrs. old I just did my fastest Olympic distance tri ever at the Deuces Wild Tri in Show Low, AZ. PR in the swim and bike. 8th overall fastest bike split out of 212, averaging 23mph on a hilly, challenging course.

I won my age group and finished 7th Overall. Used HEED, Hammergel, Race Caps Supremes, Mito Caps, Anti-Fatigue Caps, Endurolytes and, for the first time, Race Day Boost. Man, that stuff is amazing. I felt strong as an ox the entire race. Every race I believe more deeply in Hammer and its products. Nationals is in 4 weeks and I'll be there with all my Hammer nutrition. Thank you so very much for your help, encouragement and sponsorship. I would NOT be where I am today without it.

Share Your NEWS!

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 anock@hammernutrition.com (please put Race Report in the subject line) about your recent accomplishments and we'll try to include it in our Race Report.

Stephan Rosen

Two weeks ago we (the family) returned from a wonderful vacation in Maui. Sure I wanted to bring a bike along, but knew that was not going to be acceptable; after all it was a family vacation! Fortunately for me, I happened to check out the "Partner Links" page on the Hammer Nutrition site. I came across the link for Go Cycling Maui. That could not have worked out better! I gave them a call & arranged to rent a bike. I really wanted to climb Haleakala. I sent them measurements from my Torelli.

When I arrived at the shop, I immediately noted the Hammer Nutrition products prominently displayed; heck, you cannot miss it as the rack faces the front door near to the front of the store--they do a good job displaying the products! Their staff was great; super friendly & had the bike set up perfectly. We spun my Speedplays on the bike & I took off. I had an incredible ride up (and down) the volcano; it was my first real "epic" ride of the year & I thank my perfect fueling strategy for helping to make it what it was. I had to attach a picture ;-)

All the best,
Stephan



Go Cycling Maui
Donnie Arnoult, Haiku, HI
(808) 575-7469
www.gocyclingmaui.com

Team Hammer Nutrition

Team Hammer Nutrition Race Eight Days Without Breakfast

Team Hammer Nutrition, Tim Hopkin & Jason Morgan, of Hendersonville, NC, raced the 8-day mountain bike stage race, Cape Epic, with outstanding results. Our secret, we fueled for success with Hammer Nutrition. Each morning was without breakfast. Well, Jason had to have his coffee. A few Endurolytes & Race Caps Supreme helped kick start the morning. One Hammer Gel in the starting shoot would stanch any hunger before each stage started. One bottle per hour contained Perpetuem, Endurolytes & Race Caps Supreme. Perpetuem took care of our fueling requirements in superb fashion. An occasional Hammer Gel supplemented the Perpetuem while on the bike. After each stage, Recoverite with Endurolytes & Race Caps Supreme

put a little fuel back into our tanks.

The Cape Epic ran east to west along the Western Cape of South Africa. We raced our mountain bikes from beautiful beaches to dense forest thru sandy deserts & back to the water's edge. Team Hammer Nutrition covered nearly 900KM with almost 16,000M of cumulative elevation gain. Over 600 teams of two started & 468 teams finished. Many DNF'd due to GI distress & nutritional blunders. After 43 hours & 42 minutes we crossed the finish line as the second US team in 61st place overall. Not too shabby for a couple of family men with wives, young children & full time jobs.

Team Hammer Nutrition's secret, you guessed it; We Fueled For Success!
Tim & Jason.

Mike Llerandi

Great day for Team Hammer at the EagleMan 70.3 Half Iron triathlon! Lots of representation from the pre-race expo thru the post-race festivities. Saw tons of Hammer soft goods out on the course & I had the chance to wear the colors proud on the podium--I was 4th overall amateur, 18th including the pros, and was the top M40-44 year-old finisher.

Mike Llerandi

Kristin Moriarty

May 13 - Jay Benson Triathlon
(Sprint distance) - Albuquerque, NM
Overall Ranking: 7/179
Age Group Ranking: 2/16

May 20 - Buffman & Squeaky Triathlon
(Olympic distance) - Lubbock, TX
Overall Ranking: 4/30
Age Group Ranking: 1/5

June 2 - Deuces Wild Triathlon Festival
(Olympic distance) Show Low, AZ
Overall Ranking: 7/88
Age Group Ranking: 1/10

Brendan Halpin

Congratulations to Brendan Halpin for winning the inaugural (and Hammer Nutrition sponsored) VikingMan Half Iron Triathlon on June 2nd. His time of 4:08:30 was over 20 minutes faster than second place. Full results at www.vikingman.org



ENDURANCE NEWS



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- **Reducing Elevated Cholesterol**
A dietary protocol
- **and so much more!!**

A Truly Inspiring Story

To my friends at Hammer Nutrition,

I just wanted to send a note of thanks for sharing your fine products. I have been using your products for about a year and have probably had the biggest success of any Hammer user. Allow me to explain.

I started training for Triathlon three years ago and using a variety of products in the process. There was no real rhyme or reason, usually whatever was offered on course. In March of 2006, I was diagnosed with a congenital heart defect, and it had forced me to stay away from the water, so I started racing in local duathlons. The 2006 season was kind of shot and in conjunction with my marriage in July, I decided to take care of myself. While on a jog in September, the heart problem trumped me and I almost suffered a fatal heart attack at the age of 32. After two surgeries at the Cleveland Clinic, my heart problem was fixed, at least enough to allow me to start living without fear again, although I still shy away from the water and keep to duathlons. Anyways, I had noticed that certain foods caused some palpitations and discomfort, usually those with High Fructose Corn Syrup. That brought me to try Hammer. Your products keep the beat nice and smooth. I have successfully raced two USAT sanctioned International Duathlons this year. I won my AG both times and came in 6th and 4th overall with Heed and Hammer Gel fueling me. We have at least five more races scheduled and plan to do much more next year. Win or lose, place or no place, Hammer will continue to fuel me. Thanks, it is a life saver.

Pete - Cleveland, OH.

