



Know your body, find your edge.

Essential Information for Athletes

If you're like most athletes, you're always looking for an edge. You want to go faster and feel stronger. You want more energy. You want to look and feel great. And of course, you want all these things to happen quickly.

So you hire a coach, upgrade your equipment and spend loads of money on the latest and greatest nutritional supplements, hoping that they can make a difference in helping you get the results you want.

But are all those nutritional supplements actually doing anything?

You would never think of buying a new bike or pair of running shoes without trying them on for size; without knowing if they're going to fit you.

So why would you buy nutritional supplements like protein powders, recovery drinks and vitamins without knowing if they're right for your body?

Despite all the hype—what all those professional athletes are being paid to tell you—there is no such thing as a one-size-fits-all formula for improving your athletic performance. As athletes, our basic, biological needs are all very different.

Stop guessing at what's right for you!

Get to know your body—from the inside out—and take control of your health and your results!

Building upon recent advancements in laboratory testing technology, Bioletics has created a simple, at-home assessment system to help you determine exactly what your body needs to perform at its peak. These assessments, which can be completed in the comfort and privacy of your own home, will help you pinpoint any issues that might be holding you back.

Just think: No more guesswork! You'll know exactly what your body needs to fuel and repair itself so that you can train harder, recovery faster and perform better.

While many factors influence athletic achievement, there are several fundamental biological factors that determine your body's ability to perform at its peak.

Surprisingly, physicians, coaches, and athletes often overlook these key performance factors. Fortunately, each one of these factors can be easily and inexpensively evaluated at home. In most cases, deficiencies or imbalances can be resolved in about eight weeks.

In order to perform well and stay healthy, every athlete needs:

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Bioletics has helped hundreds of athletes from world class competitors to weekend warriors take their health and their performance to an entirely new level.

And we can help you, too. Visit www.bioletics.com to order your Personal Performance Profile. It may be the single, most important step you'll ever take in improving both your health and your performance!

We hope that the following information will help you become more familiar with the basic, biological processes at work inside your body and help you understand just how critical they are.

For more specific information on how you can begin to find your edge, make an appointment for your free, introductory consultation today. Contact us at info@bioletics.com or at 888.371.1033.

Metabolically-Appropriate Fuel

Every athlete is a genetically-unique individual, having very specific nutritional needs. Today, most links to metabolically-correct diets have been lost due to the globalization of foods and the loss of seasonality and selection in our food supply. Still, every individual retains an evolutionary memory of the particular foods and nutrients that are important for their overall health and athletic performance.

An Inuit, for example, can live a long and healthy life fueled by meat and blubber while a farmer in Asia will be healthier eating rice, vegetables and fish. Similarly, one athlete can thrive on a high-carbohydrate diet composed primarily of grains and fruits, while another athlete will thrive on a high-fat diet of red meat, nuts and oils.

In the absence of such metabolically-specific fuels, energy levels may drop and a subsequent rise in hunger pangs, sweets cravings, post-meal nervousness, irritability, and even depression can occur.

Athletes generally fall into three categories:

- Fast Oxidizers, who perform better on high-protein diets
- Slow Oxidizers, who thrive on high-carbohydrate diets
- Mixed Oxidizers, who can enjoy the widest variety in their food choices

By obtaining a blueprint of your body's metabolic needs, it is possible to fine tune your diet and create both steady, consistent energy and optimum performance patterns.

Assessment Method: On-line survey

Recommended For: All athletes, especially those with inconsistent energy, training and racing results

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An Adequate Supply of Essential Amino Acids

Almost every athlete knows that they need to eat protein and many supplement their diets with protein powders. Yet approximately 90% of all athletes are deficient in at least FIVE of the EIGHT essential amino acids! The problem stems from the fact that athletes don't have a protein need, they have an essential amino acid need.

Essential amino acids—the building blocks of protein—are critical for the body to build and maintain muscle, neurotransmitters, hormones, and key digestive and metabolic enzymes.

Studies have demonstrated that the lack of just one essential amino acid can significantly interfere with these processes. It is not how much protein that is critical, but the type of protein, how effective we are at breaking that protein down into its essential amino acids and how many essential amino acids our body needs that is important. The old adage, “quality not quantity” is very appropriate in this application.

- Research indicates that, for anabolic purposes, the body utilizes approximately 40% of the protein in "high biological" foods such as whole eggs, meat, fish, and poultry. Only about 20% or less of "low biological" foods such as whey, soy, egg whites, beans and nuts are actually utilized by the body for repair and growth.
- Vegetarians and those who consume much of their daily protein in the form of bars and powders should know that these are not efficient sources of protein.
- The consumption of high-quality proteins does not necessarily translate into their efficient use.
- Stress, age, the use medications and certain cooking methods can limit the body's ability to fully digest and convert these proteins into essential amino acids.

As an athlete, you should be cognizant that racing, training and injury damage structural proteins in your body.

As a result, you will require a greater amount of essential amino acids for repair, recovery and growth. A deficiency in even one essential amino acid will not only interfere with your body's ability to repair and recover, but force the physical breakdown of body tissue (muscle primarily) in order to access the depleted essential amino acid(s) it needs.

Assessment Method: Finger stick (blood spot)

Recommended For: Endurance athletes, strength and power athletes, those who train heavily, older athletes, vegetarians

Adequate and Balanced Amounts of Essential Fatty Acids

Essential fatty acids (EFA's) have many functions in the body. No cell, tissue, gland, or organ can function normally without them. Optimal EFA levels are critical in reducing inflammation, increasing endurance, shortening recovery, protecting the joint, improving mood and concentration, and promoting deeper sleep.

As athletes, our EFA status becomes stronger when we eat foods that are similar to those eaten by our primitive ancestors—a diet abundant in lean meats, antioxidant-rich fruits and vegetables, and fats with a high omega 3 to omega 6 EFA ratio.

Due to an unfounded fear of healthy fats and the increased amount of unhealthy processed fats in our food supply, most Americans consume too few natural omega 3 fats (fish, grass fed meat, seeds such as flax and hemp and nuts such as walnuts and pumpkin seeds) and too many processed omega 6 fats (corn, soy, canola, and safflower oils). This formula has led to performance-reducing imbalances in the ratio of omega 6 to omega 3 fats.

Recent research suggests that we should strive for a low omega 6/omega 3 ratio (less than 4:1) and a high Omega 3 index (greater than 10% omega 3 fat percentage) in order to derive all of the benefits of from essential fatty acids.

Assessment Method: Finger stick (blood spot)

Recommended For: All athletes, especially those with injuries, inflammatory conditions or a family risk of heart disease



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An Optimum Level of Vitamin D

Optimizing your level of vitamin D3 maybe the single, most important thing you can do to support your health and improve your athletic performance. Interestingly enough, many people do not realize that vitamin D3 is not a vitamin at all. It is a hormone manufactured by the skin during critical periods of sun exposure.

Vitamin D3 is both a key building block and a cellular activator of almost every physical process.

- It regulates more than 2,000 of the 30,000 human genes.
- As an essential part of the endocrine system, Vitamin D3 controls several of the adrenal hormones, the growth of cells, and the production of enzymes.
- Other important functions include being a powerful immune booster providing front-line defense against colds and flu as well as cancer and autoimmune disease.
- Vitamin D3 also has a direct effect on bone health; decreased levels have been linked to a variety of illnesses including heart disease, diabetes, depression and autism.
- Vitamin D3 is essential for peak athletic performance because it contributes to muscular strength and recovery while controlling physical reaction time, balance and coordination.

A surprising majority of athletes—even those who train regularly outdoors are deficient (less than 50 ng/ml) in vitamin D. In fact, many athletes are severely low (under 25ng/ml.)

Those who have restored their vitamin D3 to an optimal level have enjoyed improved performance, quicker recovery and a healthier, stronger immune system. Vitamin D3 levels must be assessed and monitored so that a safe and effective supplementation program can be implemented.

Assessment Method: Finger stick (blood spot)

Recommended For: All athletes, especially those with darker skin, those with light skin who frequently use sunscreen, those who live in northern climates and/or those who spend most of their daylight hours indoors

Balanced Mineral Levels

Inadequate mineral intake, the sweat-induced loss of calcium and magnesium, stress (both physical and psychological) and the consumption of caffeinated and acidic beverages (including sodas and other sugary drinks) disrupt the body's blood chemistry. The combination of mineral loss and over-acidity will result in a decrease in athletic performance and dramatically increase the risk of bone loss for both men and women.

While calcium receives a lot of media attention, the "king" of all minerals is magnesium.

- Magnesium is not only the single most important mineral in sports nutrition; it is one of the most critical elements in the athletes body.
- Approximately 350 enzyme functions depend on magnesium, including the production of ATP, the key factor that creates energy at the cellular level.
- Optimal magnesium levels contribute to enhanced athletic endurance and strength by increasing metabolic efficiency, enhancing muscular contractility, decreasing oxygen consumption, and improving cardiovascular efficiency.

Despite magnesium's pivotal role in energy production and muscular health, many athletes suffering from magnesium deficiencies remain unaware of its critical importance. Part of the problem is the lack of an affordable assessment for functional, intracellular magnesium levels.

Bioletics has overcome this measurement problem by using a functional marker of mineral balance called NTx. Bones are living tissues that are constantly breaking down and rebuilding. When bones break down faster than they can rebuild, an increased amounts of NTx is excreted in the urine. When NTx levels are elevated, an intracellular calcium/magnesium imbalance is assumed.

Assessment Method: First morning urine

Recommended For: Cyclists, swimmers, pre-menopausal women, and those with a family history of heart disease or osteoporosis

An Adequate Supply of Iron

Iron is critical for athletic performance as it carries the oxygen contained in the red blood cells from the lungs to the muscles. It also plays a key role as an enzymatic catalyst in many other energy related functions in the body. While very low iron results in the reduction of red blood cells (known as anemia), an athlete does not have to be anemic to be suffering from problems related to low iron.

Symptoms of iron deficiency include:

- Poor performance and delayed recovery
- Increased fatigue or lethargy
- Heavy legs
- Susceptibility to infection
- Irritability
- Feeling colder than others

While the assessment of red cell count, hemoglobin, hematocrit and serum iron are needed to diagnose anemia, it is important to acknowledge that these are not sensitive indicators to assess deficiencies in iron stores. The iron-binding protein, ferritin, is a much more reliable marker of functional iron stores.

Female athletes should strive to maintain a ferritin level between 40 and 70 ng/ml.

Male athletes, on the other hand, should be monitored for excessive iron. Because men do not bleed regularly (they do not have a menstrual cycle), tend to eat more red meat and take in more calories than women, their bodies often store too much iron. High iron levels contribute to free radical damage, which can cause inflammation and increase the risk of diseases such as cancer, arthritis, and heart disease. Because of this risk, we strongly recommend that men avoid iron supplements and iron-fortified foods unless measured ferritin levels confirm the need for iron.

Assessment Method: Finger stick (blood spot)

Recommended For: Runners, pre-menopausal women, vegetarians, men with a family history of cancer or heart disease

A Healthy Hormonal System

As athletes, we want our body to have a positive anabolic to catabolic ratio. Basically, anabolism is the process of growth and repair and catabolism is the process of breakdown and destruction. Your anabolic state is at it's highest in your teens. Testosterone is the key anabolic hormone. Your catabolic state is at it's highest after an injury and illness and increases as we age. Cortisol is the key catabolic hormone.

While it is very difficult to reverse the natural, age-related decline of testosterone (in both men and women), the effects of stress and training on testosterone can be minimized. Even "positive" stress can deplete testosterone. Those who participate in endurance-related sports are especially at risk for having lower than optimum levels.

The intense physical and mental stress associated with training and racing can lead to hormonal imbalances and immune deficiencies which not only inhibit athletic performance, but also increase the risk of illness.

- Research shows that testosterone levels temporarily decrease as a result of intense training. Similarly, serum cortisol levels increase.
- Changes in testosterone to cortisol balance are disadvantageous and sometimes disastrous for an athlete.
- These imbalances can result in an elevated resting heart rate, poor performance, slow recovery, muscle soreness, loss of appetite, lethargy, muscle loss, loss of sex drive, irritability and difficulty sleeping.

Unfortunately, we frequently find low testosterone to cortisol ratios (T/C) in athletes. By measuring the saliva, it is possible to create a snap shot of athlete's biologically active levels of testosterone and cortisol and, therefore, assess anabolic/catabolic status. Periodic assessments are important to fine tune training programs for optimum performance as well as the prevention of training plateaus or breakdowns.

Assessment Method: Saliva (four samples taken at specific times during the day)

Recommended For: Endurance athletes, strength and power athletes, those who are training heavily

Proper pH Balance

In order to perform well, your body must be alkaline. But because almost every metabolic process—from breathing, to digestion, to the production of energy—all create acid as a by-product, maintaining the proper alkaline/acid balance is a constant and ongoing battle.

Inadequate mineral intake, the sweat-induced loss of calcium and magnesium, stress (both physical and psychological) and the intake of acidic beverages (including coffee, tea, soda, juice milk and energy drinks) all disrupt the body's blood chemistry. When your cells and tissues are overly-acidic, you are more likely to:

- Fatigue more quickly and recover more slowly.
- Find it difficult to concentrate.
- Have difficulty setting and working toward goals.
- Suffer from frequent colds, flus, allergies and/or respiratory problems.
- Experience chronic muscle soreness and/or joint pain and stiffness.
- Feel depressed or pessimistic.

pH (which stands for the power of hydrogen) is a measure of how acidic or alkaline a solution is. pH values are determined according to the amount of dissolved hydrogen ions (H⁺) existing in the solution. The pH of pure water at 25°C (77° F) is very close to 7.0. Solutions with a pH less than 7.0 are said to be acidic; those with a pH greater than 7.0 are said to be basic or alkaline.

From a scientific standpoint, we know that the origins of human life can be traced to an alkaline environment—the ocean. Today, the human body's internal environment remains alkaline, with an ideal pH registering just above 7.0. When it comes to sports performance, it is important to note that every system in the human body functions at its fullest capacity in an alkaline environment.

The restoration of a health-enhancing alkaline state is essential for not only for optimum athletic performance, but for the regeneration of bones and tissues and the maintenance of a strong immune system.

Assessment Method: Urine

Recommended For: All athletes, especially endurance runners, cyclists, swimmers and other athletes who train heavily or compete frequently.