

# ATHLETE EDUCATION SERIES

Troy DeLong and Brad Lamson reach the summit of Logan Pass during the 2010 Highline Hammer.

Photo: Kelly Pris

To view more photos of this year's Highline Hammer, go to [www.hammernutrition.smugmug.com](http://www.hammernutrition.smugmug.com)



## Hammer Gel

### Superior energy without the sugar crash!

by Steve Born

It's no secret that energy gels are wildly popular amongst athletes these days and for good reason; they're convenient and provide quick energy. However, there are substantial differences among the many choices available to you when it comes to an energy gel. They're definitely not all the same, and here's why Hammer Gel should be your energy gel of choice...

#### The Hammer Gel promise – No cheap, non-beneficial “ose” sugars!

If you want to enjoy quality energy, it's imperative to avoid the use of any fuel that contains carbohydrates with the last three letters “ose” in their name. We're talking about glucose, sucrose, maltose, fructose, and galactose; they're what we call simple sugars (1- or 2-chain carbohydrates), and here's why you need to avoid them:

1. They provide a very inconsistent and short-lived “peak & valley,” “flash & crash” type of energy. Unless you want to ride a roller coaster of energy—feeling great for a few brief moments, then struggling to get out of an energy rut—you'd do well to avoid consumption of simple sugars.
2. There are strict limitations as to how many calories the body can accept, assimilate, and utilize for

energy from simple sugar fuels. A simple sugar concentration of 6-8% is the limit; any higher concentration than that and the fuel will be substantially delayed from digesting efficiently, resulting in an increased risk of a variety of stomach-related problems such as nausea, bloating, cramping, and diarrhea. The problem is that a 6-8% concentration is a fairly weak mix, yielding about 100 calories an hour, if that. For the average-size athlete, let alone a larger one, this is an inadequate amount for maintaining optimal energy production hour after hour.

What does this all mean? An energy gel that contains simple sugars requires more fluid to get it through the GI tract efficiently. When you try to fulfill your body's optimal calorie requirements by consuming increased quantities of simple sugar-containing energy gels, you have to drink copious amounts of fluids. This often leads to over-hydration and its host of associated problems.

3. Most of us already over-consume simple sugars in our daily diets. Numerous studies clearly show that sugar consumption in America is outrageously high. A report from the Berkeley Wellness Letter stated that each American consumes about 133

pounds (60+ kg) of sugar annually... that's more than a 1/3 pound of sugar every day, 365 days a year! What's disturbing to note is that this report dates back to 1985. In 1999, the U.S. Department of Agriculture (USDA) reported that annual sugar consumption was 158 pounds (71+ kg) per person. It only takes a quick look at the USDA data to conclude that sugar consumption continues to rise with each passing year. That's downright frightening!

Excess sugar consumption is implicated in numerous health problems, plain and simple. For that reason alone, you want to avoid consuming simple sugars during exercise. For an illustration of just how many health hazards are associated with sugar, be sure to check out article “146 Ways Sugar Can Ruin Your Health” by Nancy Appleton, Ph.D. You'll find this eye-opening article in the Knowledge section at [www.hammernutrition.com](http://www.hammernutrition.com).

**Bottom line:** Simple sugars are inefficient fuels. They have little or no value for the exercising athlete, and they have numerous negative health consequences associated with them. **AVOID THEM!**

**The multi-carb fad—  
It's been around for a long time, but  
don't fall for it!**

Hammer Nutrition has always been uncompromising in our stance on the use of complex carbohydrates as THE

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preferred fueling choice, no matter what the distance or intensity, and all of our fuels—including Hammer Gel—contain complex carbohydrates and NO added simple sugars.

However, a few years ago, published research piqued the interest of many athletes, and a number of companies began producing “multi-carb” fuels that

which I think we’d all agree is very much a recovery pace, if that. It’s definitely not the kind of output you’re doing when training or racing! To be blunt, at a leisurely 50% VO2 Max pace, athletes can digest just about anything and suffer no gastric issues. However, if the heart rate and core temperature are raised to only 70% VO2 Max, everything changes drastically; the body must divert core-

accumulated heat from central to peripheral. This reduces the blood volume available to absorb ingested carbohydrates or whatever the athlete has consumed.

After more than two decades of experience, we have found that in the overwhelming majority of athletes we’ve worked with—athletes engaged in typical 75-85% efforts and/or in multi-hour endurance events—the combination of simple sugars and long chain

carbohydrates, in amounts higher than 1.0 – 1.1 grams per minute (4.1 – 4.6 calories per minute/240-276 calories per hour), have yielded negative results, including increased performance-inhibiting, stomach-related maladies.

Dr. Bill Misner summarizes, “Absorption rate and how fast the liver can ‘kick it out’ are limiting factors. No matter what you eat, how much or how little, the body provides glucose to the bloodstream at a rate of about 1 gram/minute. Putting more calories in than can generate energy taxes gastric venues, electrolyte stores, and fluid levels.”

**Bottom line:** It’s not whether these published studies are disputable, but rather if these studies apply to normal bouts of exercise (read: faster paced, longer duration). We adamantly do not

believe this to be the case, which is why we do not recommend the use of multiple carbohydrate sources during exercise. Unless you plan to basically walk through your next workout or race, at an effort no higher than 50-55% VO2 Max (basically, a recovery pace, if that), stick with complex carbohydrate fuels – not simple sugars or fuels containing multiple carbohydrate sources. We guarantee that you’ll see better results.

**Where’s the sodium?**

An ever-increasing number of companies seem to be on a mission to see who can put the highest amount of sodium in their product. Before you buy into the “more is better” concept regarding sodium, remember that there are a couple of serious problems associated with excessive sodium levels in an energy gel:

- First, let’s take a look at what we know regarding sodium:
  1. The average American consumes about 12 to 15 grams of salt daily, equaling 4,800 to 6,000 mg of elemental sodium.
  2. The amount of sodium required to maintain health in a sedentary person is 200-500 mg per day.
  3. Research supports that chronic consumption of more than 2,300 mg of sodium 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. In fact, a fairly recent press release from the American Heart Association “recommends that most people strive to lower the amount of sodium consumed daily to less than 1,500 mg, to prevent or manage high blood pressure, a major but modifiable risk factor for heart attack and stroke.”
- There is no doubt that we are consuming several times more sodium than we need to on a daily basis, which not only has general health consequences, but affects

**“I just tried your new Hammer Gel flavor—Montana Huckleberry—at the Auburn Triathlon and love it. It’s a subtle sweet taste, doesn’t feel heavy in the stomach and it’s giving me the energy that I need. Awesome new flavor addition to an already great line up of flavors, I can’t wait to crack open a jug of this stuff.” - Ross S.**

**“I want to thank you for your Montana Huckleberry Hammer Gel. It is wonderful. I have decided to use it on toast instead of jam. It is better tasting and better for me! It has become my new dessert! Thank you!” - Judy B.**

contain a variety of carbohydrates—similar-to-identical in both type and ratio—that were used in the studies. In a nutshell, the research found that a blend of carbohydrates increased oxidation rates, indicating higher energy production. In one study, cyclists who ingested a 2:1 mixture of maltodextrin to fructose were able to oxidize carbohydrates at rates of up to 1.5 grams/minute, or 360 calories per hour. Another study used a mixture of glucose, fructose, and sucrose and had rates that peaked at 1.7 grams/minute, or 408 calories per hour. These results are startling, considering that complex carbohydrates typically oxidize at a rate of about 1.0 gram/minute.

However, there’s more to the results than what first meets the eye. Subjects in these studies cycled at low intensity (only 50-55% maximum power output),

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athletic performance as well. Aldosterone is a hormone that controls the rate at which sodium is circulated in the human body. When sodium levels dip too low, via loss in perspiration or urine, aldosterone is released, stimulating the kidney tubule cells to increase absorption of sodium back into the blood. In layman's terms, the body has a very complex and effective way of monitoring, re-circulating, and conserving its stores of sodium.

High sodium intake will suppress serum aldosterone, whereas low sodium intake will elevate serum aldosterone. Therefore, too much sodium—be it from diet and/or from intake during exercise—will suppress and neutralize aldosterone's sodium recirculation (and thus sparing) effects, causing more sodium to be lost. Conversely, a low-sodium diet and a more conservative sodium intake—in tandem with other electrolytes typically depleted—during a workout or race results in less sodium lost in sweat and urine. When it comes to sodium, "more" is definitely not better than "less"!

- The sodium content in an energy gel or drink may fulfill a small portion of your electrolyte requirements. However, the purpose of sodium

it alone cannot satisfy electrolyte requirements. Why so much emphasis is placed solely on this particular mineral is confusing and disturbing; other minerals are just as beneficial, primarily because they all work synergistically. As Dr. Bill Misner writes, "When a balance of electrolytes of cations (positively charged ions) to anions (negatively charged ions) are managed in the energy-producing cell—assuming the cell has adequate fuel and fluid—such a cell will produce energy at a higher rate than one overdosed by a single cation mixed with an irrational list of anions." In other words, your body will perform better with a balanced intake of electrolytes, than from just a dose (especially a large one) of sodium.

**Bottom line:** Hammer Gel contains both sodium and potassium. However, the amounts contained in Hammer Gel are sufficient for aiding in the digestion of the complex carbohydrate component and also act as a natural preservative. They are not intended to fulfill your electrolyte

this crucial requirement of athletic fueling with much greater precision. A high-sodium energy gel lacking other electrolyte minerals simply can't provide this balance.

**The unique makeup of Hammer Gel**

Hammer Gel contains two sources of carbohydrates. The first one is a specific

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**"You sent me a sample of Montana Huckleberry Hammer Gel in my last order and wow is that stuff good! It will be on my next order! GOOD JOB GUYS!" - Greg B.**

in a gel or drink is to balance the osmolality of the mixture so that it can be within body fluid osmolality parameters for efficient digestion. The higher the sugar content in an energy gel or drink, the more sodium MUST be present, not to satisfy electrolyte requirements, but rather to lower the osmolality of the mixture so that it can be digested with better efficiency.

- While sodium is a vital electrolyte,

requirements; that's where Hammer Nutrition's Endurolytes product comes in. The electrolyte profile of Endurolytes responsibly balances cations (positively charged ions) and anions (negatively charged ions), allowing you to meet



**ENJOY HUCKLEBERRY SEASON ALL YEAR ROUND!**

Here in Montana, huckleberry season is pretty short, typically lasting from June through August. However, with our most recent edition to the Hammer Gel line, Montana Huckleberry, you can enjoy the utter deliciousness of this unique berry every month of the year!

Ever since its introduction in late 2009/early 2010, the feedback we've received on Montana Huckleberry Hammer Gel has been overwhelmingly positive. If you haven't tried this oh-so-delicious version of Hammer Gel, you really are missing out! We've printed just a fraction of the feedback we've received throughout this AES... after reading such positive reviews, we know you'll want to try it!



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maltodextrin of superior quality that contains a unique saccharide profile, consisting of an unusually large amount of pentasaccharides, a five-sided complex carbohydrate. This particular pentasaccharide carbohydrate has unique properties that allow for maximal conversion to energy.

In addition, this maltodextrin is low on the Dextrose Equivalent (DE) scale.

## “The new Montana Huckleberry

Hammer Gel is absolutely fantastic! I know everyone’s taste buds are different, but it’s my new favorite flavor by a wide margin. Great job!” - Josh W.



The lower the DE, the quicker it will exit the GI tract, cross the stomach lining, and become more readily available for energy production. Hammer Gel’s maltodextrin has a DE of 18, whereas sucrose (table sugar), a sweetener found in many energy gels, has a DE of 100.

Lastly, the pH of Hammer Gel’s maltodextrin is 4.0 – 4.7 which, combined with its low DE, makes it enzyme receptive, highly absorbable, and potentially available for the demands of both endurance and strength exercise.

**Bottom line:** Other companies may use maltodextrin in their products, but with Hammer Gel you can rest assured that it’s the highest quality maltodextrin available.

The other carbohydrate source in Hammer Gel is Energy Smart™. This patented natural sweetener is a combination of naturally occurring fruit-based mono- and disaccharides,

plus specially developed medium and long chain dextrins derived from grain. The process of creating Energy Smart™ maintains the integrity of the fruit, grain dextrin enzymes, and naturally occurring vitamins and minerals. Energy Smart™ is NOT a simple sugar or artificial sweetener, and its unique biochemistry allows your body to enjoy an increase in blood glucose levels.

Energy Smart® is unique in the world of sweeteners and, to our knowledge, Hammer Gel is the only energy gel that contains this healthy, trademarked carbohydrate

source. With Energy Smart™ you don’t have to rely on refined sugars, such as high fructose corn syrup, or artificial sweeteners to give you the flavor you want in an energy gel.

In addition, Hammer Gel provides a small donation of the amino acids l-leucine, l-isoleucine, l-valine (known as branched chain amino acids or BCAAs), and l-alanine. BCAAs help prevent the cannibalization of lean muscle tissue. L-alanine aids in carbohydrate metabolism.

### Hammer Gel’s versatility

Hammer Gel is an extraordinarily convenient fuel, and you can use it in the following ways:

- As all or part of a pre-workout/race meal
- To allay hunger immediately before an event
- As your sole source of calories in workouts/races lasting up to two hours
- As a part-time fuel during longer workouts and races (to supplement Hammer Nutrition’s protein-fortified fuels)
- As part of your post-workout recovery nutrition
- To add to Sustained Energy or Perpetuem for flavor

You can use Hammer Gel in your water bottle (it mixes completely in solution),

in the Hammer Flask, in a single-serving pouch, or to flavor other products and foods (as an example, Apple-Cinnamon, Montana Huckleberry, and Raspberry Hammer Gel are great on pancakes and waffles!). You can keep an extra pouch or flask with you in case your planned fuel outlay during training or in a race comes up a bit short.

Great taste, great variety, great value! I’m sure we’re all in agreement that if a fuel—be it energy gel, sports drink, or energy bar—doesn’t taste good, it’s less likely that you’re going to consume it, or at least not with much enthusiasm. That’s why, with nine flavors of Hammer Gel currently available—including our newest flavor, the outrageously delicious Montana Huckleberry—you’re sure to find several that you’ll enjoy hour after hour.

### Lastly, Hammer Gel is a great value:

- Single serving pouches are \$1.25 each
- Eco-friendly, 26-serving jugs of Hammer Gel are \$19.95 each . . . that’s right around 77¢ per serving.
- The best value of all comes when you buy three or more jugs in any flavor combination. You pay \$16.95 per jug, which makes each serving a mere 65¢!

### Summary

Quality fuel, great taste, and economical price – with Hammer Gel you have it all. An additional plus? Hammer Gel has a shelf life of 1.5 years, though if you aren’t using at least a couple jugs of Hammer Gel in 18 months, you’re either not training enough or not fueling properly!

With a glut of energy gels available to you, we hope this Athlete Education Series will help you in making an informed choice: consuming a quality fuel source that provides quality energy. Hammer Gel is the clear choice, and as with all of our fuels, we guarantee your satisfaction 100%. Give it a try today and find what a difference it makes in the quality of your workouts and races.



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## The BEST value!

Buy three or more jugs in any flavor combination. You pay \$16.95 per jug, which makes each serving a mere 65¢!



### ATHLETE EDUCATION SERIES



## Hammer Gel - What you need to know!



If you want to enjoy quality energy, it's imperative to avoid the use of any fuel that contains carbohydrates with the last three letters "ose" in their name. Glucose, sucrose, maltose, fructose, and galactose: they're what we call simple sugars.

Hammer Gel stands alone in today's glutted market of energy products. A look at the ingredient list on the label will reveal why: we use long-chain complex carbohydrates for smooth, consistent energy release. There's only a trace of sugar, so Hammer Gel doesn't set off wild insulin spikes causing "sugar high" and "sugar crash." You won't find our products saturated with cheap, ineffective, commercial-grade sugars, which can ruin health and affect

performance. Hammer Gel is an easily digested, concentrated source of complex carbohydrates, with four amino acids added to enhance performance and prolong energy levels during intense training and competition. Hammer Gel has a syrup-like consistency that mixes easily with water if so desired. You can drink it straight, dilute it, or use it to flavor other fuels and foods. Use it before, during, and after exercise.

Available in 10 great flavors, including Montana Huckleberry. You're sure to find a flavor you'll love!

26 serving jug  
**\$19.95**

Single serving pouch  
**\$1.25**

**ORDER TODAY!** 1.800.336.1977 / [www.hammernutrition.com](http://www.hammernutrition.com)