

ISAGENIXSCIENCE

Isagenix for Exercise

The right nutrients at the right time with Isagenix products



Running and other sports place high demands on the body that require greater attention to optimal nutrient timing.

Most performance-driven athletes know that consistent training and proper nutrition are vital to improving strength, stamina, and body composition. A concept that's gained in popularity for athletes is *nutrient timing*, which is strategically eating key nutrients, mainly carbohydrate and protein, before, during and after exercise.

The science supporting nutrient timing suggests that this method of eating helps repair damaged tissues, replenish glycogen stores, increase endurance and promote muscle growth. Though specific recommendations for each athlete will vary, key findings are that both before and after an endurance or resistance workout (and during, as

in the case of endurance trials lasting more than 60 minutes, or very heavy or prolonged weight lifting), protein in combination with carbohydrate may optimize performance, muscle growth, and recovery (1-3).

Exercise, whether it's resistance or endurance training, leads to an overall breakdown of muscle tissue and depletion of glycogen (stored carbohydrate) (4). The duration and intensity of exercise will determine how much stress the body endures, but all exercise will promote these changes.

Because glycogen stores fuel muscles to power through workouts, the general advice has typically been for athletes,

Suk's Letter

Staying active and fit is a lifelong pursuit that is made easier with Isagenix. In this issue of *Isagenix Science*, we explain the value of our products to meet nutritional needs related to exercise. For example, studies on when protein confer efficacy for using IsaLean® Shake and Vanilla IsaPro® for muscle and strength; other studies show sports drinks like *Want. More Energy?*® fuel recovery faster; and studies show that adaptogens found in Ionix® Supreme improve mental and physical performance, too. Recently, a pilot study by the Colgan Institute put our products to the test on triathletes—the results were nothing short of amazing.

Live well and adventurously!

- Suk Cho, Ph.D.

especially in endurance sports, to load up on carbohydrates before events—carbohydrate loading. Anyone who played sports in high school or college can probably remember "team pasta dinners" before the big game. The need for adequate carbohydrate intake in any athlete's diet cannot be denied—it absolutely must be there to supply and replenish stores of glycogen. But now, research is also focusing on protein's key role

in fueling muscles through workouts and allowing them to recover faster. This is logical, too, because if protein is what is needed to rebuild muscle tissue, wouldn't having more quality protein on hand lead to faster rebuilding? The position of the International Society of Sports Nutrition on nutrient timing is that consuming protein before and after exercise increases muscle protein synthesis, ingesting protein *and* carbohydrate produces significantly greater synthesis of muscle protein, and regularly eating protein in combination with carbohydrate stimulates bigger gains in muscle and strength than eating carbohydrate alone (1).

"Physical activity, athletic performance, and recovery from exercise are enhanced by optimal nutrition," say the American College of Sports Medicine, the Academy of Nutrition and Dietetics, and Dieticians of Canada in a joint statement. "[We] recommend appropriate selection of food and fluids, timing of intake, and supplement choices for optimal health and exercise performance" (1).

Aging Muscles

As we age, the importance of exercise and diet to support muscle only gets stronger. Sarcopenia, which is the loss of muscle mass and function that accompanies aging, is intensified without regular exercise. The phrase "use it or lose it" rings true, as sarcopenia usually leads to weakness, disability, the onset of one or more diseases and diminished independence in those who don't act to stop it (2).

Prevention is key and early intervention—engaging in regular exercise, including strength training—translates to the preservation of life-long health and independence. Studies show that aging adults who lift weights and get regular aerobic exercise can retain more strength and lean body mass, even if they start later in life (2;3). An optimal diet may also decrease the impact of sarcopenia. For example, a diet high in whey protein, which can stimulate muscle growth in older adults who exercise, would be key to muscle health (4).

Enter Isagenix

Isagenix, well known for meeting the nutrient needs when cleansing while losing weight, can also be effective in gaining muscle and strength in athletes. Whether a weekend warrior, endurance athlete or seasoned bodybuilder, anyone

who is active can incorporate Isagenix products as tools to enhance their routine to see greater results.


Isagenix products are fundamental for anyone, in the quest for long-term muscular strength and function. Providing necessary nutrients, at the right times, Isagenix products help provide athletes with myriad options:

- IsaLean® Shakes, Bars and Soups combine quality whey protein, mono and polyunsaturated fats, and good carbohydrates, as well as vitamins and minerals. Athletes requiring more calories can enjoy multiple servings of these high-protein foods throughout the day.
- A scoop of Vanilla IsaPro® added to an IsaLean Shake offers more whey protein, which is the first choice among proteins for increasing strength and muscle building (5). Particularly within an hour after exercise, consuming IsaPro provides needed amino acids to the muscles. Doing so will optimize recovery and help boost muscle gains.
- Ionix® Supreme contains plant-based adaptogens, well-studied in athletes and shown to guard against fatigue and increase resistance against the physical and mental stress of exercise (6). An ounce of Ionix Supreme before exercise is best for improving overall performance under exercise stress; a second ounce afterwards can also support recovery.
- *Want More Energy?®* not only hydrates but also replenishes electrolytes, carbohydrates and B vitamins, fueling performance (7;8). It should be enjoyed during and after workouts.

From strengthening muscles and bones to improving sleep and mood, exercise is shown again and again to be one of the most important things we can do for our physical and mental health. But it takes the right nutrition to fuel our bodies for optimal performance in our chosen sport or activity.



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TRIATHLETES GAIN MUSCLE, LOSE FAT ON ISAGENIX PRODUCTS



Training as a competitive triathlete is demanding. Unlike other endurance athletes who train for one individual sport, triathletes must meet the unique challenges of running, swimming, and cycling in an

all-day race. They work long, hard hours to keep their bodies in peak condition by maintaining a balance of little body fat and sufficient muscle mass for top performance. Now, preliminary research suggests Isagenix products could assist triathletes in achieving a competitive edge.

The Colgan Institute, an educational and research facility, conducted an open-label pre-test/post-test pilot study examining the use of Isagenix products on six male athletes of typical to elite status in training for an Olympic-distance triathlon on the Isagenix Cleansing and Fat Burning System for 30 days. In addition to their regular training—about four hours per day, six days per week—the participants also agreed to do an additional 30 to 40 minute of resistance training exercises daily in accordance with the Colgan Power Program. The

program, developed by Michael Colgan, Ph.D., a member of the Isagenix Scientific Advisory Board, includes three sets of eight different resistance exercises in each workout (explained fully in Dr. Colgan's *The New Power Program*).

“None of the subjects reported a decline in training...” — Dr. Colgan

At the beginning of the trial, the entire group was at less than 10 percent body fat, and had been so for some time prior to testing. By the end of the study, participants had lost an average of 4.2 pounds, decreasing body fat by an average of 3 percent, while increasing lean body mass by an average of 0.7 pounds or 2.8 percent.

“Many programs in which athletes rapidly lose body fat also show losses of muscle mass,” Dr. Colgan said. “The result is surprising as these are athletes who were already doing everything known in athletics to minimize body fat while maintaining muscle mass.” None of the subjects reported a decline in training. Three reported training improvements during the 30 days. Two reported improved sleep. No subject reported adverse events. No athletes competed during the trial; however, in the two months since completion, three of the athletes recorded significant gains in cycling performance, and two saw significant gains in running performance.

The standard distance triathlon, also referred to as the Olympic distance, includes a 1.5 kilometer swim, a 40 kilometer bike ride, and a 10 kilometer run. A triathlete's ratio of body fat to lean muscle mass can mean a big difference in competitive performance in such an endurance event.

“The Olympic distance triathlon is a two-hour endurance event, during which performance is significantly affected by even small improvements in body composition,” Dr. Colgan said. “As these athletes were already in peak condition, this gain is exceptional.”

Isagenix Director of Research Susie Rockway, Ph.D., added, “Data from this preliminary trial added with the accumulating scientific evidence showing whey protein's ability to stimulate muscle synthesis, together, clearly shows that the ‘magic’ in Isagenix

products offers an advantageous strategy to maximize healthy weight loss while preserving lean muscle—the key to improving body composition.”

Triathlete-style Cleansing and Fat Burning System


The athletes followed all the instructions for the Cleansing and Fat Burning System with a few modifications to meet training demands. The routine followed the typical schedule of Shake Days combined with one Cleanse Day every seven days. In total, the products taken included the following:

- IsaLean® Shake: High-protein meal replacement taken twice daily to replace two meals per day, except on Cleanse Days.
- Ionix® Supreme: Proprietary herbal drink containing adaptogens taken daily to support the body under stress.
- Cleanse for Life®: Proprietary herbal drink taken only on Cleanse Days to support natural detoxification.
- Natural Accelerator™: Supplement taken daily to support natural thermogenesis (fat burning).
- IsaFlush!®: Supplement containing herbs plus magnesium taken daily to assist bowel regularity.

Prior to the program, participants maintained an average food intake of 4,100 to 5,200 calories per day with an average 20 percent protein, 65 percent carbohydrate, and 15 percent fat. To not compromise the caloric needs of training, modifications were made to Shake Days where the one single, evening meal contained 1,500 to 2,000 calories versus the recommended 400 to 600 calories.

The meals on Shake Days consisted of predominantly fish and multiple fresh fruits, vegetables, nuts, and seeds. No breads or cereals were consumed, and fats were mostly from unprocessed nuts, seeds, and vegetable and fish oils. The athletes also continued their personalized supplementation programs, which included vitamins and minerals, during the trial.

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ADAPTOGENS BOOST MENTAL AND PHYSICAL PERFORMANCE



It was the 1940s and Soviet researchers were on to something: In studies involving thousands—from soldiers to wrestlers to factory workers—they were showing that certain plants had the protective capacity to increase a person's resistance to mental and physical fatigue.

Results from these studies led to Soviet scientists coining the term *adaptogen*, from the Greek word “adapto” meaning “to adjust.” The term was applied to any botanical with the following characteristics:

- must have a protective and restorative-effect against physical, chemical and biological stressors,
- must have a stimulating effect that allows for increased work and mental performance in environments of fatigue and stress,
- and must not be toxic to the individual taking it or disturb natural body functions, but only improve natural stress-protective defenses.

Adaptogens are an ideal aid for any competitive athlete or person embarking on a regular exercise routine. After all, physical exercise not only fatigues an athlete's muscles, but it also increases oxidative stress in the body by generating reactive oxygen species

(ROS). Adaptogens may offer a way to help protect the body from such oxidative stress, as well as aid in recovery from exercise while also improving athletic performance.

The study of adaptogens has continued through today and the results point to what the Soviet scientists were alluding all along: adaptogenic plant substances are the real deal when it comes to helping the body fight stress to perform better and recover faster.

Swedish Herbal Institute researchers Alexander Panossian and George Wikman examined randomized, clinical trials on extensively studied adaptogens including rhodiola (*Rhodiola rosea*), schizandra berry (*Schizandra chinensis*), and eleuthero root (*Eleutherococcus senticosus*).

They found that these and other adaptogens not only reduce stress and fatigue, but also improve attention and focus.

According to their scientific review on adaptogens, recently published in *Current Clinical Pharmacology* (1), the reason these herbs are effective may be because they stimulate biochemical pathways that help mediate the harmful effects of stress on the body. Among the findings from studies the authors included in their review were the following:

- Rhodiola improved levels of emotional stability, self-esteem, and attention while also reducing fatigue and insomnia.
- Eleuthero root reduced feelings of fatigue and increased resistance to low-oxygen

settings, such as in deep-sea diving or high altitudes.

- Schizandra increased work accuracy and feelings of general well-being, and decreased feelings of sleepiness and exhaustion.

Adaptogens

- May act as mild “vaccines,” inoculating the body against sources of stress
- Help to guard the body against the harmful effects of stress in everyday life
- Help increase the body's resistance against mental and physical stress from exercise
- Help improve performance while under stress from exercise

Mild Stress Vaccines

One of the main questions Panossian and Wikman sought to answer was how adaptogens work. In their paper, they propose that adaptogens may help the body adapt to stress by inducing a mild stress response in the body. Acting like a “stress vaccine” adaptogens then inoculate against future sources of stress.

In a sense, adaptogens mimic stress, creating an adaptive response in the nervous, cardiovascular, endocrine, immune and gastrointestinal systems. The authors suggest that through the regulation of stress with adaptogenic herbs, consumers may enjoy “enhanced mental and physical performance, and, possibly, increased longevity.”

Writing in a second review published in *Pharmaceuticals* in 2010 (2), the same authors wrote that these herbs normalize

homeostasis (balance in the body) through several mechanisms akin to mild stress hormones. For example, active components of rhodiola, schizandra and eleuthero are structurally similar to catecholamines—primary regulators of stress—and other components resembling corticosteroids that help to inactivate a stress response. Fortunately, what adaptogens won't do is impair mental function or cause addiction.



Ionix® Supreme

Ionix Supreme, deemed “nature’s answer to stress”, is an adaptogen-rich drink designed with potent amounts of rhodiola, schizandra and eleuthero—as discussed by Panossian and Wilkman above.

In fact, a 2010 double-blind, randomized, placebo-controlled trial found that eight weeks of eleuthero root supplementation in nine recreationally trained college males resulted in improved endurance, elevated cardiovascular function and enhanced use of fat for fuel (sparing muscle glycogen) during exhaustive bicycling (3).

Other beneficial herbs included in Ionix Supreme are:

- Wolfberry (*Lycium barbarum*.) acts as an adaptogen and an antioxidant for the maintenance of good health and increased


mental and physical performance (4,5). In a 2011 study, wolfberry was found to reduce oxidative stress and increase exercise tolerance (4), while another study also showed a significant adaptability to exercise load in addition to increased resistance and faster elimination of fatigue (5).

- Ashwagandha (*Withania somnifera*) operates as an antioxidant for maintaining good health while increasing the body’s resistance to stress (6). A randomized controlled trial published in 2010 found that supplementation with Ashwagandha led to increases in maximum oxygen consumption, maximum velocity and maximum power in 40 moderately active young adults (male and female).
- Bacopa (*Bacopa monnieri*) acts as an antioxidant in the maintenance of brain health and has been found to help maintain normal memory and cognitive function (7,8).

With these herbal ingredients acting synergistically, drinking a shot or two of Ionix Supreme daily offers consumers an advantageous way of obtaining the protection adaptogens provide against stress. The drink can also help improve focus, attention or athletic performance.

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THE RIGHT SPORTS DRINK FOR EXERCISE



With its blend of energy-supporting vitamins and minerals, *Want More Energy?*® can benefit anyone (the young, the weekend warrior, and the athletic) as an excellent during- or post-workout supplement to replenish nutrients in active bodies.

Now according to a recent study (1) from researchers at the Nestle Research Institute in Switzerland, and published in the journal *Medicine and Science in Sports and Exercise*, sports drinks like *Want More Energy?* that contain fructose may be better at replenishing energy stores depleted during exercise compared with other sugars.

This study found that liver glycogen stores were more quickly restored in athletes that consumed beverages containing fructose or galactose (milk sugar), but not glucose. Glycogen is a polymer of glucose stored in liver and muscle. It's readily broken down during periods of fasting or during physical activity providing the necessary glucose for cellular energy.

In this double blinded, triple cross-over, randomized clinical trial, 10 healthy male athletes exercised to exhaustion on three separate days and then ingested a carbohydrate drink containing 65 grams of fructose, galactose, or glucose. Liver glycogen stores were then monitored every two hours during recovery.

The researchers reported that the beverages containing fructose or galactose restored liver glycogen faster than those containing glucose. During exercise, low-glycogen stores can lead to low-blood sugar, the researchers explain, and may be a significant factor in exercise-induced fatigue.

“The liver plays a crucial role in preventing hypoglycemia during exercise and it is generally believed that strategies that enhance liver glycogen

post-exercise will increase exercise capacity in a subsequent exercise bout,” the authors wrote.

Glycogen to Go

Glycogen stores are responsible for regulating blood sugar at night and providing cells with a continuous supply of glucose, the authors explain. These findings suggest that fructose leads to faster recovery and more readily supplies the body with energy for additional activity.


“Carbohydrate drinks containing fructose and galactose could help in situations where athletes have to exercise twice in one day with relatively little recovery,” the authors wrote.

While previous research has targeted muscle glycogen levels, the researchers felt that liver glycogen was a better indicator of exercise recovery. This study helps to demonstrate the importance of a variety of carbohydrates to support physical activity and glycogen status.

Fructose, often the target of criticism, is a natural sugar found in most fruits and vegetables. Fructose is preferred because of its higher stability and perceived sweetness, which leads to less use of sugar overall in food products (2).

This latest study shows that consuming fructose, particularly after exercising, replenishes glycogen stores efficiently and is an effective fuel source for the body. Drinks like *Want More Energy?* provide the body with fructose—less than 8 grams, an amount comparable to eating an apple—that may facilitate recovery and support intense and prolonged physical activity.

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LARGE DOSES OF WHEY BEST FOR MUSCLE GAINS



Athletes who supplement with large doses of whey protein or a leucine-enriched drink directly after training increase their gains in muscle and strength, according to two independent studies published in the *American Journal of Clinical Nutrition*.

One study from McMaster University in Canada (1) found that recreational athletes who consume 25 grams of whey protein immediately after exercise increased muscle protein synthesis more than equivalent doses divided over a longer period of time. Another study, performed by U.S. Army researchers and colleagues from other universities (2), found that an essential amino acid drink supplement containing higher concentrations of leucine increases protein synthesis up to 33 percent more than one with lower amounts of leucine.

The McMaster University researchers compared the effects of consuming 25 grams of whey protein versus 10 smaller doses every 20 minutes over 200 minutes in eight male athletes, immediately after resistance training. They found

that whey protein in the large single dose delivered a greater increase in plasma amino acids (including leucine) to trigger muscle protein synthesis compared with protein in smaller doses over time.

The US Army researchers and their colleagues evaluated muscle protein synthesis and whole body protein metabolism during cycling over an hour (2). After the workout, the subjects consumed a drink containing 10 grams of essential amino acids; the first drink contained 1.87 grams leucine and the second contained 3.5 grams leucine. The researchers observed 33 percent more protein synthesis in the subjects who consumed more leucine.

“These findings suggest that increasing the concentration of leucine in an [essential amino acids] supplement consumed during steady state exercise elicits a greater [muscle protein synthesis] response during recovery,” the researchers wrote.

Earlier studies have similarly noted the muscle-building potential of whey protein, leucine and other branched chain amino acids. Indeed, whey has a higher concentration of branched-chain amino acids including leucine, compared to other sources of protein.

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Both studies suggest that athletes should take advantage of consuming single large doses of high-quality whey protein after training. This is easily achieved by consuming 1½ scoops of IsaLean Shake mixed with 1 scoop of IsaPro (containing 4 grams of leucine).

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