

Editor's Note

Well, 1998 is a whole new year and I am excited about what's in store. In addition to adding just a couple of new products, our main goal in 1998 is to increase your understanding and knowledge of nutrition, existing supplements and training to help you get the most out of all of your hard work. We are approaching this goal in several different ways starting with increasing the frequency of Endurance News. Notice that it has been less than two months since you received your last issue. Another angle is the launching of our own on-line news or chat group. You can read more about the Endurance on-line forum in this issue. Lastly, we will be doing educational/informational mailings on some of our existing products as well as 2 or 3 new ones.

I also have a new cause, if you will, in 1998 that I am going to be up on my soap box preaching about any chance I get. That cause is water—the overwhelming need for pure, uncontaminated water. Everyone agrees that it is the most critical component of our health, athletic performance and for sustaining life itself. Yet, it is completely overlooked by some, ineffectively addressed by many and only dealt with satisfactorily by a scant few. In 1998, I aim to change that, at least among my customers.

Dr. Bill and I have spent the last several months gathering mountains of information on the pathetic state of our water supply and larger mountains of information on the best ways to protect yourself and family from its harmful effects. Yes, I am talking about water filtration systems and through a very lengthy process of deductive analysis, we have identified the two best systems available and will be offering them to you at very reasonable prices.

The introductory article by Dr. Bill on water should whet your appetite, no pun intended, as to the urgency of taking control of your water supply now.

I hope you enjoy this issue of Endurance News and as always we encourage your feedback on any and all subjects relating to endurance.

Brian Frank, Co-founder

PURE WATER = PERSONAL BEST

IT'S THAT SIMPLE!

By Dr. Bill Misner, Ph.D.

Why is water so important to the athlete? The human body overall consists of approximately 70% water. A muscle that moves the bones through time and space is 75% water; the brain which sends impulses for body movement and direction is 76% water; the blood which transports nutrients, oxygen, and wastes is 82% water; and the lungs which ventilate the useful and wasteful blood gases are made up of 90% water! Each of us needs a minimum of 64 ounces fluid intake per day even if we do not exercise. Body processes such as digestion, fuel absorption, body temperature regulation, nutrient transport, and waste excretion are directly dependent upon the quality and quantity of fluids available. The human body can survive 35 days without food, but will die in 5 days without water! An athlete involved in heavy, intense training may use over 2 gallons of tissue stored fluids in one day. A 165 lb. athlete is structurally composed of 50 quarts of water. During a 6-day training period, all of those tissue stores of water are completely replaced with a new 50-quart water volume (Sargent & Weinman 1963). During such high volume exchanges, by drinking unfiltered tap water, it is possible to expose living tissues in your body to over 60,000 contaminants.

Evidence suggests that pure water is the single most important performance-enhancing supplement. Most athletes are not only lacking pure water, but are substituting impure, polluted fluids which have been shown to hinder optimal performance!

How Does Our Water Supply Get so Polluted?

The worst offenders are industry, but agriculture and humans also contribute more than their fair share. Water pollution has gotten so bad that according to the U.S. Department of Public Health, 85% of the water supply in the U.S. today is dangerously contaminated. What is frightening about the flux of toxic substances in our water system is that it only takes one harmful

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toxin to obliterate the dreams and hopes of the best athlete, yet there are over 60,000 specific performance-inhibiting contaminants flowing through filterless faucets in the U.S.A.! Industry dumps billions of gallons of chemical-laced waste water each day. Over 70 pesticides have been detected in aquifers responsible for tapwater in the USA (Ritter 1990). Fertilizers and insecticide residues are constantly flushed by rainwater and allowed to flow into our most pristine lakes, rivers, and streams. Each year, millions of gallons of raw, untreated sewage desecrate our rivers, streams and lakes. Over 250,000 regulated or unregulated dumps leach a variety of toxic contaminants into the soils, then into our water supply. Our homes are also a source of toxic chemicals. Softened water, which increases corrosive sodium content, also tends to dangerously dissolve the linings of all pipes; lead is leached from the soldered joints of copper pipes, while cadmium is extracted from pipes made of galvanized metals or plastics. Tolerance levels for lead and cadmium are "ZERO" under the demands of extreme exercise. Additional harmful toxic, carcinogenic chemicals found in the watershed which may deteriorate your performance goals are: nitrates, alum, carbon, chlorine, trihalomethanes, fluorine, lime, phosphates, soda, ash, asbestos, and cyanides (Balch 1990). Nitrates, for example, in minute quantities, will cause a newborn baby to turn cyanotic blue and suffocate from lack of oxygen, explaining why hospitals boil and filter the water they use for newborn babies. If you live near a stockyard or an agricultural area, chances are good that your tapwater has elevated nitrate toxins. Animal feces dumped into the watershed create 5-100 times more nitrates per unit than does human waste. Consider that a cow produces 16 times more volume of waste than humans, a horse 12 times, a pig or goat double. That becomes a lot of water-born nitrates in the water supply!

Boil Alerts!

When a "Boil Alert" is sounded in a community, it is generally suspected that

What is frightening about the flux of toxic substances in our water system is that it only takes one harmful toxin to obliterate the dreams and hopes of the best athlete

bacterial counts have multiplied to harmful levels for humans. In 1993, over 500,000 people were seriously sickened from a water-born "Cryptosporidium" bacterial outbreak in their water supply. An isolated case? Hardly! In the past 4 years over 10 million people have been subject to "Boil Alerts" due to the invasion of bacteria into the water supply. The chemical answer to halting bacterial proliferation is to treat the water system with chlorine. Chlorine is used to treat 90% of the water supply in the USA and is ingested by over 230 million Americans. Chlorine (and chloride, a binary compound of chlorine) has been associated with cardiovascular degeneration, high blood pressure, anemia, diabetes, and kidney disease. This chemical is definitely one that should be avoided by the competitive athlete.

Growth and Strength Require Pure Water

In any sport, whether the focus is endurance, power, or strength, muscle growth response to exercise stress is the "key" to enhanced competitive performance. Complete nutrition, adequate rest/sleep, progressive training, and the aforementioned anabolic response to training are the pre-event physical determinants for how high, how fast, how much, or how far the athlete may progress.

Does tapwater quality affect growth and development? It has been bluntly suggested, though not concluded, by a study

conducted in New Jersey (Bove 1995) that, "Tapwater may have effected birth outcomes." Between 1985 and 1988, 80,938 births and 594 fetal deaths were studied in terms of the monthly exposures to local tapwater during a fullterm pregnancy. Tapwater containing micro-measured levels of trihalomethane, carbon tetrachloride, trichlorethylene, benzene, and dichloro-ethylene were implicated in undersize fetal growth, central nervous system defects, neural tube defects, oral cleft defects, and major cardiac defects! Is it possible that the 50-75 gallons of water replaced every 6 days by an athlete is also inhibiting the anabolic growth response which he or she hopes to gain from intense training?

An Athlete's Story

"If you are polluting your muscles, organs, and brain with regular tapwater, do not expect to reach your athletic potential; a high performance machine cannot operate at its optimum with dirty lubricants," according to a highly respected sports scientist. A prime example is an Olympic-level runner who trained successfully using filtered-purified water while in San Diego, and was performing at levels that would have put him in the hunt for a medal in the coming Olympic Games. Aiming for the performance of his life, this athlete chose to train at an altitude above 4000 feet in order to enhance production of red blood cells. After training for a few months on the tapwater from wells near Denver, Colorado prior to the Olympic Trials, the training performances of this athlete deteriorated dramatically. Health and blood serum counts were all normal, but a hair analysis revealed water-born arsenic levels had risen from a 2 part per million (ppm) normal count to over 11.0 ppm, which is rated at "slightly" elevated levels, not enough to put health at risk, but definitely enough to hinder athletic performance when the demands are extreme. A corrected regimen of purified water hydration was immediately employed, but not soon enough to reverse the slightly elevated arsenic's toxic hold on the physiology responsible for optimal performance, and this athlete failed to make the Olympic Team.

Ergogenic Pure Water From the Filtered Tap

The typical American tapwater faucet yields a contaminate count of 350-1000 parts per million (ppm). The best filtering device installed in your home will reduce that count to as low as 10-12 ppm. Then your internal organs can focus on ridding your body of metabolic waste which results from intense training sessions rather than being preoccupied with toxic contaminants. "Zero Tolerance" microbes and toxic chemicals are significantly reduced by a home water system, which then allows optimal recovery, muscle growth and cardiovascular development from exercise stress to take place at maximal rates. A solid carbon block filter or distillation/carbon filter that will eliminate more than 99% of contaminants are the ideal units to consider for dramatically improving the quality of your water. However, any system that will remove 90% or more of the drinking water born toxins will remarkably reduce the systemic stress that they impose on an unsuspecting athlete who is doing everything else right in order to optimize both performance and health.

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Water Purifiers

We are pleased to announce that E-CAPS now offers what we believe to be the two best water purification systems available. The overwhelming necessity for pure, uncontaminated water and its complete unavailability from the tap are two facts that are beyond question. For most people the only issue is how to effectively address the problem. Because the options are so numerous and confusing, many just drink less water or buy outrageously expensive bottled water.

Although I have been drinking only filtered water for the past 15 years and have been all too aware of the dangers of drinking out of the tap, I have until recently maintained the attitude that E-CAPS specialized in micronutrient supplements and the water issue should be left to the water experts. However, about a year ago, a customer helped me realize that with something like 1,700 different water purification devices on the market, it is totally beyond most people's interest or desire to research and find the best system. I finally realized that it would be a real service to our customers if we did the homework for them, narrowed the field down to the two best systems and offered them with our usual 100% satisfaction guarantee.

Now, we didn't look at 1,700 systems, but Dr. Bill and I have spent the last several months gathering and analyzing information on the all of the different types of water filtration systems on the market. Our primary objective was to find the system that removes the highest percentage of the widest variety of contaminants. Both Dr. Bill and I thought we knew a bit about filters before we began this research, but we quickly realized that our existing knowledge barely scratched the surface. Although cost was not a primary concern, we found that the two best systems varied in price from \$199 to about

\$900 and that units costing several thousand dollars were not necessarily the most effective.

Research Results

#1—According to our research, the top system for removing the highest degree of contaminants is a distillation unit with a carbon post filter. The brand that we chose to offer is called *Pure Water*. Their devices are top quality stainless steel construction with very long warranties and a high degree of serviceability. The most basic *Pure Water* distiller retails for \$475 and will distill up to 4 gallons of water each day—ideal for one or two people. Their next unit, which will distill up to 7 gallons per day, is best for families of 3 or more and retails for \$1,069.00. We have made special arrangements which allow E-CAPS customers to purchase *Pure Water* distillers for 15% below these suggested retail prices.

Professional triathlete Eric Haar endorses these distillers and claims that through nonscientific tests with his coach, he has determined that his performance improves by 2% when drinking distilled water versus Fairfax, CA tap water.

#2—In close second is the solid carbon block filter. Believe it or not, our #2 water filtration device is sold through a multilevel marketing company and E-CAPS is an official distributor. The *Multi Pure* solid carbon block filters are almost the best water purifiers on the market and I wasn't going to avoid them just because they are sold MLM. Some of you may think that this is totally hypocritical of us considering the position we have taken on MLMs in the past. But, we checked out *Multi Pure* very carefully and found that they sell a great product at very reasonable prices. In fact, they received the prestigious "Best Buy" award from Consumer Digest for the excellent value of their filters. These units start at \$199.95 and their top-of-the-line filter, which we use in our offices, goes for \$459.95.

These filters will be discussed in much greater detail in the future, but if you are interested in either of these purification devices now, call E-CAPS at 1-800-336-1977 and ask to speak to Brian.



X WINTER CROSS-TRAINING

by Nate Llerandi

Winter's weather can be a real downer sometimes. Most people can't bike outside because it's too cold or icy, and even running can be treacherous due to ice or obstacles hidden by snowfall. Mother Nature can make it extremely difficult to put in the time necessary to progress in our training. So what's a frustrated athlete to do?

Luckily there are many types of indoor workout equipment available—either for purchase or use at your local health clubs and YMCAs—that can help to eliminate your training woes, be viable substitutes for a treadmill or indoor bike workout, and add spice to your routine.

Here are several, in no particular order of importance.

1. Cross-Country Ski Machine

These are some of the least expensive, yet most effective machines available. They offer a total-body workout, burn lots of calories and offer in-line movement similar to running but with less impact.

2. Elliptical Trainer

These are fairly new and may not yet have made it to your health club. Elliptical Trainers offer no impact while supplying a great workout for the legs and cardiovascular system. It's like a cross between a stairclimber, ski machine and treadmill.

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3. Stairclimber

This is a great cross-trainer if you need to develop strength in your legs on a par with the workout you would get from running up hills. Also, given its lack of impact during a workout, a stairclimber is a great way to simulate your run training while recovering from an injury.

Avoid supporting your weight with your arms. Instead let them swing freely as you do while running; it won't take long before you feel like you're mimicking your running form. Also, be sure to take shallow steps to keep your cadence up rather than long, deep steps.

4. Rowing Ergometer

While rowing machines offer a total body workout, their main benefit as far as triathlon is concerned is cardiovascular. Ergs offer no impact while allowing you to get your heart rate up as high as you want to.

Proper technique is essential to minimize the risk of injury to the lower back, so it's important that you be shown how to use an erg correctly.

Any one of these pieces of equipment will give you a great workout and add variety to a sometimes dull routine. And, by using your muscles in a different way than you are accustomed to, you will be enhancing your overall strength as well.

Should you decide to incorporate any or all of these cardio machines into your weekly routine, all you need to do is follow the day's run or bike workout as it is written—in terms of duration and heart rate intensity.

So, the next time you are loathing an upcoming treadmill or magturbo workout, or just don't want to put on ten layers of clothes so you can run or bike outside, give serious thought to trying out one of these pieces (or another piece) of cardio equipment.

Happy training!

Nate Llerandi is a top-ranked professional triathlete. His career highlights include being ranked 6th in the world and winning the Mrs. T's Triathlon in Chicago. He has been using E-CAPS products since his NCAA All American swimming days at Kenyon College in 1989 with great success and satisfaction. Nate can be contacted at llerandi@sprintmail.com with any questions you may have about endurance training or the E-CAPS line of products.





U I C I D E on a Spoon!

by Dr. Bill Misner, Ph.D.

Sugar, an aldehyde or ketone derivative of polyhydric alcohol, mostly shows up as either disaccharides ($C_{12}H_{22}O_{11}$), or monosaccharides ($C_6H_{12}O_6$) found in foods such as candy, fruit, salt, peanut butter, canned vegetables, bouillon cubes, medicines, toothpaste, vitamins, and almost all processed "fat-free" products. The health dangers sugar creates when habitually imposed on human physiology are known. Simple sugars have been observed to aggravate asthma, muster mental illness, move mood swings, provoke personality changes, nourish nervous disorders, hurry heart disease, deliver diabetes, grow gallstones, hasten hypertension, add arthritis, and on top of all of that...It can kill you!

Certain harmful refined dietary sugars (which are specifically discussed below) almost always turn directly into fat! Glucose, Fructose, Sucrose, Galactose, Maltose, and Lactose are digested and absorbed with such speed that the body must convert them into saturated fats. Saturated fatty acids are "sticky" by nature, and, when introduced into the vascular system, clog arteries, increase the chance of stroke, diabetes, and decrease athletic performance.

High sugar intake corrupts muscle performance and impedes strength development dramatically!

Muscle mitochondrial cells (internal energy cell units that produce muscle movement) breakdown 6-carbon glucose molecules for all muscle energy. One of the by-products of the energy cycle is a 2-carbon acetate, vinegar. Acetates form the building blocks for cholesterol. If acetates are produced faster than they can be burned, enzymatic reactions within our cells "join" acetates end-to-end to make excess cholesterol and saturated fat, which (1) makes red blood cells sluggish, sticky, and inefficient, (2) deposits excess saturated fatty acids around organs and in subcutaneous skinfolds, or, (3) deposits clogs of cholesterol within the vascular system, impeding blood transport of vital nutrients and oxygen to peripheral muscle

cells. Unfortunately for those of us who enjoy the moment of sweet taste, this process tends to go one way, i.e. sugar transforms to fat, but fat tenaciously tends to remain as fat deposits, and only severe starvation or extreme caloric expenditures will mobilize it as a burnable fuel source. Most of our organs burn off fat for their fuel needs, which is why master's aged athletes store more fat around organs than do younger athletes, simply from the passing of time and the nature of human physiology.

The brain commands a pre-eminent role in the sugar equation. Human survival and efficient performance depend upon this organ's need for specific fuels such as glucose, glutamic acid, or ketones to be constantly supplied. If glucose is absent, either from a dietary insufficiency, or perhaps from high caloric expenditure during intense muscular exercise, the body must harvest or convert it from two tissue stores: (1) amino acids found in lean muscle mass, or (2) chemistry from the adrenal glands initiating a conversion process which transforms liver and/or muscle glycogen stores into glucose. A diet high in refined carbohydrates stimulates an abnormal pancreatic insulin response in order to moderate blood sugar levels, while high sugar intake may also increase adrenal cortisone and cholesterol levels fourfold.

Constant high intake of simple dietary sugar overstimulates or "burns out" normal, healthy pancreas and adrenal function. Subnormal or lackluster performance of these two important endocrine glands leads directly to adult-onset diabetes, cardiovascular complications, hypoglycemia, and chronic fatigue. The direct result of high sugar intake is a significant increase in blood serum saturated fatty acids, which depresses the oxygen transport system dramatically during athletic performance. Red blood cells stick together and move more slowly, delaying delivery of much needed oxygen to muscle cells. Cellular hypoxia is the constant companion of the degenerative diseases previously mentioned.

Because refined dietary sugars lack vitamins and minerals, they must draw upon the body tissue micronutrient stores

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in order to be metabolized into the system. When these store houses are depleted, metabolism of fatty acid and cholesterol are impeded, contributing to higher blood serum triglycerides and promoting obesity due to higher fatty acid storage around organs and in subcutaneous tissue folds. Increased obesity contributes to increased cholesterol levels by lowering resting metabolism. A lower resting metabolic rate has been implicated directly in feelings of fatigue or lack of energy, increased rate of aging, arthritis, and coronary heart disease. Athletes need a high metabolic rate for a minimal body fat percentage and explosive energy expenditure upon demand.

A Little Sugar Can Cause All of That?

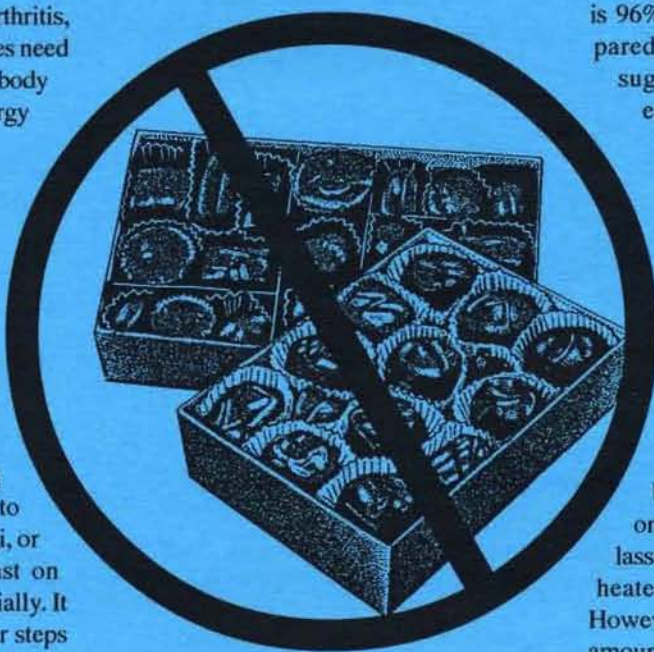
Dietary sugars feed harmful intestinal yeasts, fungi, toxic organisms, and all forms of cellular cancer. Sugar and vitamin C utilize the same transport system, but not at the same time! If vitamin C is disabled from reaching tissue folds where it is needed to control or eradicate the virus, fungi, or cancerous organisms which feast on sugar, they will multiply exponentially. It is very important that the first four steps during the hydrolysis of vitamin C are allowed to transport maximum dose for tissue antioxidation and restoration of cells damaged by intense workouts or accumulated daily stress.

Dietary sugars have been observed to cross-link proteins, which leads to increased skin fold wrinkles and general aging of our largest vital organ, the skin. Because sugar is devoid of vitamins, minerals, fiber, and has such a deteriorating effect on the endocrine system, major researchers (such as Udo Erasmus and Linus Pauling) and major health organizations (American Dietetic Association and American Diabetic Association) agree that sugar consumption in America is one of the three major causes of degenerative disease. In the last 20 years sugar consumption in the USA has increased from 26 pounds to 135 lbs. per person per year. Prior to the turn of this century (1887-1890), the average consumption was only

5 lbs. per person per year! Cardiovascular disease and cancer were virtually unknown in the early 1900s. When one compares the rates of degenerative disease to the consumption rates of total fat, sugar and altered fat during the past 100 years, altered fat is #1, sugar is #2, and total fat is #3.

Where It Comes From and How Dangerous It Is.

There are 5 classes of simple sugars which are regarded by most nutritionists



as harmful to ideal health and optimal athletic performance when prolonged consumption is in amounts above 15% of the caloric intake from carbohydrates.

Sucrose, fructose, honey, "tols", and malts are the classes reviewed in order of the real and present dangers they impose on our health and therefore physical performance.

Sucrose Class

Sucrose is found in almost all processed foods such as plain table sugar, dextrose, raw natural sugar, blackstrap molasses, maple syrup, or sorghum molasses. Taken from sugar beets or sugar cane, this disaccharide is composed of glucose and fructose. Because it contains NO vitamins or minerals it must rob them from the body in which it is assimilated, (like a parasite leaching the "life" from

its victim).

Dextrose, D-glucose monohydrate, is a monosaccharide known as glucose. It comes from the hydrolysis of cornstarch, and is found as a prime ingredient in many processed foods. Dextrose is mentioned in the Sucrose Class because it acts very much like the vitamin-mineral parasite, sucrose; in order to be assimilated after digestion, it must rob the body of its valuable micronutrient stores.

Raw or natural sugar is a white sugar which is also mostly sucrose. While it costs more than sucrose, raw/natural sugar is 96% less-processed sucrose, as compared to the purified/bleached table sugar's 99% sucrose content. The empty calories from this so-called natural product perform exactly the same as sucrose.

Blackstrap molasses is made from the "liquid leftovers" of processed table sugar (sucrose). It does contain small amounts of iron, calcium and B vitamins, but this token "good" is offset with 65% sucrose content.

Sorghum molasses is made by an extraction process performed on sorghum stalks. Unless this molasses product is enzyme treated and heated, it will ferment very rapidly. However this process "kills" the small amount of vitamins and minerals which pass through the initial extraction process, allowing only a small amount of dietary iron and pesticide spray as companions to its "sweet" 65% sucrose solution.

Maple sugar or syrup also contain 65% sucrose. Several processing techniques, such as boiling the maple sap in lead buckets which allows lead to leach into the syrup or finished product for market, cause lead contamination. Formaldehyde pellets placed in the sap holes in maple trees to keep the sap flowing often leach into the sap and the final product. Other "nasties" found in maple sugar products are chemical anti-foaming agents, polishing chemicals, and animal fats. Add cooking the sap over oil fires in lead buckets and your final product becomes a delectable sweet-tasting yummy laced with poisons!

Fructose Class

Fructose is "natural" only when found in fresh fruits which contain all the enzymes, vitamins, and minerals to effectively assimilate it as a rich nutrient for human consumption. About 20 times sweeter than table sugar, processed fructose is used as an additive to sweeten all sorts of packaged foods. Without enzymes, vitamins, and minerals it, like the sucrose class, robs the body of its micro-nutrient treasures in order to assimilate itself for physiological use. As a sweetener additive, enzymes are added to corn syrup starch, which produces "High Fructose Corn Syrup" (always check ingredient lists on all labels). Fructose does not raise blood sugars significantly, but does raise blood serum triglycerides significantly! As a "left-handed" sugar, fructose digestion is very low. For complete internal conversion of fructose into glucose and acetates, it must rob ATP energy stores from the liver. Processed, metabolized, and converted to small glycogen stores (by the liver for itself and the muscles) digestion is hindered, blood serum triglycerides are raised, body stores of vitamins, enzymes, minerals, and liver stores of ATP are scavenged from the body so that the "eater" may enjoy a moment of sweet taste.

Honey Class

It is no wonder that the honey bear is the only animal found in nature with a problem with tooth decay (honey decays teeth faster than table sugar)! Honey has the highest calorie content of all sugars with 65 calories per tablespoon, compared to the 48 calories found in table sugar! The increased calories are bound to manifest increased blood serum fatty acids, and weight gain, on top of the likelihood of more cavities. Pesticides (carcinogens) used on farm crops and residential flowers have been found in commercial honey. Honey can be fatal to an infant whose immature digestive tracts are unable to deal effectively with *Botulinum Spore* growth. What enzymes or nutrients raw honey contains are destroyed by manufacturers who heat it in order to give it a clear appearance for enhancing \$ale\$. Some beekeepers feed their bees sugar water for enhanced production and flavor, while others add sugar syrup to the

It is no wonder that the honey bear is the only animal found in nature with tooth decay problems (honey decays teeth faster than table sugar)! Honey has the highest calorie content of all sugars.

product for the same ridiculous reason.

The Three "Tols"

Xylitol is extracted from birch cellulose and is considered to be a carbohydrate alcohol. While it has the same amount of calories as sucrose, it metabolizes in a dissimilar manner and may be used safely for diabetics and hypoglycemics. Bacterial salivary organisms do not feed, grow or ferment on xylitol as they do on the aforementioned sugars. "Sugar-Free" chewing gum contains xylitol because it does not produce the bacterial support for increase of cavity causing acids. Studies show that prolonged use or large intake may produce the following side effects: (1) weight gain similar to that associated with high/prolonged sucrose intake, (2) diarrhea, (3) tumor growth, (4) liver/kidney/brain dysfunction. Many manufacturers have withdrawn xylitol from their product formulation for these reasons.

Sorbitol and Mannitol are industrial sweet alcohols made from hydrogen and commercial glucose, extracted from corn sugar. Slow absorption makes them attractive for use in "sugar-free" gums and candies. Both are known to nourish and increase the mouth bacteria, *Streptococcus Mutans*, which tends to stick to the teeth. When other sugars are eaten, these bacteria proliferate, manifesting the perfect chemistry for increasing the rate of tooth decay beyond the normal rate. While research has not documented this conjecture, some believe that carcinogenic or mutagenic properties may be consistent with the behavior of this altered nutrient. Perhaps the stomach has already testified to this: gastric distress, diarrhea, and laxative effects can all result from prolonged or high dietary intake.

Malt Syrup Class

Most Malt Syrups added for sweetening flavor do elevate blood sugar/trig-

lyceride response. Many rice syrups, rice honey, and other malt sugars have significant amounts of glucose, maltose, and corn syrup ADDED to heighten their sweetness index. Unfortunately, such formulation creates a blood serum response similar to sucrose and "robs" vital enzymes, minerals, and vitamins from the body for digestive assimilation. Only 100% barley malt syrup has a minimal effect on internal healthy physiology, but its expense may be prohibitive for most at just under \$1.00 per ounce!

Simple sugars in reasonably lenient amounts are safe sugars IF they have enough fiber, enzymes, vitamins/minerals to moderate their effect on absorption, blood chemistry, and viable assimilation into the energy cycle in order to support both health and dynamic muscular development.

All products marketed by E-CAPS Inc. & Hammer Nutrition Ltd. are carefully formulated with this end in mind. As a measure of prudence to enhance optimal performance when using our supplements, dietary intake of any significant amounts of any of the above sugar classifications should be severely restricted as an integral principle of the daily training schedule. Please read all labels carefully, and act accordingly.

**REMEMBER,
SUGAR DESTROYS
OPTIMAL PERFORMANCE!**

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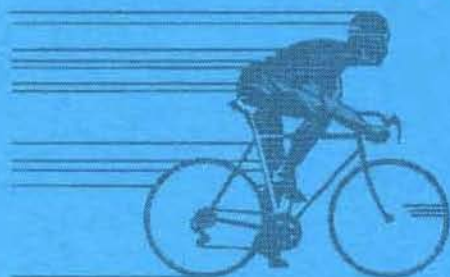
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A "NEW" METHOD FOR IMPROVING ATHLETIC PERFORMANCE AND RECOVERY!

DUL-X, FROM BIOPERFORMANCE NATURAL PLANT EXTRACTS,

By Dr. Bill Misner, Ph.D.



Sportscience technology has provided a variety of performance enhancing substrates which have the ability to access muscle cells by oral, anal, nasal, sublingual, or intravenous routes. The newest transport system being explored is the largest organ in the body: the skin. It is now well understood that the outermost layer of skin, the epidermis, affords the body a shield from most sunlight, germs, dirt, heat, cold, and bacteria. The dermis or inner layer (roughly 90% of the skin organ mass) contains blood vessels, nerves, sweat, and oil glands.

The epidermis was once thought to be impenetrable; however, research has clearly shown that several substances (good or bad), if their particles are small enough, or in the presence of a chemical carrier, can and do penetrate, and then infiltrate for systemic absorption. Duff and Kissel (1996) showed how dirt-born pesticides used on crops could penetrate both epidermal and dermal tissues. Bronaugh (1986) correlated water permeation with 7 common compounds deep within human cadaver skin. Acetylsalicylic, Benzopyrene, Cortisone, DDT, Nicotinic Acid, Propylene Glycol, and Testosterone all can permeate the skin in a water solution. (You may recognize some of these ingredients on the labels of skin creams from your medicine cabinet.) Radioactive vitamin E tocopherol acetate has been observed (Trevithick & Mitton 1993) to have absorption rates as high as 98% into epidermal skin layers. Absorp-

tion time observed during studies of kinetic penetration varies with the type of carrier, molecular size, and amount of application. Gazith et al., (1978) measured dermal substance transfer from 100 to 300 minutes post application. Their study showed that the percent of substance permeation is inversely proportional to the amount applied. Reinberg (1995) studied mixed substrate skin applications which fixed volume flow to dermal capillaries from 240 to 780 minutes (4-13 hours)! If topical applications were formulated for timed-release (100 to 780 minutes) by applying a skin patch or a cream to the skin, the possibilities for endurance energy are endless! One study illustrated ultra-long term benefits: epidermal application of vitamin A, D, and E reduced skin inflammation dramatically over a 29-hour period (Malley 1985). As for an immediate response, eucalyptus oils applied to the skin were recorded subcutaneously after only 6 minutes! (Habersaat-Possing 1995) The time for effect ranges from 6 to 780 minutes, while total volume intake is controlled by formulae variations, or the amount spread over the largest organ in human physiology. Natural plant oils are absorbed within 1 minute at 90%, while mineral oil based applications are absorbed at 30% within 5 minutes.

During Exercise or Event Competition

Muscle environment is a key factor for both strength and endurance energy production. Dermal capillary expansion and contraction controls 70% of the temperature variables inside the muscle fibers. If the muscles are warm and the skin is cool, the brain automatically responds by sending blood to the muscles in order to restore "heat" to the distal areas. Increased

peripheral circulation produces enhanced performance. A variety of topical formulations were introduced in 1995 by BIOKSAMA of Switzerland in order to provide optimal muscle "environs" depending on length of event and whether it was needed for strength or endurance.

Specific Natural Extracts Exert Special Dermal Effects

Some of the following results may be expected within a few minutes following application: (a) Cooling—menthol, peppermint, lemon oil, citral, (b) Invigoration—pine oil, rosemary, wintergreen, camphor, cayenne, (c) Breathing—eucalyptus, pine oil, balm mint, (d) Circulation & Anti-inflammation—allantoin, arnica, horse chestnut. Each of these natural extracts can be made to produce the optimal muscle environment before, during, and after an event by varying the carriers which enable time release exactly when it is needed to the sport-specific muscle groups involved.

All DUL-X active ingredients employ only fresh organic plant extracts, while no pore clogging paraffins, animal by-products, genetically-manipulated components, or mineral oils are used.

Anecdotal Reports From E-CAPS Field Tests

We approach all "new" ergogenic products with reluctance for three reasons: (a) to eliminate the placebo effect, (b) too many performance-enhancing products already exist; for a product line to pass our screening process, it has to be exceptionally effective, (c) today, the majority of new products use ingredients that are unsafe or not healthy for prolonged use. After passing (c) on paper, cycling tests performed in the heat in California yielded 5-10% ergogenic benefits, while those in the cold of northwest Montana averaged between 10-15% increases in performance!

We found "Warm-up" to be the #1 product for gains attained both during training and competition.

"Red Point" gives extraordinary results for muscle tightness or joint pain resulting from prolonged endurance or intense interval sessions.

The application of "Cool Down",

following a post workout shower imitates the feeling of a full body massage, but without the expense.

"Rapid Gel" is clinically proven to hasten the recovery of sprains, strains, contusions, or bruises (Prokop 1986).

"Recovery Bath" is a formulation which is added to a hot water bath and is helpful for generally fatigued muscles ("dead legs" syndrome) by improving peripheral circulation.

Reliable Experts Also Recommend Dul-X

Mr. Jim Gosset, the head Athletic Trainer for Columbia University, reports impressive results with his athletes in all sports. Minna Lessig, "Ms. Fitness USA," uses DUL-X for what she terms "Ultra Rejuvenation" from her intense workout sessions. Two-time Olympic Marathoner, Peter Maher, who uses DUL-X, frankly stated, "My recovery was brought forward by 24 hours." DUL-X is reasonably priced, and carries the E-CAPS 100% Customer Satisfaction Guarantee. Trial of this ergogenic will literally "shock" the skeptic when performance becomes easier, faster, and farther...No disappointment, we guarantee it!

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DUL-X Product Descriptions and Prices

By Dustin Phillips

New for 1998 is the DUL-X line of sports lotions and creams. These products have been trusted in Europe for over 40 years by everyone from medical professionals and sports trainers to Olympic athletes and everyday fitness enthusiasts. DUL-X products are backed by five decades of research in Switzerland. Only natural plant extracts are used for a refreshing, distinctive aroma. These products are not your run-of-the-mill sports creams and are far more advanced than products like Kool N Fit. In addition to the basic product descriptions and prices, I have added my observations based on personal use during the past year.

DUL-X Warm Up

Massage: This lotion cools first, then warms.

Use before strenuous exercise or athletic performance. Apply liberally and massage into the skin. Warm Up Massage works to enhance circulation, invigorate, facilitate breathing, and ease pain, plus keep muscles warm.

Price: \$11.95 for a 4.4 oz. bottle, or \$.95 for a .33 oz. trial size

Ideal usage: Use any time you are exercising by applying to the specific areas that will be under stress. Use this 20-30 minutes before your workout on days when the temperature ranges from 50-80 degrees. I have noticed when using Warm Up Massage that my muscles are more prepared for the event and I am less stiff afterwards, thus cutting down on the recovery time.

DUL-X Presport SPF 18 Lotion: Under the same category as Warm Up

Massage but Presport contains SPF 18 sunblock. It's not as active as Warm Up Massage but still very effective.

Price: \$11.95 for a 4.4 oz. bottle, or \$.95 for a .33 oz. trial size

Ideal usage: Same as the Warm Up Massage but more specific to hotter days and exposure to the sun. It doesn't warm the area applied to as effectively as the Warm Up lotion. If you have no trouble with sun burns I would suggest the Warm Up over Presport even on hot days.

DUL-X Cool Down Massage:

This lotion cools and refreshes. Use after strenuous exercise or athletic performance. Cool Down Massage works to ease pain, soothe muscles, invigorate, and enhance the natural cooling down process.

Price: \$11.95 for a 4.4 oz. bottle, or \$.95 for a .33 oz. trial size

Ideal usage: Very effective in proper cool down after your exercise. Because as it penetrates it will take with it what the body was trying to excrete through sweat and other debris you picked up along the way while exercising, it is important to wash the area you are applying the lotion to before application. This doesn't have to be used immediately after your exercise, it is still very effective in recovery if used hours later.

DUL-X Red Point Gel:

This is a maximum impact product. Warms immediately. Great for people sensitive to the cold and ideal for winter and water sports. Red Point works to enhance circulation, invigorate, and ease pain. Red Point warms up muscles... not the skin and leaves a long lasting warming effect.

Price: \$11.95 for a 1.7 oz. tube or \$1.49 for a .33 oz. trial size

Ideal usage: This is extremely useful on those cold, wet days and for tight muscles or even minor injuries. This also penetrates deep into the muscle areas applied to, and is almost waterproof, making it effective when it rains and for water



Please see page 10

sports. I had twisted my ankle in a MTB wreck and barely finished the ride; I could hardly walk. Later that day and for the next two days I applied Red Point Gel. Each time I applied it to my ankle I found it quite relieving of the pain. By the third day the swelling and pain had gone down noticeably.

DUL-X Rapid Gel: Another maximum impact product. Cools immediately and refreshes. Rapid Gel's Natural ingredients create a nice cooling effect, ease pain, soothe, invigorate, and leave a long lasting cooling effect.

Price: \$11.95 for a 1.7 oz. tube, or \$1.49 for a .33 oz. trial size

Ideal usage: I found this to be very relieving on those super hot days where it feels like your head is going to blow up. Again, apply after you have showered or at least cleaned the area that you apply the lotion to. This brings quick relief and a fresh feeling to the worked muscles.

DUL-X Recovery Bath: A revitalizing bath for the whole family. Use when fatigued, tired, sore and/or stressed. Recovery Bath ingredients soothe, invigorate, and refresh as well as stimulate the natural functions of the skin and promote circulation.

Price: \$17.95 for an 8.8 oz. bottle or \$1.49 for a .60 oz. trial size

Ideal usage: At the end of any hard workout, race, or even a stressful day. My experience with this product is that it is very stimulating to the skin and body overall. The Recovery bath seemed to increase my overall well being and I was more prepared to face the next workout. For maximum effect, after using Recovery Bath you can use the Rapid Gel or Cool Down. Recovery Bath usage was designed not just for the athlete but for the whole family.

If you have more questions about the DUL-X products or would like to try some of them out, contact Dustin at E-CAPS. He can be reached during the week by calling 1-800-336-1977.

Endurance On-Line Forum



Over the past several years, the on-line revolution has made the exchange of information easier than ever imagined. Today there are literally tens of thousands of chat or news groups where people of similar interests can come together to share information and ideas. Unfortunately, for those of you who do not have a computer and/or e-mail/internet service, this resource is not available. We are sorry that this is the case and hope that customers who are still "off-line" will make every effort to change that situation in 1998. And, for those of you who simply do not want to be on-line, you still have excellent information resources at your disposal: Endurance News and correspondence with Dr. Bill or myself by regular mail, phone or fax for your questions and comments.

Most of these on-line groups are open to the public and some have almost a "free for all" type of structure that can and does sometimes cause the ideas and information to take a back seat. Our Endurance chat group is different for many reasons. The biggest difference is that our news group can only be subscribed to by E-CAPS/Hammer Nutrition customers (yes, we will check to verify that each new subscriber is a customer) or by my special invitation. Secondly, in addition to customers, we have enlisted the assistance

of a wide variety of experts to monitor and participate in the group. They will respond to questions as well as contributing information in their respective areas of expertise. Honestly, I am not sure whether customers sharing their experiences with each other or direct access to the gurus will be more valuable to you. Either way, this chat group is an invaluable resource that is completely free for you to use and benefit from.

We sincerely hope that we will not have any problems in this area, but all participants in this on-line forum will be expected to maintain the highest standards of civility and respect for fellow list members at all times. We simply do not want anything to interfere with the free exchange of ideas or for anyone to be personally offended. Basically, nothing should be posted to the group that you wouldn't want your child to read.

When you subscribe to the group you will receive a welcome letter which contains a very detailed set of guidelines for maintaining the decorum which we would like to be the foundation of this resource. This information is appropriately listed under the "info" heading.

To subscribe to the Endurance On-Line Forum send an e-mail to: endurance-request@MailingList.net. In the body of the e-mail write "subscribe" without quotation marks. Do not put anything in the subject line. The list is also available in digest form. So, instead of receiving a message every time someone posts one to the group, you can receive just one e-mail which will include all of the posts for the past 24-hour period. To subscribe to the digest version, follow the same procedure above except send your e-mail to: endurance-digest-request@MailingList.net instead. Of course, you are free to unsubscribe from the list any time you wish. More procedural/operational details will be forwarded to you when you subscribe.

We hope you use and enjoy this new resource and find it to be interesting, informative and educational.



You have questions. Dr. Misner has answers.

In the last issue of Endurance News, our customers were reminded that E-CAPS/Hammer Nutrition employs a full time nutritionist with a wide range of educational and practical knowledge pertaining to diet, training and supplements. Many of you responded by e-mailing a wide variety of questions to Dr. Bill, to which he provided detailed responses in 24 hours or less in almost every case. The questions listed below are a sampling of the types of questions that Dr. Bill fielded. These are also the types of topics that you will find being discussed on the brand new, just launched free Endurance On-Line Forum (see related article).

However, only one or two customers have submitted questions by phone or regular mail. This leads us to believe that either 95% of E-CAPS/Hammer Nutrition customers are currently on-line OR there are still a lot of customers out there with questions who are not on-line. So, whether you are on-line or not, we encourage you to bring your heretofore unanswered questions and or problems to Dr. Misner. When you contact him, mention that you are a customer so that he can give your inquiry the attention it deserves. We only mention this because he gets a lot of posts from non-customers and would prefer to answer your questions first.

Lastly, if you are interested in learning from the questions, answers and ex-

periences of other customers and/or sharing your experiences, be sure to subscribe to the new Endurance On-Line Forum.

Sample Questions

- What supplements to take for healing broken ankle and therapy?
- How much dietary protein for endurance activities?
- Why not put PABA in PICs?
- How/what to do for an ultra event if (woman) has her period?
- What to do for Spondylolisthesis?
- Questions on Aspartame...(5)?
- Request for Technical Manual?
- Value of a Echysterone Supplement for anabolic lean muscle mass?
- Aerobic Threshold Intensity for maximal training gains?
- How to deal with knee pain resulting from increased endurance activities?
- Elevated Creatine Kinase blood serum levels after exercise?
- What to do about multiple fractures from snowboard accident, i.e. diet, supplements, activity to enhance recovery?
- How or when to use "Liquid Endurance" for a 100 miler in the heat?
- Running stride for maximal endurance performance?
- Aspartame related migraine headaches?



More Athletic Highlights

Colin Bailey—1997 NORBA Junior National Champion - Downhill.

Jerry Kenney —1997 70-75 USA Triathlon National Champion, 1996 Long Distance Triathlon World Champion.



More on Shipping

In issue 17 of Endurance News, I explained the change in carriers from UPS to Federal Express for E-CAPS/Hammer Nutrition shipments. In case I gave the wrong impression, this change has not necessarily been all good. In fact, it has been a real headache for us and we have heard more than a couple of complaints from customers who simply don't like FedEx and the way they do business. Their policy seems to be charge first and ask questions later. The way they bill, we now get 10 or more per week as opposed to one from UPS, and their \$10 address correction charges for the smallest errors are more than an inconvenience.

Unfortunately, for the time being, FedEx is here to stay. The reduced time in transit is just too good to lose. However, we do still have our UPS account, so if you simply can't stand FedEx, you can request that we use UPS for your orders instead. It may take your package longer to arrive or require a more costly type of air service to reach you by a certain date, but it is an option.

I am hoping that UPS will develop a competitive 3-day or less program in the next year or two so that we can switch back. We have also heard that the U.S. Postal Service is working on a FedEx/UPS type of service that offers package tracking, delivery confirmations and guaranteed delivery days.

For everyone's best interests, we will be watching and waiting hoping that UPS or USPS will come up with something soon.



**BUY ALL THE CHOCOLATE
FLAVORED HAMMER GEL YOU
WANT FOR JUST \$4.00 PER JUG!**

That's about 15¢ per serving

Right now I am sitting on more than 1,000 jugs that are too thick which I am ready to sell at a loss. A minor glitch in production caused too much water to evaporate from the chocolate flavor. Other than that, there is nothing wrong with this gel. We've solved the problem, but still need to move this inventory.

To soften the consistency of the Chocolate Hammer Gel, squeeze out about 1/2 a flask of gel and replace it with water. Place the jug, with added water and lid open, in a microwave for 2-3 minutes on high. Once the contents are heated, close lid and shake for a few seconds. The water mixes easily with the gel and gives a softer consistency which will stay the same after it cools.

Call 1 800 336-1977 to order while supplies last! Or go to www.e-caps.com, click the on-line order form, complete the order and mention the \$4.00 price at the bottom under order notes. This price does NOT include a free flask.

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 ongoing 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 benefit 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.

*Brian Frank,
Editor*

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

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