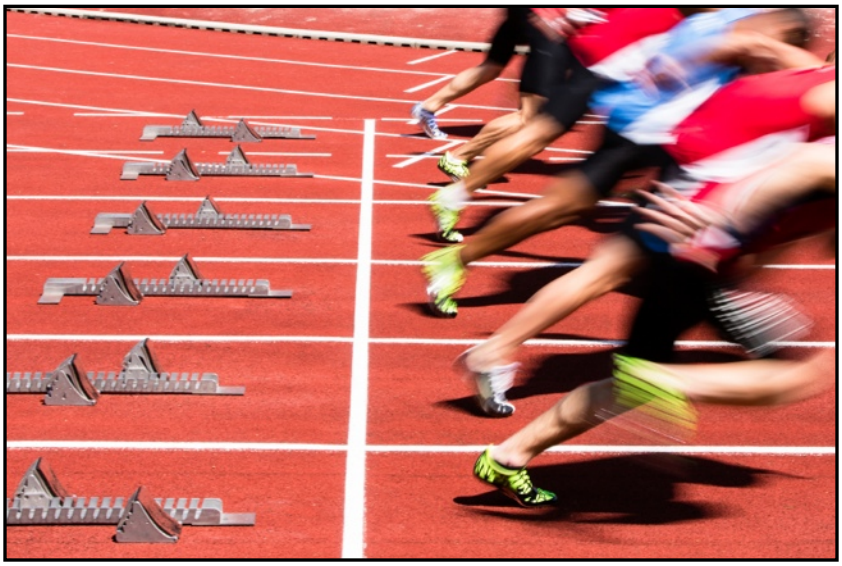
ISAGENIXSCIENCE

Energy and Performance

Start winning with smart nutrition that's worth its weight in gold



Athletes can boost speed, strength, and endurance with optimal nutrition with products that make up the Energy and Performance Pak.

It's that time again... when the world's finest athletes are gathering for the ultimate competition in athletic prowess—the London 2012 Summer Olympics.

No doubt there have been countless hours of precise training and dedicated effort on the road to the Olympics. But as any Olympian will tell you, his or her performance is highly dependent on getting proper fuel and nutrients.

Scientific research has also shown that carefully designed nutritional products for sports performance can lead to significant gains of speed, strength, and endurance in athletes (1).

You don't have to be an Olympic athlete to gain from smart nutrition for sports performance. This is why Isagenix has put together the Energy and Performance Pak. It's excellent for anyone who works outs, whether it's once a week or twice a day, every day.

Athletes will have different individual diet needs, of course, dependent on the duration and type of training—think Olympic swimmer Michael Phelps and his 6,000 calories-a-day training diet—but the components of the Energy and Performance Pak offer top-notch nutritional support that can be incorporated into anybody's regimen.

Suk's Letter

Isagenix has come down with a case of Olympic fever! As a result, this month's entire issue of *Isagenix Science* is dedicated to recognizing the science behind our products in relation to enhanced athletic performance.

You'll learn why the products within the Energy and Performance Pak are key for gains of speed, strength, and endurance. The products carry value for gaining performance at most sports, as you'll find out, because of therapeutic doses of nutrients and bioactives. Finally, you'll learn why "skinny" is not always healthy and why we should aspire to be "fit and strong."

Live well and adventurously!

- Suk Cho, Ph.D.

IsaLean Shake, IsaLean Pro, and IsaLean Bars

By far, the stars of the Energy and Performance Pak are the three IsaLean products: IsaLean Shake, IsaLean Pro, and IsaLean Bars. Ranging from 18 to 35 grams of protein per serving, these offer great-tasting, convenient ways for athletes of any status to fuel their active bodies with the whey

protein and other nutrients for muscle and, ultimately, performance gains.

Continually, the scientific literature points to the superiority of whey protein for greater stimulation of muscle protein synthesis (muscle building) compared to other proteins, especially soy (1-5). The timing of protein intake, such as after exercise, also plays a part in maximizing muscle repair and building. One review of protein requirements for athletes advised, "A simple message may be that the earlier after exercise an athlete consumes protein the better" (2). (For more on different protein needs for different types of athletes, see article on Page 4.)

The beauty of the IsaLean products in the Energy and Performance Pak is that they allow you to load up on protein when you need to, however you need to. Choose between the original IsaLean Shake, a nutrient-packed meal replacement with 24 grams of the highest-quality whey protein, IsaLean Pro, the new protein mega-dose boasting 35 grams, or IsaLean Bars, containing 18 grams of whey protein for on-the-go protein meals or snacks.

Want More Energy?

For any kind of sport, energy stores reign supreme. Ever try to work out or train totally zapped of energy? It doesn't work too well. *Want More Energy?* (WME) works to combat fatigue in the body by keeping the body hydrated and supplying lost electrolytes. WME also contains vitamin C, B vitamins, and choline to support the body's energy requirements.

Another important part of keeping the body energized are its glycogen stores. Glycogen is a polymer of glucose that's stored in the liver and muscles. Any endurance athlete knows the value of having adequate glycogen stores to power them through long, exhaustive races or training sessions. This is because glycogen is readily broken down during physical activity, and low glycogen stores can lead to low blood sugar, which may be a significant factor in exercise-induced fatigue.

WME is an ideal drink for exercise—before, during, and after. A recent study found that in comparison to glucose-containing drinks, consuming fructose-containing drinks, particularly after exercise, replenishes glycogen stores efficiently and is an effective fuel source for the body (6). The science shows that sports-designed beverages like WME, which provide the body with fructose—less than 8 grams, an amount comparable to eating an apple—can facilitate faster recovery and support endurance during intense and prolonged physical activity.

Isagenix Greens!

It's widely known that long bouts of aerobic or exhaustive exercise can stimulate the production of free radicals, which can then lead to increased oxidative stress and cause cellular damage. In muscle, this damage presents itself as delayed-onset muscle soreness (when it's hard to stand up the day after a really hard workout), muscle tissue adaptations, and the eventual decrease in performance.

It may be in athletes' best interest to counteract the potential for damage and to build up their antioxidant defense systems. A study performed in male and female athletes subjected to strenuous exercise for 30 minutes at 80 percent of their VO_{2max} (a measure of respiratory fitness) found that supplementation with vitamins C and E or a vegetable and fruit juice concentrate decreased levels of oxidative stress (7). For this reason, and to be sure that Isagenix athletes have increased antioxidant defenses, *Isagenix Greens!* is an important part of the Energy and Performance Pak.

Rich in antioxidant components like wheat grass, parsley, shiitake, Brussels sprouts, spirulina, chia seed, and carrot—in addition to vitamins C and E—*Isagenix Greens!* is sure to lift your antioxidant status, help protect against exercise-induced muscle damage, and improve recovery.

Ageless Essentials Daily Pack

Speaking of increased antioxidant status, having Ageless Essentials Daily Pack (AEDP) on hand takes it to the next level. Including Essentials for Men or Women, IsaOmega Supreme, Ageless Actives, and C-Lyte, AEDP lets you take care of your entire vitamin, mineral, and antioxidant needs.

Not only do you help boost your antioxidant defenses with Essentials for Men or Women, the broad-spectrum multivitamin, but you also get potent doses of coenzyme Q10, resveratrol, vitamin D, vitamin C, and the fish-derived omega-3 fatty acids EPA and DHA.

Taking a variety of vitamins, minerals, and antioxidants may not seem like a sure-fire way to increase athletic performance, but other than the

need for protection as mentioned above and, in addition to immune protection, many nutrients do indeed play a role in athletic performance.

For example, fish-derived omega-3 fatty acids, long known for their heart-health benefits, were found recently to improve muscle function when 2 grams daily were combined with a strength-training regimen (8). Some B vitamins are absolutely essential for energy production necessary for athletic performance. Others, such as folic acid and vitamin B12, are needed to make red blood cells, for protein synthesis, and tissue repair. Finally, adequate folate intake improves the immune response after exercise (9).

Ionix Supreme

Initially studied in the Soviet Union in the 1940s, adaptogens are specific plants known to increase the body's ability to "adapt" to stress. It wasn't until the 1990s that scientists in the United States took note of these natural stress-fighters when former Soviet Union Olympic Coach Ben Tabachnik immigrated to America and revealed that Soviet athletes and cosmonauts had secretly used adaptogenic herbs throughout the 1970s.

It was out of this initial research that Isagenix came up with Ionix Supreme, an adaptogenic tonic that's deemed "nature's answer to stress." A review of adaptogens by Alexander Panossian, Ph.D., found that overall, adaptogens do increase the body's resistance to stress while also increasing mental performance, attention, and other necessary factors in optimizing one's athletic performance (10). All things any athlete can benefit from.

There's more to a top-notch performance each and every time you hit the gym or jogging trail than just previous training sessions and consistent effort. Propelling athletic performance, at any level, is about correct and adequate nutrition. Isagenix has created the Energy and Performance Pak just for you, to support your efforts for optimal performance and a robust immune system while training to be your best.

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SHOULD DIFFERENT ATHLETES CONSUME PROTEIN DIFFERENTLY?

Athletes can make leaps in performance gains by getting the right type of protein, at the right time, in the right amounts.

Do I need more protein if I'm a bodybuilder? Do I need less protein if I'm a marathon runner? These are valid questions, as athletes participating in various activities manipulate their intakes of carbohydrates, fat, and protein differently to achieve their goals. The simple answer is that protein is key in optimizing the performance of all types of athletes and anyone who exercises, offering numerous advantages when consumed at levels above the recommended daily allowance (RDA). Some studies even show that athletes can benefit from as much as twice the RDA (1).

Athletes can be categorized into three main groups based on the goals associated with their chosen activities: *endurance athletes, high-intensity athletes*, and *strength athletes*. Endurance athletes include those who participate in activities requiring stamina, such as distance runners and swimmers, cyclists, and triathletes. High-intensity athletes compete in activities that require short, intense bursts of energy focusing on technique, lasting in duration from seconds to only a few minutes. Such athletes include sprinters, volleyball players, and gymnasts. Like high-intensity athletes, strength athletes also engage in activities that require short bursts of energy. However, their primary goal is to attain strength and muscle mass rather than honing a sport-specific skill. The term strength athlete is synonymous with bodybuilder.

Protein has been shown to boost performance among the three categories of athletes in the following ways:

Endurance Athletes

Endurance athletes engage in low to medium intensity activities that elevate the heart rate for prolonged periods. To generate the energy needed to sustain low intensity exercise over a long duration, the body mainly uses the aerobic system. A system relying on the cardiovascular system to supply oxygen to the muscle. Improving endurance in athletes demands optimizing aerobic energy production, improving cardiovascular fitness, and maximizing the ability of muscle fibers to contract.

Historically, much more attention has been paid to carbohydrates in maximizing endurance than protein. “Carb-loading” is a popular dietary strategy used by endurance athletes to improve performance, and involves eating foods high in starch prior to events in an effort to maximize muscle glycogen. Glycogen is the storage form of carbohydrate that can be used by the aerobic system to supply muscles with energy. With importance placed on carbohydrate consumption in endurance activities, protein is often pushed to the wayside. Many myths regarding protein intake have circulated among endurance athletes, such as the idea that high protein intake will cause bulky muscle gains that hinder efficiency, or that high protein intake is of greater relevance to strength athletes.

False beliefs that result in low protein intake are detrimental to endurance athletes.

However, the truth is that strength and endurance athletes each have similar protein needs, with the only difference being how the body uses the protein in relation to different training regimens. While the protein consumed by strength athletes is primarily used to build muscle, it is used by endurance athletes for muscle repair and

Endurance Athlete Menu Plan

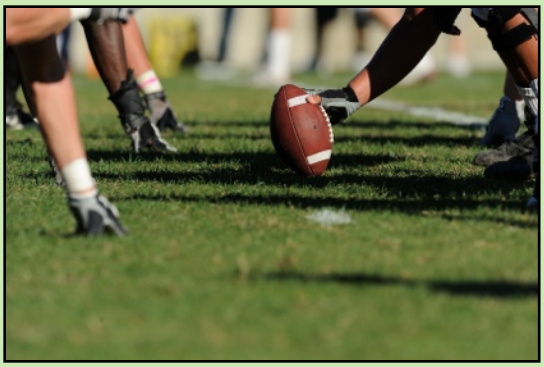
Example of a typical day's menu plan for a marathon runner (40-year-old male, 5'10", weight 160 lbs) using E&P Pak (total kcal: 2500; 50 percent of calories from carbs, 25 percent from protein and fat each):

- Breakfast
  - IsaLean Shake & *Isagenix Greens!*
  - Steel-cut oats with berries
  - A.M. packet of AEDP
  - Ionix Supreme
- Mid-Morning
  - Banana with peanut butter
  - FiberSnacks (optional - not included in Pak)
- Lunch
  - Salad of mixed greens, brown rice, vegetables, and grilled chicken breast
- Mid-Afternoon Snack
  - IsaLean Bar
- 30 min. Pre-Training
  - Want More Energy?
- During Training (10-mile run)
  - Want More Energy?
- Within 1 hour of Training
  - IsaLean Pro
- Dinner
  - Whole wheat pasta with vegetables
  - P.M. packet of AEDP

other functions related to the effects of prolonged training. Because protein improves endurance performance in a variety of ways, false beliefs resulting in low protein intake are detrimental to the athlete.

High-intensity Athletes

High-intensity athletes seek to perfect technique and train their muscles to perform the powerful functional movements necessary to their sport. They engage in activity that consists of repeated bouts of short intense exercise. Such activity draws on the anaerobic system to make energy.



Protein is the primary substrate used by muscle to not only enhance high-intensity performance, but to also trigger muscle growth.

In contrast to the aerobic system, the anaerobic system is able to make muscle energy in the absence of oxygen. Although this system is able to rapidly produce the energy needed to drive intense bursts of activity, it cannot be relied upon for extended periods of time—less than a 2 minute maximum.

The primary goal of high-intensity athletes is to improve performance by perfecting technique and increasing speed, strength, and agility. This requires developing muscle memory for optimally performing a sport-specific movement. It also requires increasing the speed and force with which a muscle contracts, optimizing the lean muscle to fat ratio, and raising the anaerobic threshold. Supplying the body with adequate protein is essential for improving the performance of high-intensity athletes, as protein plays a key role in muscular development and fat loss, and may even beneficially influence factors that affect the anaerobic system.

Protein is the primary substrate used by muscle to achieve the optimal physical adaptations that enhance high-intensity performance. Following a strenuous workout, the body is very sensitive to the effects of protein in stimulating muscle synthesis. Eating protein during the post-exercise period promotes the synthesis of new muscle fiber proteins and an increase in contractile muscle proteins, resulting in greater strength and speed (2).

High-Intensity Athlete Menu Plan

Example of a typical day's diet for a sprinter (25-year-old female, 5'7", 140lbs) with 45 percent of calories from carbs, 30 percent from protein, 25 percent from fat:

- Breakfast
  - IsaLean Shake
  - Ionix Supreme
  - A.M. packet of AEDP
- 30 min. Pre-Training
  - *Want More Energy?* and *Isagenix Greens!*
- During Training (90 minutes of sprints)
  - Want More Energy?
- Post-training
  - IsaLean Pro with *Isagenix Greens!*
- Lunch
  - Eggs (4 whites, 2 whole)
  - Sweet potato wedges
  - Sautéed bell peppers
  - 2 slices whole-grain toast
- Mid-Afternoon Snack
  - IsaLean Bar
- Dinner
  - Grilled salmon with brown rice and vegetables
  - P.M. packet of AEDP

Strength Athletes

Strength athletes share the same goal as high-intensity athletes in improving strength, but they place a particular emphasis on aesthetics, seeking to achieve optimal muscular proportion while maximizing muscle size and definition.

Because lifting weights primes the muscles for growth, resistance training is the central component in the work-out regimen of the strength athlete. Like high-intensity athletes, strength athletes draw on the anaerobic system to get the energy they need to fuel their grueling resistance workouts.

High protein intake has always been a central component of the dietary strategy used by strength athletes, as they have long recognized its value in promoting muscle synthesis.

In addition, the beneficial effects of protein in promoting fat loss and preserving muscle is extremely important to strength athletes, who desire a particularly high lean muscle to fat ratio in achieving their aesthetic goals.

Although all athletes will benefit from using dietary strategies to maximize muscular development and body composition, this is particularly important to strength athletes.

Timing, Type, and Source of Protein for Any Athlete

Regular amounts of protein, especially from whey, should be a central component of a dietary strategy used by strength athletes.

Following intense exercise, the body is very sensitive to the effects of protein in provoking muscle synthesis. Studies suggest that there is an optimal window during which maximal benefits can be derived from eating protein. Most experts agree that protein eaten close to the end of a workout provides the greatest benefit, with most benefit being derived within an hour after finishing exercise. However, some benefit has even shown to be derived up to 2 hours post-exercise (1, 3).

An optimal amount of protein is needed to maximally stimulate muscle growth. Studies have shown that a dose of about 18 to 40 grams (depending on body weight, age, and workout length and type) is necessary to trigger muscle synthesis, although no greater benefit is derived from consuming amounts above this level in one sitting (2).

To optimize muscle growth and repair throughout the day, studies suggest that several meals consisting of about 30 grams of protein each should be eaten throughout the day (3).

Strength Athlete Menu Plan

Example of a typical day's diet for a fitness model using E&P Pak (35-year-old female, 5'4," 130 lbs) needing 1500 kcal; 35 percent of calories from carbs, 40 percent from protein, 25 percent from fat):

- Breakfast
  IsaLean Pro & *Isagenix Greens!*
  Ionix Supreme
  A.M. packet of AEDP
- Mid-Morning
  IsaLean Bar
- Lunch
  Baked tilapia with grilled asparagus
- Mid-Afternoon Snack
  IsaLean Bar
  Handful of pistachios
- During Training (1 hr weights; 45 mins cardio)
  Want More Energy?
- Within 1 hour of Training:
  2 scoops Vanilla IsaPro with
  Isagenix Greens! & 1 tbsp peanut butter

(Note: This menu plan is from a day very close to competition, so as to maintain muscle tone and low body fat. Strength athletes will typically shift between higher carb and calorie intake when in muscle-building phase and lower calorie but higher protein intake prior to competition. Cleansing during periods of reduced training or close to a competition is another favorite among strength athletes, as it allows them to further control calorie intake.)

Whey Protein

Whey protein, derived from milk, is superior to other protein sources for promoting muscle growth and repair. It is absorbed faster than either casein or soy protein and is higher in BCAAs, ultimately leading to greater muscle synthesis (1, 3). In addition, its high leucine content serves as a trigger for muscle growth. Whey is also the most satiating protein, helping achieve fat loss and an improved body composition.

With the numerous advantages conferred by protein, and whey in particular, incorporating this macronutrient into a dietary and training plan will help any athlete get a leg up on the competition:

- Whey is classified as a fast-absorbing protein. It is absorbed faster to maximize peak muscle growth for high-intensity and strength athletes.
- Compared to other protein sources, whey is higher in BCAAs. BCAAs serve as a trigger for muscle growth after resistance training exercise.
- Whey protein enhances recovery after exercise because it elicits a higher insulin response that speeds up glycogen resynthesis.
- Enhanced recovery from whey protein enables greater training volume to support increased muscle growth or more frequent training.
- Whey protein stimulates greater fat oxidation following a test meal compared to other protein sources like casein or soy.
- Although the goals and training techniques used to improve performance varies by athlete, protein has unanimous benefits among all athletes and exercisers of any kind and should be a central component of any good dietary strategy.

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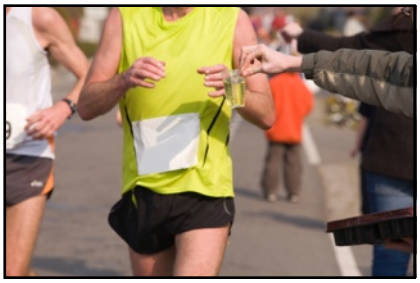
FOR EXERCISE SYNERGY, WHO WANT MORE ENERGY?



Staying hydrated and getting the right kinds of nutrients with Want More Energy? *can power athletic endurance and recovery.*

If you want a sports drink that promotes coordination, prioritizes recovery, puts your mind at ease, and pumps up energy, Isagenix Want More Energy? is the drink for you. WME is great for any occasion—appropriate for sipping, a good source of vitamins, a nice touch to a tired afternoon—but the formulation is certainly primed for fitness. WME is free of artificial ingredients, flavor enhancers and sweeteners, and did we mention it tastes wonderful?

Water Your Energy

Looking for an energy boost? By popular demand, many workout supplements are riddled with heavy doses of caffeine, sugar, and artificial stimulants. Unfortunately, it is your health that pays the surcharge on this superficial excitement. We suggest WME for an easier, more natural possibility for powering-up.

Water. Plain water could lift you from lethargy to lively. Researchers from the University of Connecticut found that even miniscule water loss (approximately 2 percent) depresses mood and impairs concentration in healthy women (1). Proper hydration will fight fatigue and provide a natural way to reboot.

Replenish Glycogen with Fructose

No competitive athlete is likely to advise against carbohydrates. The primary fuel source for the brain, the blood cells, and muscle, carbohydrates promote focus, aerobic activity, and muscle strength. Keeping your workout from short circuiting, the body stores carbohydrates for easy access when we need them most.

Glycogen (the storage form of sugar) is found mostly in the muscle and liver. When muscle and liver glycogen is depleted (such as during distance running), fatigue will set in and the body will slow down. The questions are: what sugar and what dosage is most effective for your workout? What will replenish your glycogen the fastest? What will give you fuel without spiking your blood sugar?

Fructose has spent a long time out of the lime light, but this plant-based sugar is ideal to replenish liver and muscle glycogen. Researchers at the Nestle Research Institute found that a beverage with fructose will replenish liver glycogen more efficiently than glucose (2). Whether there is an hour between rounds, or a night between races, optimal performance follows an optimal strategy for recovery.

Fructose is also a confirmed low-glycemic sugar, helping to better blood sugar (3). Metabolized a little differently than glucose, fructose is less likely to surge into the blood stream, and more likely to restock energy stores. Avoiding sugar spikes enables you to sustain high levels of energy without crashing later. Isagenix WME has 7 grams of natural fructose to sustain exercise, replenish glycogen, and balance blood sugar. Isn't that sweet!

Supplement C

In addition to being the poster-child for antioxidant vitamins, vitamin C is a star for sustaining a workout. Exercise is hard, that is the point. But it does not have to feel that way. Vitamin C supplements can make exercise more enjoyable and they may even reduce its difficulty.

How can this be? Arizona State University researchers found that vitamin C supplementation reduced subjects' heart rates and the perceived burden of strenuous exercise (4). For many, physical activity is a discipline. Conquering the mind and morphing the perception of exertion to enjoyment can play a part in the physically gratifying process. Vitamin C may serve as a catalyst in this process. Confirmed by the research, vitamin C lowers perception of effort, allowing you to go the same distance while the mental anguish takes a hike.

B Vitamins for Your Brain

The B vitamins are essential for energetic activity and are used to make red blood cells. Without these essential-for-life vitamins, oxygen would have a hard time getting around the body. Also playing a part in the breakdown of carbohydrate and fat, the B vitamins follow a metabolic mandate. Burning up fuel and courting oxygen, they act seamlessly in the work behind a workout. Abundant in the diet, the

necessity of B vitamins is more easily noticed when absent. So why include them in a workout drink? Again, the real benefit goes straight to the brain.

Research has shown that thiamin (vitamin B1), vitamin B6, and vitamin B12 support serotonin production, a neurotransmitter that regulates mood. This dynamic trio has been shown to improve fine motor skills, perhaps due to an increased release of serotonin (5). It may seem counter-intuitive from these energy-mobilizing vitamins, but serotonin helps reduce mental agitation and promotes focus. Rev up your metabolism and calm down your mind? Isagenix believes this is a delightful combination for staying light on your feet.

Confident in Choline

Speaking of neurotransmitters, choline is a B vitamin-like essential nutrient and precursor to the famed acetylcholine. Acetylcholine helps signals movement between your nerves and muscles. In one study, researchers found that plasma choline dropped by 40 percent in marathon runners (6). Because acetylcholine bridges the mind and the muscles, many researchers believe that reduced levels of choline will translate to lower performance. Incidentally, supplementing with choline may oppose the exercise-induced drop in circulation. Opening your mind to choline may just open up the channels for signal conduction.

Don't Endanger Electrolytes

Exercise makes us sweat, causing both water and electrolyte loss. Balancing your beverages is among the hardest games in athletic training. Most sports drinks contain electrolytes because they are incredibly important for the health of any athlete. Check the label on your sports drink to ensure that it is not opposing your hydration. Water alone will not do the trick. Electrolytes promote water absorption, support blood pressure, and mediate muscle contraction and relaxation (7). If you are choosing a drink to serve your sport, pay special attention to sodium and potassium, as even small amounts will go a long way. Find your stride and sustain your activity with electrolyte balance.

Sports drinks have moved beyond just being used on the field. A survey unveiled that more than one-third of consumers in the U.S., Germany, and the UK consume sports beverages each month—and not surprisingly, most aren't after exercise. Moving quickly from recovery to sustained activity, most consumers in Germany and the UK choose their sports drink for a boost in energy. Most Americans choose a drink that supports mental acuity. So, with functional foods, vitamin waters, and energy drinks grouped into the category of sports drinks, you may need to decide what your goal is when choosing your sports beverage.

If your answer is a drink that optimizes hydration, sustains natural energy, fuels your muscles, and eases your mind, Isagenix may have just what the trainer ordered with WME.

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OPTIMIZING NUTRITION FOR SPORTS PERFORMANCE

Athletes require first-class nutrition to gain a competitive edge.

Athletes are usually so focused on how macronutrients—protein, carbohydrates, and fat—affect their performance, but what about bioactive compounds and micronutrients? Can they improve performance? The answer is a resounding "yes!" Ageless Essentials Daily Pack has exactly what you need to take your skills to the next level. Here are seven powerful ingredients in Ageless Essentials that can help you gain a competitive edge:

1. Coenzyme 10 (CoQ10): Coenzyme Q10 (coQ10) is a vitamin-like substance that is essential in generating about 95 percent of the body's energy. It is also a potent fat-soluble antioxidant. Exercise increases the need for oxygen—10 to 20 times more than the resting state—causing an intensified metabolic process known as oxidative stress. The coping strategies that the body has developed to combat oxidative stress can become maxed out during times of intense physical activity and can lead to tissue damage and inflammation, excess fatigue, and delayed recovery. A study published in the *European Journal of Nutrition* found that supplements of coQ10 not only decreased oxidative stress but also reduced over-expression of pro-inflammatory genes and reduced levels of creatinine, an indicator of muscle breakdown (1). Although a degree of muscle breakdown stimulates growth, minimizing damage can allow athletes to recover faster and train harder.

2. Resveratrol: Phenols are compounds naturally produced by plants and are used to protect against pests and pathogens. Resveratrol, a phenol, exhibits similar protective properties in the human body. Now research has found that, when paired with exercise, resveratrol can enhance strength, metabolism, cardiovascular efficiency, and exercise capacity. In this study, rats consuming resveratrol ran longer and faster (2). Additionally, the rats developed stronger leg muscles with an 18 percent strength gain in the calf muscle and 58 percent gain in their tibialis anterior (on the front of the leg) muscle. Even more important for athletes, scientists found that resveratrol's ability to improve cardiovascular efficiency lead to higher levels of fat burning, increased muscle mass, and improved endurance.

3. Vitamin C: Vitamin C is renowned for quenching free radicals, as well as playing a major role in collagen synthesis, hormone formation, and fat metabolism. The newest skill to add to the vitamin C resume is its ability to act as an ergogenic (exercise-enhancing) aid. In a study conducted at Arizona State University, researchers found that subjects who supplemented with vitamin C had decreased heart rates during exercise and a 10 percent decrease in the perceived difficulty of physical activity compared to the placebo group (3). In addition to decreasing the effects of oxidative stress in athletes, vitamin C supplementation may be able to optimize performance by decreasing the discomfort of high-intensity physical exertion.

4. Fish Oil: Strength training has long been thought to have health benefits, but now research shows that supplementing with fish oil can amplify the benefits of resistance training. A study shows that elderly women taking fish oil who began a strength training regimen had increased neuromuscular responses compared to women who did not take the supplement (4). Fish oil is rich in omega-3 fatty acids such as eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), which can alter cell membrane fluidity. This fluidity may affect the uptake of acetylcholine, a neurotransmitter that triggers the process of muscle contraction. The combination of fish oil and strength training may lead to faster communication between nerves and muscles, and thus faster muscle contraction for athletes. An additional bonus for athletes is the inflammation-soothing effects of omega-3s to assist with a proper recovery.

5. Vitamin D: Vitamin D deficiency is increasingly recognized as one of the most common health problems in the world today, with athletes being no

exception. Vitamin D (cholecalciferol) is a hormone that is essential for bone growth & repair, cell function, management of inflammation, and mineral balance in the body. It can either be consumed through the diet or synthesized in the body when skin is exposed to sunlight; however, evidence is showing that people are not getting adequate amounts. Vitamin D deficiency may make an impact on training quality and injury, and as a result, athletic performance. A study of elderly patients found that supplementation with vitamin D significantly increased the mean diameter of type II muscle fibers (5). The discovery of vitamin D receptors (VDR) on muscle cells provides further evidence that vitamin D plays a significant role in muscle structure and function. Finally, apart from supporting optimal athletic performance, higher vitamin D status has been link to improved overall physical health and muscle function well into old age.

6. Calcium: Getting enough calcium in your diet is so important that your body will actually "rob" calcium from your bones if there is not enough in the blood. Lacking calcium in the diet not only leads to poor bone health, but it can also severely affect nerves and muscles causing weakness, muscle spasms, and muscle pain. Calcium is an integral part in the communication between nerves and muscle cells for muscle contraction to occur. Without sufficient amounts of calcium, muscle weakness will result in decreased athletic performance and discomfort. Athletes most at risk for inadequate dietary calcium intake are those who are involved in weight-control sports such as figure skating and distance running. Additionally, some evidence points to increased calcium losses related to intense endurance training (6). Be sure you're getting enough.

7. Electrolytes: Ever notice that your skin feels gritty after a workout? That is actually salt that has escaped through your pores. The evaporation of sweat from the skin's surface assists the body in regulating core temperature. Unfortunately, the side effect of this temperature-regulating mechanism is the loss of essential electrolytes and fluid. According to the National Athletic Trainers' Association, 1 to 2 percent loss of body weight in sweat begins to compromise physiologic function and negatively influence performance. Greater than 3 percent further disturbs physiologic function and increases the risk of developing cramps or heat exhaustion. Electrolytes, such as sodium and potassium, are important minerals for regulating the hydration status of the body. It is not only important for athletes to rehydrate but also to replace the electrolytes lost during exercise to perform well and recovery quickly.

The greatest concern when choosing the right supplement is to find a product that is high in quality and supported by science. Isagenix Ageless Essentials Daily Packs are carefully formulated to contain proper nutrients to help you power your workouts—helping you reach athletic goals. Let Isagenix nourish your body so you can focus on preparing to win the gold.

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WHY YOU SHOULD TRAIN LIKE AN ATHLETE

Focus on "fit and strong" and take "skinny" out of your vocabulary.

Normal-weight obesity, also known as "skinny fat," is a growing problem in the U.S. These terms describe a person's body composition that is high in fatty tissue in comparison to lean tissue, while still within normal limits of the body mass index (BMI). Those who are considered to be "skinny fat" do not appear to be overweight; however, they have a high percent body fat, especially visceral fat—the fat that surrounds vital organs.

A major problem for these folks is that they often are misclassified as healthy when they actually could be at high risk for chronic disease. The fact is that "skinny" is not at all synonymous with "healthy". In the same manner that muscular athletes can still have optimal body composition while technically being in the overweight BMI category, people who appear to be thin can actually have high levels of body fat. Think of sumo wrestlers who can weigh upwards of 300 pounds—it is possible that they are more fit and healthy than the thin spectators who have a higher fat-to-muscle ratio.

A recent study showed that percent body fat was inversely related to cardiorespiratory fitness (CRF)—a strong predictor of cardiovascular disease and premature death (1). Subjects that had larger amounts of body fat were found to be less fit, independent of body weight or stature.

Numerous studies show similar trends between body fat and risk of chronic disease and mortality. While much focus has been on how increased body weight can lead to a greater risk of disease, little emphasis has been on the health risks associated with being underweight and unfit.

In a study that reviewed the relationship between cancer mortality and various obesity measures as well as fitness (quantified as the duration of maximal treadmill exercise test), researchers found that unfit, underweight subjects were at a higher risk of mortality than the obese, fit subjects (2). These results suggest that, in addition to weight management, physical activity should be emphasized as a critical part of a healthy lifestyle and disease prevention.

"Good health is more than a BMI or a number on a scale. We know that people who choose a healthy lifestyle enjoy better health," reported Keith Bachman, M.D., a weight-management specialist with Kaiser Permanente's Care Management Institute, in a press release. He emphasized a balanced diet, physical activity, and stress management as healthy lifestyle practices.

In addition to supporting weight loss and preventing weight gain, increasing your muscle mass contributes to overall health and prevention of disease.

Take "skinny" out of your vocabulary and focus more on "fit and strong." Get there by incorporating more protein into your diet with IsaLean products (Shakes, Bars, and Soups), IsaPro, and IsaLean Pro, which pack in anywhere from 18 to 35 grams of undenatured whey protein to promote and maintain muscle and strength.

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