

Attention IRONMAN Participants

For those of you who are going to do the Ironman in October, here are a couple of suggestions to help make your race more successful.

FUEL SOURCE

Since Gatorade and Powerbars will be the only fuel available on course again this year, you will probably want to carry your own. Because E-CAPS' ENERGY SURGE drink mix was designed specifically for ultra distance events like Ironman, it is the perfect alternative. It is easy to carry, contains no sugar and the protein will really help in this type of race. It has already been used in the Western States 100, RAAM and many other ultra distance events with extremely good results. Not one athlete has complained of upset stomach or other fuel related ailments in these races.

Here is the scenario; Drink 1 to 1 1/2 servings (8-12 ounces) per hour of ENERGY SURGE, and pick up water from the aid stations as needed to maintain adequate hydration. This way you will be able to avoid all of the sugar in those other products and the problems it causes. This also means that you will be drinking mainly plain water and only taking a sip of fuel (ENERGY SURGE) about every 15-20 minutes. For those of you who have done this race before, I don't need to go into the fuel related complications that many athletes experience. However, suffice it to say that for many triathletes a year's worth of training and a lot of money go down the drain out on the lava beds of Kona because

(continued on page 5)

Are you suffering from protein deficiency? Part II

Let me say it one more time; If you are experiencing a feeling of over training characterized by excessive fatigue, slow muscular recovery, crankiness and or poor immune function - you are protein deficient!!

In the first part of this article I raised the issue of chronic protein deficiencies among endurance athletes and discussed some of the myths that have led to this situation - including the infamous 70% carbohydrate diet. Part I concluded with the recommendation that you set a goal of eating 1/2 gram of protein per pound of body weight each day. For most of you, this is going to represent a significant change in your dietary habits. So, part II of this article is dedicated to explaining in more detail why you need more protein and how you can easily get the extra protein with some relatively painless changes in your diet.

Research confirms it

In case you were wondering what kind of documentation there is to support my ideas about protein requirements, you're in luck. In 1992 Richard Kreider, Ph.D. presented his findings on protein needs of endurance athletes to the American College of Sports Medicine. His research indicated that athletes do break down muscle tissue during intense endurance training. Furthermore, he demonstrated that replacing the protein had a positive effect on fatigue, moodiness and the immune system. Kreider,

"These studies and other research demonstrates that endurance athletes in heavy training need about 50% more protein than recreational athletes."

who is director of the Wellness Institute and Research Center at Old Dominion University in Norfolk Virginia, studied the effects of hard training on protein breakdown, mood disturbances and immune status in college swimmers.

Since the research was funded by a company that sells amino acids, the protein source used in the research was a group of 3 amino acids called "Branched Chain" or BCAA's (See accompanying article for more on BCAA's and amino acids).

After a month of training, the swimmers who had used the protein supplement experienced less muscle breakdown than the placebo group. By measuring nitrogen waste levels, which is a by product of muscle tissue breakdown, the research showed that the levels were 37% lower in the swimmers who used a protein supplement compared to those who took a placebo. Additionally, the swimmers who used the protein experienced less mood swings and improved immune response.

John Ivy, Ph.D. of the University of Texas at Austin also did a study which examined protein given after endurance exercise. His test involved cyclists doing a 2 hour time trial, then immediately after the time trial, each cyclist was given one of three mixtures; Carbohydrates, protein or a combination of the two. Blood samples and muscle biopsies revealed that the

(continued on page 5)

BCAA's and Amino Acids

A quick word study tells us that protein comes from the Greek word meaning "of prime importance" and like carbohydrates and fats, is composed of atoms of carbon, oxygen and hydrogen. In addition, proteins contain nitrogen, sulfur, phosphorous and iron. These molecules are linked in various forms by peptide bonds to form amino acids. It is these amino acids which are your body's "building blocks" for building and repairing muscle tissue as well as numerous other essential biological and physiological functions.

There are 20 different amino acids which are required by the body, 9 of which are classified as **essential** because they cannot be synthesized by the body and must be derived from external food sources. Two other aminos are synthesized by your body from two of the essential amino acids. The remaining 9 amino acids are classified as **non essential** because they can be manufactured in the body.

All proteins can be identified as either complete or incomplete. Only if all nine essential amino acids are present in the proper quantity and correct ratio, to maintain nitrogen balance and allow for tissue growth and repair, is it a complete protein. Complete proteins are derived from animal sources such as eggs, milk, meat, fish and poultry. Whereas vegetable protein sources are usually considered incomplete because they lack at least 1 essential amino acid. This is why vegetarians must combine various vegetarian protein sources to get a complete profile of the 9 essential amino acids. However, it is extremely difficult to arrive at the ideal ratios and quantities when doing so.

BCAA's

Among the 9 essential amino acids are the three amino acids leucine, isoleucine, and valine which are known as "branched chain amino acids" or BCAA for short. Up to 75% of your body's muscle tissue is composed of these three amino acids which are also directly involved in the tissue repair process. However, if the BCAA's are ingested without the other 6 essential amino acids in the right amounts, they're ability to function properly is significantly impaired. BCAA formulas are also one of the most expen-

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sive amino acid supplements on the market. However, the following common foods contain at least 2 grams* of BCAA's;

- 3 ounces of tuna (fresh grilled or canned packed in water)
- 3 ounces of extra lean beef (grilled filet mignon, etc.)
- 3 ounces of cooked light or dark meat chicken
- 1 cup of nonfat or low fat yogurt (plain or fruit flavored)
- 1 cup of cooked kidney beans or lentils
- 1 cup cooked rice mixed with 1 cup of cooked black beans

*Studies show that at least 2 grams of your daily protein intake should be from the BCAA group.

Free form amino acids

Some amino acid supplements are offered in free form, which means that all 20 amino acids are present. This

type of protein supplement is also expensive but does offer the vegetarian or semi-vegetarian a viable source of protein. However, free form amino acids in large quantities or taken too frequently can create unwanted stress on your liver and kidneys. This occurs because only a few of the 20 amino acids are in high demand and the excess aminos must be disposed through the liver and kidneys, which act like filters for eliminating toxins and excess nutrients.

Specific amino acids

Amino acid products are also offered in specific or individual formulas. If you really know what you're doing, you can put these to good use. Two examples of specific amino acids are L-Carnitine used to improve fat burning activity and L-Tryptophan as a natural sedative. Many other amino acids have

similar performance and therapeutic applications, but some very thorough and careful study should be undertaken before getting involved in this type of supplementation.

Protein powders

Protein powders are probably the best and most economical protein supplement available, but still more expensive than protein from normal dietary sources. They are available in either animal, milk and egg protein, or vegetable, such as soy protein, configurations in a wide range of prices. However, remember that the vegetable protein powder will not provide a "complete protein" source unless one or more amino acid has been added. Either way you go, a generic protein powder, preferably in bulk form, will give you the most bang for your buck. Above all, this gives you a very conve-

(continued on page 3)

—Legislative Alert!! Vitamin C a Prescription Drug?—

It is a distinct possibility that in the near future, you will need a prescription to buy your nutritional supplements. After January 1, 1993, for example, Vitamin C in potencies higher than 50mg can be classified by the FDA as a prescription drug. Dozens of other vitamins, minerals, amino acids, herbs and micro nutrients such as Co Q10 may also be reclassified as drugs. Specifically, the FDA will be able to reclassify a dietary supplement as a drug solely based on its potency and other criteria which have nothing to do with the safety of any given supplement. Based on position papers published by the FDA, they are poised and ready to deny consumers access to these and other natural, harmless nutritional supplements under the guise of consumer protection.

This agenda is being vigorously pursued by the FDA even though there is no evidence that any consumers have been harmed by these innocuous supplements. On the contrary, there is a steady stream of scientific evidence that dietary supplements confer numerous and significant health benefits to the user. In fact, the 4/6/92 issue of *TIME* magazine had a 6 page cover story which highlighted research that suggests that vitamins may help fight cancer, heart disease and the ravages of aging. The 5/4/92 issue of *U.S. News & World Report* also ran a cover story touting the benefits of vitamins and dietary supplements as one the best ways to stay healthy.

Fortunately there is legislation pending in both houses of congress that would restrict the FDA from undertaking these irrational policies. Senate Bill 784, introduced by Senators Reid and Hatch titled

"The Dietary Supplement and Education Act of 1993" and House Resolution 1709, introduced by Representative Richardson would amend the Federal Food, Drug, and Cosmetic Act, to allow honest supplement manufacturers to continue to provide dietary supplements such as vitamins, minerals, amino acids and herbs to consumers. There will still be very strict guidelines regarding labeling, health claims, etc., but these bills will prevent the FDA from reclassifying a safe, harmless dietary supplement as a harmful drug.

If the likelihood of loosing access to beneficial nutritional supplements concerns you, now is the time to contact your representative to let them know that you want your rights protected. There are some very powerful lobbies on Capitol Hill that don't want this legislation to pass, so it is more important than ever to let congress know how the people feel about this issue. Call or write your representatives in the House and Senate immediately. Both of these bills will probably be voted on between the August recess and the end of the year.

Here is what to do:

Write to Congress and make your opinion count.

Senator* (your senator's name)
U.S. Senate
Washington, D.C. 20510

Ask your senators to cosponsor S. 784, The Dietary Supplement and Education Act of 1993.

Representative*
(your representative's name)
U.S. House of Representatives
Washington, D.C. 20515

Ask your representative to cosponsor HR1709.

*To find the name or to directly contact your local congressman and senators, call the Capitol Switchboard at (202) 225-3121.

For more information on these bills, contact Endurance News or your local health food store. Every health food store I have been in recently has had a lot of facts concerning this issue, including form letters and other useful information. ■

(BCAA continued from page 2)

nient source of protein for those times when you don't feel like eating a piece of chicken, etc. But I would not use a protein powder supplement more than three or four times a week.

Metabolic Optimizers

Along with BCAA's, this breed of protein supplements is very expensive. Sure they offer plenty of bells and whistles to make you think that these do more than a mere protein supplement, but it's almost all hype. However, they are convenient and usually taste pretty good because they are loaded with sugar. In truth, most of these products were designed for body builders and have simply been repackaged so they can be marketed to endurance athletes. If you ever wondered how body builders could spend two hundred dollars or more a month on their supplements, now you know.

Special note: As of January 1, 1994, most amino acid supplements may no longer be available to consumers. As a result of legislation that has already been voted into law, stringent new guidelines will go into effect that will allow the FDA to reclassify all individual and free form amino acid supplements as Over The Counter (OTC) or prescription drugs. For more on this subject please read "Legislative Alert" on this page. ■

HEALTHY RECIPES

HEALTHY TUNA SALAD

***THIS SALAD IS A MEAL!
GREAT FOR LUNCH OR
DINNER***

INGREDIENTS:

- 1/2 head of lettuce, cleaned and shredded
- 8 oz. can red kidney beans, drained
- 6 oz. can solid white tuna in spring water, drained
- 1 carrot, chopped or grated
- 1/4 cup purple onion, chopped
- 1/2 cup fresh parsley
- 1 cup cooked red potatoes, diced
- 1 small tomato, sliced
- 2 tablespoons low-fat Italian salad dressing
- 1 hard-boiled egg, diced

Start with a large salad bowl. Add all ingredients, except egg, and toss well. Top with egg and fresh pepper. Add croutons or sunflower seeds if desired. Makes 2 hearty servings. Add your favorite herbs for extra flavor.

CALORIES PER SERVING: 220
CARBOHYDRATES PER SERVING: 45g
FAT PER SERVING: 4.5g
PROTEIN PER SERVING: 33g

SOUTHWESTERN BROWN RICE

INGREDIENTS:

- 1 onion, chopped
- 1 tablespoon Canola oil
- 1 clove garlic, pressed or minced
- 1/2 cup red bell pepper, chopped
- 1 cup cooked brown rice*
- 8 oz. can red kidney beans, drained
- 11 oz. can whole kernel corn with liquid
- 2 teaspoons ground cumin
- 2 tablespoons fresh parsley, chopped
- 1 tablespoon apple cider vinegar

Sauté onion in oil until onions are transparent. Add garlic and red bell pepper, stirring constantly. Add rice, beans, corn, cumin and parsley. Cook until thoroughly heated. Sprinkle vinegar on top, and serve. Makes 4 servings.

CALORIES PER SERVING: 178.5
CARBOHYDRATES PER SERVING: 24g
FAT PER SERVING: 3.5g
PROTEIN PER SERVING: 5g

*See recipe for Simple Brown Rice

SIMPLE BROWN RICE

Though there are many ways to make brown rice, this simple version is quick and easy to prepare. Hearty and versatile, short grain (preferably organic) brown rice is a great source of fiber and carbohydrates, as well as a healthy alternative to wheat pasta. Eat it plain along with steamed veggies, or add to a variety of dishes.

INGREDIENTS:

- 2 cups plus 1 tablespoon water
- 1 cup brown rice (we prefer short grain)
- 1/2 teaspoon salt or bouillon

Bring water to boil, add rice and salt, and stir once. With lid off, wait for water to boil again. When it boils, put lid on and simmer for 45 min. or until water is gone. Set aside and let cool.

Endurance News Mission Statement

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 on-going pursuit of optimum performance and health.

Endurance News features insightful articles on diet, nutrition, training and other topics of interest to 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, EN will include articles highlighting new and existing E-CAPS products and how to get the maximum benefits from them.

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

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

(IRONMAN continued from page 1)

their body can't handle the sugar based fuel sources they use.

Since each large water bottle will hold 3 servings, you will need to carry two bottles with you on the bike (you will also need 1 or 2 extra cages for your water), pick up two more at the turn around, then take one bottle with you on the run, and pick up the second one at the run turn around. Since each bottle will contain over 1000 calories, 220 grams of carbohydrates, and 32 grams of protein, you will be ingesting about 4,000 calories on the bike and 2,000 calories during the run.

This is probably more calories than you have ever been able to consume in the past, but it won't feel like it. And best of all, you won't have to deal with sticky fingers and energy bars glued to your frame. If you follow this regimen, you will not need to eat anything else during the race. However, if you are accustomed to eating solid foods, you should try to eat something like bagels, bread or other foods that do not contain sugar. If you must eat something with sugar, stick to fruit like raisins or bananas and be careful not to eat too much.

After talking with my customers and sponsored athletes who have done other Ironman races using ENERGY SURGE, I am convinced that this is the hot ticket. But don't take my word for it, get a container and try it out on a couple of your long days and see for yourself. We will also provide extra water bottles if you need them—just let us know when you order. ENERGY SURGE will be available at B&L Bike & Sport in Kailua if you should need to pick some up once you get there.

"After talking with my customers and sponsored athletes who have done other Ironman races using ENERGY SURGE, I am convinced that this is the hot ticket."

E-CAPS Dosages

After six years of experimenting with various dosage combinations for Ironman distance races, I think we have got it down pat. Here is how to do it. Remember that RACE CAPS and TRAINING CAPS are interchangeable.

During the weeks prior to the race when you are tapering, continue taking dosages. I would recommend taking a full 2 and 4 dosage in the morning, but 1 and 2 could suffice.

90 minutes before the start, take 2 RACE CAPS (TRAINING CAPS if you are using them) and 4 ENDURO CAPS.

Then, just before you go to get into the water, take 1 RACE CAP and 2 ENDURO CAPS. This will cover you for about the first 2 1/2 hours of the event.

Once you start the bike, take 1 RACE CAP and 2 ENDURO CAPS 60 minutes into the bike and every 90 minutes thereafter until the 5 1/2 hour mark. Then begin taking the same dosage every 60 minutes for the remainder of the bike and during the entire run.

One option that has worked very well for late in the run is to begin taking the ATP SURGE 100SL tablets every 30-45 minutes during the second half of the marathon or just the last six to ten miles. I do not feel that this is essential, but if you are anticipating difficulties during the last half of the marathon, it would probably be a good idea. The ATP SURGE 100SL's are perfect for this application because the oral absorption allows a good dose of ATP (energy) to get into your system very fast, about 5-7 minutes during a race, so when your energy levels drop unexpectedly, just chew up a tablet and presto - magic. ■

(Protein continued from page 1)

carbohydrate-protein combination produced muscle glycogen 38% faster than the carbohydrate alone. Protein only produced glycogen at the slowest rate.

These studies and other research demonstrates that endurance athletes in heavy training need about 50% more protein than recreational athletes. Specifically, this translates to .54 grams of protein per pound of body weight. So if you weigh 165 pounds, multiply that times .54 and you come up with 89.1 grams of protein as your daily requirement. This is more than twice the USRDA for adults and is probably quite a bit more than you are accustomed to eating. Also keep in mind that this amount of protein is only for maintaining the muscle mass you currently have. If you want to add muscle, in the off season for instance, you will need to increase your protein intake to .75 grams per pound of body weight to get the most out of your strength training.

Now that you know you are suffering from a protein deficiency in your diet, what are you going to do about it? You basically have two options; You can start using protein supplements or change your diet.

Protein supplements

Protein supplements come in all shapes and sizes, from amino acid tablets to generic protein powder to so called "metabolic optimizers" and so on. The single greatest feature of all of these various protein supplements is convenience. If you don't have time or the desire to prepare and shop for healthy foods, then using a protein supplement might make sense. However, keep in mind that these supplements are not cheap, some are \$3.50 a serving or more, and that they do not offer anything that could not be attained through normal dietary means.

You should also know that excessive amino acid supplementation can be hard on your liver and kidneys.

(continued on page 6)

(Protein continued from page 5)

Countless unfortunate body builders have proven this with their "more is better" mentality. So, don't assume that you can get all of your protein from these type of supplements. However, limited use can help you meet your protein needs without emptying your wallet. My suggestion is to get a generic protein powder consisting of milk and egg protein solids or a soy based protein. These are the least expensive and have an amino acid profile similar to what we find in regular foods. (See related article for more on protein supplements.)

Special note for vegetarians: If you are unwilling to eat meat and or dairy products, a good quality protein supplement is a necessity. A soy protein powder for meals and a BCAA capsule for immediately after workouts would be ideal. The reason being that it is almost impossible for you to get adequate proteins from combinations of rice and beans. Besides, veg-

etarian protein sources are relatively low in mineral content and lack complete amino acid profiles.

Change your diet

The most economical and healthy way to meet your newly realized protein needs is by modifying your diet. By incorporating protein into most of your meals and snacks, you should be able to reach your desired level of protein without resorting to expensive protein supplements. By dividing your body weight by 2, you will know roughly how many grams of protein you need on a daily basis. By reading labels and becoming familiar with protein rich foods, you should be able to keep a fairly accurate mental tally of your protein intake for the day. For some, writing what you eat in a diary may be better for judging your daily protein intake.

The best overall approach is to eat a balanced combination of carbohydrates and protein at each meal and snack. Things like yogurt, cottage

cheese, soft boiled eggs with toast and milk with fruit or cereal for breakfast. Turkey or chicken sandwiches with a green salad for lunch. Tuna, packed in water, with kidney and garbanzo beans on a bed of lettuce with light salad dressing is a favorite meal or after noon snack (See recipe on page 4). Dinner should almost always include a complete protein from animal or dairy sources. However, lentils, kidney beans and vegetarian protein sources can be substituted for added variety. You can also keep a couple of hard boiled eggs and baked potatoes in your refrigerator for a quick snack anytime you need it.

Hopefully, this article has helped you realize how important protein is to your health and achieving maximum performance from your body. A more comprehensive diet with suggestions for breakfast, lunch, dinner and snacks is available free of charge from Endurance News. Just drop us a line and we will be happy to send you a copy. ■

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IN THIS ISSUE:

- **EN Mission Statement**
- **Protein Deficiencies, Part II**
- **All About Amino Acids and BCAA's**
- **Legislative Alert: Vitamin C a Prescription Drug?**
- **Healthy Recipes: Simple Brown Rice, Healthy Tuna Salad & Southwestern Rice**
- **Ironman Update: Suggestions for a More Successful Race**