



Vitamin & Mineral Intake For Athletes



By Lee Hayward

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Lee Hayward's Total Fitness Bodybuilding

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About the Author



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Lee Hayward's Total Fitness Bodybuilding has been online since 1999 and has become a trusted resource for practical bodybuilding, fitness, and nutrition advice. His YouTube channel has over 250,000 subscribers and over 70 million video views.

Whether your goal is to make a complete muscle building & fat loss transformation, or just lose a few pounds of stubborn belly fat and increase your energy levels. Lee Hayward can help get the results you want.

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Just visit www.LeeHayward.com for more information and to register for your free 20-minute coaching call

TABLE OF CONTENTS

VITAMIN & MINERAL INTAKE FOR ATHLETES!.....	1
WHAT ARE VITAMINS AND MINERALS?.....	2
THE HISTORY BEHIND VITAMINS.....	2
RECOMMENDED VITAMIN AND MINERAL INTAKE FOR ATHLETES... ..	4
VITAMIN A (RETINOL & BETA-CAROTENE)	4
VITAMIN B1 (THIAMINE)	5
VITAMIN B2 (RIBOFLAVIN)	6
VITAMIN B3 (NIACIN)	7
VITAMIN B5 (PANTOTHENIC ACID)	8
WHAT HAPPENED TO VITAMIN B4 ?.....	8
VITAMIN B6 (PYRIDOXINE).....	9
VITAMIN B7 (BIOTIN).....	10
VITAMIN B9 (FOLIC ACID).....	11
VITAMIN B12 (COBALAMIN)	12
VITAMIN C (ASCORBIC ACID)	13
VITAMIN D	14
VITAMIN E.....	15
VITAMIN K.....	16
MINERALS.....	17
CALCIUM	17
CHROMIUM	18
COPPER	19
IODINE	20

IRON21

MAGNESIUM22

MANGANESE.....23

PHOSPHOROUS.....24

SELENIUM25

ZINC26

ELECTROLYTES... .. 27

POTASSIUM.....27

SODIUM28

CONCLUSION..... 29

Next Level Nutrition...

Vitamin & Mineral Intake For Athletes!

When it comes to meeting your vitamin and mineral needs, don't go by the RDA's (recommended daily allowance) that's set forth by the government. They are antiquated and too low.

In fact, the RDA's are being revised based on recent research showing that daily dietary needs for vitamins are higher than originally anticipated. Keep in mind that the RDA's that are on food labels were established back in 1941 to try and prevent World War II soldiers from getting sick and dying from vitamin and mineral deficiencies. They were not set for optimal levels of health and athletic performance.

Just because you consume enough vitamins and minerals to stay alive, doesn't mean that you are consuming optimal levels to maximize your strength, health, and athletic performance. Even a minor micronutrient deficiency could short change the entire muscle building process and bring your gains in the gym to a screeching halt... Even if you are eating a high calorie / high protein diet!

Thanks to the modern invention of processed food, we now live in a society where it is possible to overeat to the extent that one becomes obese; yet can still be malnourished on the cellular level from a lack of essential nutrients.

Most processed foods today are stripped of their healthy vitamins and minerals and then loaded with preservatives, so they are nothing more than empty toxic calories.

For guys who are in the gym working out on a regular basis, you are placing even more demand and stress on your body, and you need more micro-nutrients than the average Joe.

So that's why I recommend that you pay particular attention to your diet to ensure that you are consuming adequate vitamins and minerals to meet your body's needs.

What Are Vitamins and Minerals?

In the broad sense, vitamins and minerals are “essential” dietary nutrients because the body can’t make them. Therefore, they must be consumed from the diet or supplementation.

Scientists categorize vitamins and minerals as “micronutrients” because they are only needed in very minute amounts, compared to “macronutrients” such as protein, carbohydrates, and fat. However, even though the amounts are small, they play a vital role in maintaining the proper biological functioning of everything from building muscle to improving your memory.

Vitamins and minerals regulate the metabolism and assist all the biological processes that are involved with releasing energy from the food you eat. If you don’t consume enough of these vital micronutrients to maintain proper biological levels, then the body will start to deteriorate.

Bottom line, without adequate vitamins and minerals you won’t be able to build muscle because your body would not be able convert the food you eat into all the wonderful chemicals that make up the human body. Needless to say, they are a lot more important than most people realize.

For this reason alone, you should be supplementing your diet with a good multi vitamin / mineral supplement. Think of it as insurance policy to make sure that you are covering all bases. With all the time and energy you are investing into improving yourself by going to the gym, weight training, cardio, diet, etc. It would suck big time if all your efforts were short changed simply because you didn’t meet your optimal vitamin and mineral needs.

The History Behind Vitamins...

Did you know that back in 1911 there were only 2 known vitamins:

A fat-soluble vitamin, which they called “A”

And a water-soluble vitamin, which they called “B”

Over the next 10 years scientists discovered another vitamin and appropriately enough called it “C”. Then by the early 1920’s another fat-soluble vitamin was discovered within vitamin A. So scientists got really creative and came up with a brand new name for this vitamin and called it “D”. By 1948 scientists discovered all the known vitamins that we have today.

The fat-soluble vitamins include: **A, D, E** and **K**. These vitamins need fat in order to get transported through the bloodstream. They can also be stored in fatty tissue and in the liver, extending their lifespan in the body.

The water-soluble vitamins include: all the **B** vitamins and vitamin **C**. Because these vitamins are water-soluble they can't be stored in the body for long. Daily intake of B and C vitamins is a must.

You've probably heard of scurvy, which is a disease resulting from a deficiency in Vitamin C. This was very common illness that killed many sailors and soldiers in the early 20th century who would be away for long periods of time without access to fresh fruits and vegetables to provide their body's with water soluble vitamins.

Therefore the government created the "*Recommended Daily Allowance*" for vitamins back in 1941 to try and prevent World War II soldiers from becoming malnourished, getting sick, and dying.

Recommended Vitamin and Mineral Intake for Athletes...

In this next section you're going to get a full list of all the vitamins and minerals, along recommended daily intakes that will meet the needs of hard training fitness enthusiasts and athletes. You'll also get suggestions of the best food sources for these vitamins and minerals.

Vitamin A (Retinol & Beta-Carotene)

recommended intake 5000 IU/day

Vitamin A is a fat-soluble vitamin that has several important functions in the body that are necessary for growth, development, and strengthening the immune system. It is used for the formation of skin, hair, and mucous membranes. Vitamin A plays an important role bone formation, reproduction, and wound healing.

Vitamin A comes from two sources. One group comes from animal sources and is called retinoids, which includes retinol. The other group comes from plants and is called carotenoids, which includes beta-carotene. The body converts beta-carotene to Vitamin A.

Beta-carotene is a type of pigment found in plants, especially carrots and colorful vegetables. The name beta-carotene comes from the Latin word for carrot. This is what gives yellow and orange fruits and vegetables their rich colors.

Vitamin A is a critical component in preventing vision problems like cataracts, glaucoma, macular degeneration and night blindness. This is where the old saying "*Carrots help you see in the dark*" came from.

Vitamin A is also good for the skin and is used in many cosmetic skin cream products. It helps thicken and stimulates the Dermis – where your collagen, elastin and blood vessels are – so it helps reduce wrinkles and increases blood flow to the surface of the skin. Vitamin A increases the deposition of collagen and slows the breakdown of collagen and elastin caused from normal aging.

The best dietary sources of Vitamin A are: bright yellow or orange fruits and vegetables like carrots, apricots and sweet potatoes. Other great sources include fish oils, liver, eggs and fortified dairy products.

Vitamin B1 (Thiamine)

recommended intake 50 mg/day

Vitamin B1 is one of 8 B vitamins. Thiamine is called B1 because it was the first discovered B vitamin. All B vitamins help the body convert food into energy. Your body needs them to form adenosine triphosphate (ATP), which is the energy system used for high intensity training.

All B vitamins are water-soluble, meaning that the body does not store them so they must be consumed daily through food and / or supplementation.

B vitamins are needed for healthy skin, hair, eyes, and liver. They also help the nervous system function properly and improve the body's ability to withstand stressful conditions (*i.e. recovery from hard weight training workouts*), and are needed for optimal brain function.

Vitamin B1 is often referred to as the “anti-stress” vitamin because of its ability to improve the body's immune system and ability to withstand stressful conditions.

It's rare to be deficient in thiamine, although alcoholics, people with Crohn's disease, anorexia, and those undergoing kidney dialysis may be deficient. Symptoms of thiamine deficiency are fatigue, irritability, depression and abdominal discomfort. People with thiamine deficiency also have trouble digesting carbohydrates. That allows a substance called pyruvic acid to build up in their bloodstream, causing a loss of mental alertness, difficulty breathing, and heart damage.

The best dietary sources of vitamin B1 are: red meat and organ meats, legumes, wheat germ, bran, brewer's yeast, and blackstrap molasses. Vitamin B1 is also found in fortified cereals, breads, and pasta.

Vitamin B2 (Riboflavin)

– recommended intake 15 mg/day

Vitamin B2 is one of 8 B vitamins. Each of the B vitamins are numbered in the order that they were discovered. All B vitamins help the body convert food into energy. Your body needs them to form adenosine triphosphate (ATP), which is the energy system used for high intensity training.

All B vitamins are water-soluble, meaning that the body does not store them so they must be consumed daily.

Vitamin B2 is important for body growth and red blood cell production. It's an antioxidant that helps fight off damaging particles in the body known as free radicals. Free radicals can damage cells, break down the body, contribute to the aging process, and cause health problems such as heart disease and cancer. Antioxidants such as B2 (riboflavin) can fight free radicals and may help prevent some of the damage they cause.

Riboflavin is also needed to help the body convert Vitamin B6 and folate into forms the body can use. It is also important for growth and red blood cell production.

Some studies have shown that taking B2 can reduce how often people get migraine headaches. One double-blind placebo-controlled study showed that taking 400 mg of riboflavin a day cut the number of migraine attacks in half. If you suffer from migraine headaches, than you should consider supplementing with Vitamin B2 (riboflavin) it maybe worth a try.

The best dietary sources of Vitamin B2 are: brewer's yeast, almonds, organ meats, whole grains, wheat germ, wild rice, mushrooms, soybeans, milk, yogurt, eggs, broccoli, brussel sprouts, and spinach. Vitamin B2 is also found in fortified cereals, breads, and pasta.

Vitamin B3 (Niacin)

– recommended intake 25 mg/day

Vitamin B3 is one of 8 B vitamins. Each B vitamin is numbered in the order that they were discovered. All B vitamins help the body convert food into energy. Your body needs them to form adenosine triphosphate (ATP), which is the energy system used for high intensity training.

All B vitamins are water-soluble, meaning that the body does not store them so they must be consumed daily.

Vitamin B3 (niacin) helps the body make various sex and stress-related hormones in the adrenal glands and other parts of the body. Niacin helps improve blood circulation. A lot of the popular “*pre-workout*” energy drinks include niacin to help increase blood flow during training.

It’s also common for competitive bodybuilders to take Vitamin B3 (i.e. niacin) in pill form while pumping up before getting on stage at a competition because it helps to increase blood flow and will help the muscles look more pumped, jacked, and vascular. Especially when bodyfat levels are very low and the skin is really thin.

Note: if you are a competitive bodybuilder and are going to take niacin, be very cautious and test it out before the actual competition to see how your body reacts. High doses of niacin is very powerful. It can make your face as red as a tomato, cause headaches, and make you to feel itchy all over your body. I’ve tried it myself and I hated the way it made me feel, so I don’t use it when I compete. But I know several bodybuilders who do and swear by it. So use your own discretion when it comes to niacin.

Supplementing with Niacin has been used since the 1950’s as a way to lower elevated LDL (“bad”) cholesterol and triglyceride (fat) levels in the blood. However, niacin can interact with other cholesterol-lowering drugs. So if you are taking any medication for high cholesterol, make sure to check with your doctor before supplementing with Vitamin B3 (niacin).

The best dietary sources of Vitamin B3 are: beets, brewer’s yeast, beef liver, beef kidney, fish, salmon, swordfish, tuna, sunflower seeds, and peanuts. Vitamin B3 is also found in fortified cereals, breads, and pasta.

Vitamin B5 (Pantothenic Acid)

recommended intake 10 mg/day

Vitamin B5 is one of 8 B vitamins. Each of the B vitamins is numbered in the order that they were discovered. All B vitamins help the body convert food into energy. Your body needs them to form adenosine triphosphate (ATP), which is the energy system used for high intensity training.

Vitamin B5 is critical in the production of red blood cells, as well as the production of sex and stress-related hormones. It is sometimes called the “anti-stress” vitamin. Pantothenic acid is also important in maintaining a healthy digestive tract, and it helps the body use other vitamins, particularly Vitamin B2 (riboflavin).

Your body needs pantothenic acid to synthesize cholesterol. Several studies have suggested that Vitamin B5 may help with lowering triglycerides in people who have high cholesterol, reducing LDL (bad) cholesterol and increasing HDL (good) cholesterol.

Another benefit that is particularly good for bodybuilders and athletes is that Vitamin B5 may help speed the healing process, especially if Vitamin B5 is combined with vitamin C. This will aid with rebuilding muscle tissue after a hard workout.

Today it is rare for anyone to be severely deficient in Vitamin B5. However, symptoms of a Vitamin B5 deficiency may include fatigue, insomnia, depression, irritability, vomiting, stomach pains, burning feet, and upper respiratory infections.

The best dietary sources of vitamin B5 are: brewer’s yeast, corn, cauliflower, kale, broccoli, tomatoes, avocado, legumes, lentils, egg yolks, red meat (especially organ meats), turkey, duck, chicken, milk, split peas, peanuts, soybeans, sweet potatoes, sunflower seeds, lobster, wheat germ, and salmon. Vitamin B5 is also found in fortified cereals, breads, and pasta.

What Happened To Vitamin B4 ?

In the old research literature of vitamins scientists have discovered over 20 variations of B vitamins. However as the years went on and vitamin research improved, scientists found that several of the substances they first thought were new B vitamins, were actually the same B vitamins that had already been discovered. While in other cases they turned out to not even be vitamins at all. This is where all the missing B vitamin numbers have gone and you won’t see listings for vitamins B4, B8, B10 and B11.

Vitamin B6 (Pyridoxine)

– recommended intake 15 mg/day

Vitamin B6 is one of 8 B vitamins. Each of the B vitamins is numbered in the order that they were discovered (*excluding the missing B's as explained above*). All B vitamins help the body convert food into energy. Your body needs them to form adenosine triphosphate (ATP), which is the energy system used for high intensity training.

Vitamin B6 is used to make neurotransmitters, which are chemicals that carry signals from one nerve cell to another. This is needed for proper brain function. Pyridoxine helps the body produce the hormones serotonin and norepinephrine, which influence mood, melatonin production, and helps regulate the body's natural rhythms. Some researchers think that vitamin B6 might help reduce symptoms of depression.

Your body needs vitamin B6 in order to absorb vitamin B12 and to make red blood cells to strengthen the immune system. People who don't get enough B6 in their diet have a higher risk of heart disease. Vitamin B6 plays a role in lowering levels of homocysteine in the blood, and high levels of homocysteine appear to be associated with heart disease, but the exact relationship is unknown to scientists at this time.

Another benefit of vitamin B6 is that it can help reduce inflammation and ease up the symptoms of carpal tunnel syndrome. I've personally supplemented with vitamin B6 for this reason and have noticed an improvement in the numbness that mild carpal tunnel syndrome causes in the hands.

While it's rare to have a significant deficiency in Vitamin B6, some studies indicate that many people may be mildly deficient, especially young children and elderly people. Certain medications can hinder the absorption of Vitamin B6 and cause low levels of pyridoxine in the body. Symptoms of serious deficiency include muscle weakness, nervousness, irritability, depression, difficulty concentrating, and short-term memory loss.

The best dietary sources of Vitamin B6 are: chicken, turkey, tuna, salmon, shrimp, beef liver, milk, cheese, lentils, beans, spinach, carrots, brown rice, bran, sunflower seeds, wheat germ, and whole-grain flour.

Vitamin B7 (Biotin)

– recommended intake 500 mcg/day

Vitamin B7, more commonly known as biotin is one of the B vitamins. All B vitamins help the body metabolize carbohydrates, fats, and protein into energy. Your body needs them to form adenosine triphosphate (ATP), which is the energy system used for high intensity training.

Biotin is also known as Vitamin H. I know that all of these different names can get a bit confusing. But regardless of the names we give them, the main thing is that you just make sure you consume enough of them to meet your body's needs. Biotin is essential for the formation of fatty acids and blood sugar (also called glucose). Biotin is often recommended for strengthening hair and nails and it is found in many cosmetic products for hair and skin. There is some evidence that biotin supplementation may benefit people with a form of hair loss called alopecia areata. In addition to that biotin may also improve thin, splitting, or brittle fingernails and toenails.

Proponents of biotin supplements claim that boosting your biotin intake can help with the following conditions: healthy hair, acne, brittle nails, diabetes, eczema, hair loss, mild depression, skin rash in infants (also known as seborrheic dermatitis).

It's rare to be deficient in biotin because bacteria in the intestine can make biotin. Biotin is important for normal embryonic growth, making it a critical nutrient during pregnancy.

The best dietary sources of vitamin B7 are: brewer's yeast; cooked eggs, especially egg yolk, sardines, almonds, peanuts, pecans, walnuts, soybeans, legumes, whole grains, cauliflower, bananas, and mushrooms.

Note: Raw egg whites contain a certain type of protein called Avidin, this interferes with the body's absorption of biotin. That's why it's not recommended that you eat raw eggs. Always cook your eggs or use pasteurized liquid egg whites. In addition to that, food-processing techniques can destroy biotin. So, eating more natural unprocessed foods from the above list will contain more biotin.

Vitamin B9 (Folic acid)

– recommended intake 1 mg/day

Vitamin B9, which is more commonly known as folate or folic acid, is one of the water-soluble B vitamins. All B vitamins are needed for healthy skin, hair, eyes, and liver. They also help the nervous system function properly.

Folic acid plays an important role in mental and emotional health. It's required for proper brain function and aids in the production of DNA. Folic acid is an essential nutrient that's needed when the body is growing rapidly, such as in infancy, adolescence, pregnancy, and when you are doing a massive muscle pumping workout!

Vitamin B9 is used along with Vitamin B6 and B12 and several other key nutrients in the production of red blood cells.

A deficiency in folic acid can cause numerous health problems from poor growth, gingivitis, loss of appetite, shortness of breath, diarrhea, irritability, forgetfulness and mental sluggishness.

Getting adequate folic acid in the diet has been shown to protect against the development of certain forms of cancer. The research is unclear on exactly how it may help prevent cancer, but some scientists think that folic acid keeps DNA healthy and this may prevent mutations which can eventually lead to cancer. Now this doesn't mean that simply getting enough folic acid will prevent cancer, but it's certainly a step in the right direction.

The best dietary sources of vitamin B9 are: dark leafy greens such as spinach, collard greens, turnip greens, mustard greens, and romaine lettuce. Other foods high in folic acid include beef liver, brewer's yeast, asparagus, broccoli, brussel sprouts, beans, peas, lentils, and avocados. Citrus fruits like papaya, oranges, grapefruit, strawberries, and raspberries. In North America a lot of cereals, breads, and pastas are fortified with B vitamins like folic acid.

Vitamin B12 (Cobalamin)

– recommended intake 10 mcg/day

Vitamin B12, also known as cobalamin, is one of the B vitamins that your body needs to convert food into energy. Vitamin B12 is an especially important vitamin for maintaining healthy nerve cells. It is vital in the production of DNA and RNA, which is the genetic material that's used in the development and function of all living organisms.

Vitamin B12 works with vitamin B9 to help make red blood cells and produce S-adenosylmethionine (SAME), a compound involved in immune function and mood.

It's rare for young people to be deficient in vitamin B12, but it's not uncommon for older people to be mildly deficient. Vegetarians are especially at risk of developing a vitamin B12 deficiency because cobalamin is only found in animal products. However, even people who eat meat can develop a vitamin B12 deficiency due to poor absorption in the stomach.

Low levels of B12 can cause a range of symptoms including fatigue, shortness of breath, diarrhea, nervousness, numbness, or tingling sensation in the fingers and toes, loss of balance, confusion, memory loss, and moodiness. Severe deficiency of B12 causes nerve damage, which can lead to nervous breakdown and depression.

**Vitamin B12 is only found in animal foods.

The best dietary sources of vitamin B12 are: red meat like beef and pork. It's particularly high in organ meats such as liver and kidney. Other good sources include: fish, seafood, dairy products, and eggs. Algae products like spirulina and chlorella also contain vitamin B12.

Note: if you are a vegan you really should supplement your diet with a Vitamin B12 supplement or you'll risk developing a deficiency as mentioned above.

In nature animals that live on a plant based diet can get adequate vitamin B12 through the natural bacteria that grows on the plants they eat and in the water they drink. In addition to that animals are eating unwashed plants that have traces of soil and insects, which also provides vitamin B12 in their diet.

However, in today's sterile society where our vegetables are all washed clean of soil, insects, and bacteria a purely plant based diet doesn't contain the amount of vitamin B12 that's needed for optimal health. So make sure to take a daily Vitamin B-complex supplement that contains adequate amounts of B12 in order to meet your body's needs.

Vitamin C (ascorbic acid)

– recommended intake 3000 mg/day

Vitamin C, also known as ascorbic acid, is needed by the body for growth and recovery. It helps the body make collagen, an important protein used to make skin, cartilage, tendons, ligaments, and blood vessels. Vitamin C is required for healing wounds, and for repairing and maintaining bones and teeth.

Vitamin C is a water-soluble vitamin, meaning that your body doesn't store it for long periods of time. You need to get vitamin C daily either from food and / or supplements. It's rare to have a serious deficiency in vitamin C today in modern times. However, it was serious problem in the past when fresh fruits and vegetables were not always available.

Vitamin C is an antioxidant which can block some of the damage caused by free radicals. The build-up of free radicals over time may contribute to the aging process and the development of health conditions such as cancer, heart disease, and arthritis. Vitamin C is essential for the body to make collagen, which is a part of normal cartilage. Consuming enough vitamin C in your diet will help to keep your joints healthy.

Low levels of vitamin C have been associated with a number of conditions, including high blood pressure, gallbladder disease, stroke, some cancers, and atherosclerosis, the build-up plaque in blood vessels that can lead to heart attack and stroke. Getting enough vitamin C from your diet may help reduce the risk of developing these conditions.

Vitamin C has also been used in the prevention/treatment of the common cold. While some of the research on this is controversial, there have been studies on people living in extreme circumstances, including soldiers during sub-arctic excursions, skiers, and marathon runners, who have found a significant reduction in the risk of developing a cold by approximately 50% with vitamin C supplementation. This is a huge benefit to athletes and fitness enthusiasts because something as simple as a cold or flu can set you back in your training progress.

There is also some research showing that supplementing with vitamin C can help speed up your recovery and help minimize muscle soreness. This is because supplementing vitamin C helps to suppress your body's release of cortisone. Which is a stress hormone that is released whenever you are under stress. Cortisone decreases your testosterone levels and throws your body into a catabolic state (*i.e. breaking down muscle tissue*).

The best dietary sources of vitamin C are: oranges, grapefruit, lemons, limes, watermelon, papaya, cantaloupe, strawberries, kiwi, mango, broccoli, tomatoes, brussel sprouts, cauliflower, cabbage, leafy greens, peppers, tomatoes, potatoes, squash, raspberries, blueberries, cranberries, and pineapple.

Vitamin D

– recommended intake 2000 IU/day

Vitamin D is a fat-soluble vitamin that plays a role in many important body functions. It is best known for working with calcium in your body to help build and maintain strong bones. But there is more to Vitamin D than just bone health because it's really a group of fat soluble prohormones called secosteroids. Thus, unlike most other vitamins, vitamin D is really a steroid hormone that the body uses to manufacture calcitrol (1,25-Dihydroxycholecalciferol), which is the active form of vitamin D in our bodies.

Research has shown that vitamin D is crucial for many functions in the body. As a measure of just how important it is; scientists estimate that approximately 2,000 different genes are affected by vitamin D.

Your body can make vitamin D it when your skin is exposed to sunlight. However, to make enough, you need direct midday summer sunlight on a large portion of your body for at least 15 minutes a day. For people who live in Northern climates this is impossible to do simply because it's too cold to suntan. But even for people who live in warm sunny climates this is becoming increasingly difficult to do because most of us work indoors during the day and commute to and from work via car or public transportation. So even though the sun maybe shining, most people are not getting much direct sun exposure. This is causing a vitamin D deficiency as a worldwide epidemic. Some experts believe that up to 3 out of every 4 people are deficient in vitamin D, which is generally defined as having blood levels of less than 30 ng/mL.

Vitamin D also impacts exercise performance by increasing the size and number of Type II (fast twitch) muscle fibers. It is well known that physical and athletic performance is seasonal in that it follows natural levels of vitamin D, peaking during the summer months and declining during the fall and winter months.

Supplementing Vitamin D may improve athletic performance in deficient athletes. Peak athletic performance generally occurs when levels approach those obtained by natural, full-body, summer sun exposure, which is at least 50 ng/mL and these levels may also help protect athletes from several acute and chronic medical conditions.

The best dietary sources of Vitamin D are: fatty fish such as salmon, mackerel, tuna, sardines, herring, and cod liver oil. Wholes eggs are another good source of Vitamin D. It's also found in fortified dairy products, breads, and cereals.

Vitamin E

– recommended intake 1000 mg/day (1,500 IU)

Vitamin E is a fat-soluble vitamin that is an antioxidant that helps protect the cells, tissue, and essential fatty acids from harmful destruction within the body. Vitamin E has been shown to be essential for the integrity and optimum function of the reproductive, muscular, circulatory, nervous, and immune systems.

Vitamin E is good for reducing some of the side effects of overtraining such as infection and sickness. Vitamin E is also important in helping your body make red blood cells. It also helps the body to utilize Vitamin K.

The first use of Vitamin E as a dietary supplement was conducted back in 1938 by Widen Bauer. He used wheat germ oil as a supplement on 17 premature newborn infants suffering from growth failure. 11 of the original 17 patients recovered and were able to resume normal growth rates.

People who can't absorb fat properly may develop a Vitamin E deficiency. Symptoms of serious Vitamin E deficiency include:

- Muscle weakness
- Loss of muscle mass
- Abnormal eye movements
- Vision problems
- Unsteady walking

A deficiency that lasts a long time may also cause liver and kidney problems. Although most people in developed countries aren't seriously deficient in Vitamin E, many people may have slightly low levels. And having less than optimal levels of any nutrient, vitamin, or mineral can hinder you from achieving peak athletic performance.

The best dietary sources of Vitamin E are: Wheat germ (the best source), liver, eggs, nuts (i.e. almonds, hazelnuts, and walnuts), sunflower seeds, olive oil, dark green leafy vegetables, sweet potatoes / yams, avocado, and asparagus. In North America a lot of cereals, breads, and pastas are fortified with Vitamin E.

Vitamin K

– recommended intake 125 mcg/day

Vitamin K is a fat-soluble vitamin that your body stores in fat tissue and the liver. It is best known for its role in helping blood clot properly. The “K” comes from its German name, Koagulationsvitamin.

Vitamin K also plays an important role in bone health. Your body needs vitamin K to use calcium to build bone. People who have higher levels of vitamin K have greater bone density, while low levels of vitamin K have been found in those with osteoporosis.

There is increasing evidence that vitamin K improves bone health and reduces risk of bone fractures, particularly in postmenopausal women who are at risk for osteoporosis. In addition, studies of male and female athletes have also found that vitamin K helps with bone health.

It is rare to have a serious vitamin K deficiency because in addition to being found in leafy green foods, the bacteria in your intestines can make vitamin K. Sometimes taking antibiotics can kill the bacteria and lead to a mild deficiency, mostly in people with low levels to begin with. Vitamin K deficiency can lead to excessive bleeding, which may begin as oozing from the gums or nose.

Other things that may lead to vitamin K deficiency include health problems that can prevent your body from absorbing vitamin K, such as:

- Gallbladder disease, cystic fibrosis, celiac disease, Crohn’s disease, and liver disease.
- Taking blood-thinner medication
- Long-term hemodialysis
- Serious burns

In the U.S., Canada, Great Britain, and many other countries, all newborns receive Vitamin K injections to prevent the possibility of bleeding, particularly in the brain. Babies are born without any bacteria in their intestines and do not get enough Vitamin K from breast milk to tide them over until their bodies are able to make it.

The best dietary sources of Vitamin K are: Beef liver, green tea, turnip greens, broccoli, kale, spinach, cabbage, asparagus, and dark green lettuce. Chlorophyll is the substance in plants that gives them their green color and provides Vitamin K.

Note: freezing foods may destroy vitamin K, but heating food does not affect it.

Minerals...

Calcium

– recommended intake 1500 mg/day

Calcium is the most abundant mineral in your body. It is essential for the development and maintenance of strong bones and teeth, and that’s where about 99% of the body’s calcium is found.

Calcium also helps the heart, nerves, muscles, and other body systems work properly. It is probably best known for helping prevent osteoporosis. In addition to bone health, adequate calcium intake can help aid with fat loss and keeping your body in an alkaline state.

Your body needs several other nutrients in order for calcium to be absorbed and used properly, including magnesium, phosphorous, and especially vitamins D and K.

The best way to get calcium is through food. Many foods are fortified with calcium, but some people may still need to take calcium supplements to get enough. It is especially important for children to get enough calcium in their diet as they are growing and forming bone, and for older people as they start to lose bone mass.

Some studies have shown that calcium competes for absorption with a number of other minerals. So to be on the safe side it’s recommended that if you take a calcium supplement to take it separately from your other vitamin / mineral supplements or any medications that you maybe taking to ensure optimal absorption.

Most people think that the best way to meet their calcium needs is through milk. But few people are aware that dark leafy green vegetables are another fantastic source of calcium. For example, 1 cup of milk has 275 mg of calcium. A cup of collard greens has 266 mg of calcium. So make sure you eat your veggies because they are loaded with essential vitamins and minerals.

The best dietary sources of calcium are: Dairy products such as milk, cheese, and yogurt. Other good sources of calcium include: blackstrap molasses, almonds, brewer’s yeast, bok choy, Brazil nuts, broccoli, cabbage, dried figs, kelp, dark leafy greens, hazelnuts, oysters, sardines, and canned salmon. Foods that are fortified with calcium, such as juices, soy milk, rice milk, tofu and cereals, are also good sources of this mineral.

Chromium

– recommended intake 100 mcg/day

Chromium is an essential mineral that helps the body use insulin to regulate blood sugar levels. Insulin is a storage hormone that your body uses to convert sugar, starches, and other food into energy.

Chromium has been used as a supplement to help people with diabetes lower blood sugar levels. People with diabetes either do not make enough insulin or cannot properly use the insulin that their bodies make. As a result, glucose or sugar builds up in the bloodstream.

As many as 90% of American diets are low in chromium, but it's rare to be truly deficient in chromium. The people who are most likely to be deficient in chromium are elderly people, athletes who do a lot of strenuous exercise, people who eat a lot of processed and sugary foods, and pregnant women.

Low chromium levels can increase blood sugar, cholesterol, and triglycerides (*a type of fat in the blood that's formed from glycerol and three fatty acids.*) This increases the risk for a number of conditions, such as diabetes and heart disease.

The best dietary sources of chromium are: Broccoli and other cruciferous vegetables contain the highest amount of dietary chromium. But there are many other foods that contain smaller amounts of chromium such as: beef, liver, eggs, chicken, oysters, wheat germ, brown rice, green peppers, apples, bananas, spinach and other green leafy vegetables. Some spices, such as black pepper and thyme are also rich in chromium.

Note On Chromium Picolinate Supplements:

There has been a lot of marketing hype promoting chromium picolinate as a potent fat burning supplement. The idea is that adding more chromium to your diet will boost the metabolism, increase insulin sensitivity and thus help increase fat loss.

However, unless you are deficient in chromium to begin with increasing your chromium intake through supplements is not going to help, because your body is already metabolizing the food you consume just fine.

Chromium deficiencies are rare, despite what the advertisements may try to tell you. Unless of course your diet is comprised mostly of processed and refined foods, which is a whole other problem in itself and would most likely be the root cause of being overweight to begin with.

My advice is to focus on consuming the natural foods as outlined above and then take a quality multi-vitamin / mineral supplement to ensure you are meeting your vitamin / mineral needs. I would NOT recommend taking a pure chromium supplement unless directed to do so by your doctor.

Copper

– recommended intake 3 mg/day

Copper is a mineral that helps your body make red blood cells and keeps nerve cells and your immune system healthy. It also helps form collagen, a key part of bones and connective tissue. Copper also acts as an antioxidant to get rid of free radicals that can damage cells and DNA. Copper is used to help the body absorb iron and to produce energy.

Your body doesn't need much copper, and while it's rare to be truly deficient in copper, many people fall short of the optimal amounts needed for peak physical performance. Signs of possible copper deficiency include anemia, low body temperature, bone fractures and osteoporosis, low white blood cell count, irregular heartbeat, loss of pigment from the skin, and thyroid problems.

People who have anemia should consider taking copper supplements because copper works together with iron to form red blood cells. In addition to that there is some evidence that shows taking copper supplements along with zinc, manganese, and calcium might help postmenopausal women slow down the rate of bone loss.

People who take high amounts of zinc, iron, or vitamin C may need more copper, but a good multi-vitamin / mineral supplement along with a balanced diet should cover your needs. Before taking a pure copper supplement ask your doctor to see if it's needed, because consuming too much copper can be dangerous. Signs of too much copper include: nausea, vomiting, stomach pain, headache, dizziness, weakness, diarrhea, and a metallic taste in the mouth.

The best dietary sources of copper are: Seafood, such as oysters, squid, lobster, mussels, crab, and clams. Organ meats, such as beef liver, kidneys, and heart. Nuts such as cashews, filberts, macadamia nuts, pecans, almonds, peanuts, and pistachios. Legumes, such as soybeans, lentils, and navy beans. Copper is found in many enriched cereals and is also found in mushrooms, tomatoes, potatoes, sweet potatoes, bananas, grapes, and avocados.

Iodine

– recommended intake 150 mcg/day

Iodine is a trace mineral that the body needs to make thyroid hormones, which are responsible for regulation of the metabolism. In your body, about 75% of iodine is found in the thyroid gland in the neck. The rest is distributed throughout the rest of the body.

In your entire lifetime you will need less than a teaspoon of iodine to ensure good health, however, your body cannot store iodine so you have to eat a little bit every day. You only need 150 micrograms (or 20,000th of a teaspoon) to meet your daily requirement.

If your body doesn't get enough iodine, you can develop hypothyroidism (low thyroid hormone levels). Symptoms include feeling sluggish and tired, gaining weight (i.e. bodyfat), dry skin, and sensitivity to temperature changes. Thyroid deficiencies happen more often in women than in men, and they are more common in pregnant women and older children. The classic sign of iodine deficiency is an enlarged thyroid gland. Some people with hypothyroidism develop an extremely large thyroid, known as goiter.

Iodine is added to table salt. However, with more health conscious people purposely avoiding table salt, or opting for natural sea salt instead (which does not have any added iodine) this limits the amount of iodine consumed.

On the flip side, consuming too much iodine can also increase the risk for other thyroid hormone related diseases, such as Hashimoto's disease, Graves' disease, certain thyroid cancers, and thyrotoxicosis (a dangerous condition involving a large amount of thyroid hormones in the bloodstream). For these reasons, you should not take iodine supplements without first talking to your doctor. And instead try to meet your iodine needs through the dietary sources listed below.

The best dietary sources of iodine are: Iodized salt is the main source of iodine in the diet. Plant and animal sea life absorb iodine from the water and are great sources of iodine. Some good sources include: shellfish, white deepwater fish, and brown seaweed kelp. Garlic, lima beans, sesame seeds, soybeans, spinach, Swiss chard, summer squash, and turnip greens are also good sources of iodine. In addition to that baked potatoes with the skin is another rich source of iodine.

Iron

– recommended intake 30 mg/day

In addition to “*Pumping Iron*” you also need to consume it. And chewing on the end of a barbell won’t cut it. Iron is an essential mineral that is required for human life. It is involved in producing ATP (adenosine triphosphate), which is the energy system the body uses for strength and power.

Much of the iron in the body is found in red blood cells and carries oxygen to every cell in the body. Extra iron is stored in the liver, bone marrow, spleen, and muscles.

Not having enough iron can lead to anemia. The most common symptoms of anemia are weakness and fatigue – one reason people who are iron deficient get tired easily is because their cells don’t get enough oxygen. Women during their reproductive years tend to be at the highest risk of iron deficiency from regular blood loss through menstruation. Low iron levels can also be caused by poor diet, or by not absorbing enough dietary iron.

On the other hand, consuming too much iron can lead to a condition known as hemochromatosis, which can cause diabetes, liver damage, and discoloration of the skin. Unlike other nutrients, excess iron cannot be excreted by the human body. For that reason, you should NOT take iron supplements on your own – always check with your doctor first to see if you need extra iron.

According to the World Health Organization (WHO), iron deficiency is the number one nutritional disorder in the world. Up to 80% of the world’s population may be iron deficient, and 30% may have iron deficiency anemia.

The best dietary sources of iron:

There are 2 types of iron you can get from food: heme and non heme. Heme iron is more easily absorbed by the body. The best dietary sources of heme iron are liver and other organ meats, red meat, poultry, eggs, fish, and shellfish.

Sources of non heme iron include dried beans and peas, legumes, nuts and seeds, whole grains, dark molasses, and green leafy vegetables. Some nutrients help the body better absorb this kind of iron. For example, vitamin C helps the absorption of this type of iron while calcium (including all dairy products), bran, tea, and unprocessed whole grain products block its absorption.

In North America grain products, such as breads and cereals, are fortified with iron to help increase amount in our diet.

Magnesium

– recommended intake 500 mg/day

Magnesium is needed by virtually every organ in the body; especially the heart, skeletal muscles, and kidneys. It also contributes to the makeup of teeth and bones. Magnesium contributes to energy production and helps regulate calcium levels as well as copper, zinc, potassium, vitamin D, and other important nutrients in the body.

You can get magnesium from many foods. However, most people don't get as much magnesium as they should from their diet. Although you may not get enough magnesium from diet alone, it's rare to be truly deficient in magnesium.

Certain medical conditions can upset the body's magnesium balance. For example, an intestinal virus that causes vomiting or diarrhea can cause temporary magnesium deficiencies. Some gastrointestinal diseases (such as irritable bowel syndrome or IBS and ulcerative colitis), diabetes, pancreatitis, hyperthyroidism (high thyroid hormone levels), kidney disease, and taking diuretics can lead to deficiencies. Too much coffee, soda, salt, or alcohol, as well as heavy menstrual periods, excessive sweating, and prolonged stress can also lower magnesium levels.

Symptoms of magnesium deficiency may include agitation and anxiety, restless leg syndrome (RLS), sleep disorders, irritability, nausea and vomiting, abnormal heart rhythms, low blood pressure, confusion, muscle spasm and weakness, hyperventilation, insomnia, poor nail growth, and even seizures.

A few studies suggest that taking magnesium supplements may help prevent migraine headaches. In addition, a few clinical studies suggest that magnesium supplements may shorten the duration of a migraine and reduce the amount of medication needed. People who have migraine headaches tend to have lower levels of magnesium compared to those with tension headaches or no headaches at all.

The best dietary sources of magnesium are: The highest sources of dietary magnesium are nuts and seeds such as: sesame seeds, pumpkin seeds, Brazil nuts, almonds, cashews, pine nuts, peanuts, pecans, and walnuts. Other good sources include: Legumes, whole grains, green leafy vegetables, wheat bran, whole wheat flour, oat flour, beet greens, spinach, shredded wheat, bran cereals, oatmeal, bananas, and baked potatoes (with skin), dark chocolate, and cocoa powder. Many herbs, spices, and seaweeds supply magnesium, such as agar seaweed, coriander, dill weed, celery seed, sage, dried mustard, basil, cocoa powder, fennel seed, savory, cumin seed, tarragon, marjoram, poppy seed.

Manganese

– recommended intake 5 mg/day

Manganese is a trace mineral that is found mostly in bones, the liver, kidneys, and pancreas. Manganese helps the body form connective tissue, bones, blood clotting factors, and sex hormones. It also plays a role in fat and carbohydrate metabolism, calcium absorption, blood sugar regulation, and it helps your body synthesize fatty acids and cholesterol. Manganese is necessary for normal brain and nerve function.

Manganese is a component of the antioxidant enzyme Superoxide Dismutase (SOD), which helps fight free radicals. Free radicals occur naturally in the body but can damage cell membranes and DNA. They may play a role in aging, as well as the development of a number of health conditions, including heart disease and cancer. Antioxidants, such as SOD, can help neutralize free radicals and reduce or even help prevent some of the damage they cause.

Low levels of manganese in the body can contribute to infertility, bone malformation, weakness, and seizures. Manganese is easily obtained through diet so supplementation is generally not needed. You should take dietary supplements only under the supervision of a knowledgeable health care provider. The amount of manganese ingested in 1 day (from foods or supplements) should not exceed 10 milligrams due to the potential for nervous system damage from high doses.

The best dietary sources of manganese are: nuts and seeds, wheat germ, whole grains, mustard greens, kale, chard, raspberries, pineapple, strawberries, romaine lettuce, collard greens, spinach, garlic, summer squash, grapes, turnip greens, eggplant, brown rice, blackstrap molasses, maple syrup, cloves, cinnamon, thyme, black pepper, and turmeric.

Phosphorous

– recommended intake 1000 mg/day

Next to calcium, phosphorus is the most abundant mineral in the body. These 2 important nutrients work closely together to build strong bones and teeth. About 85% of phosphorus in the body can be found in bones and teeth, but it is also present in cells and tissues throughout the body.

Phosphorus helps filter out waste in the kidneys and plays an essential role in how the body stores and uses energy. It also helps reduce muscle pain after a hard workout. Phosphorus is needed for the growth, maintenance, and repair of all tissues and cells, and to produce the genetic building blocks, DNA and RNA. Phosphorus is also needed to help balance and use other vitamins and minerals, including vitamin D, iodine, magnesium, and zinc.

Most people get plenty of phosphorus in their diets. The mineral is found in milk, grains, and protein rich foods. Some health conditions such as diabetes, starvation, and alcoholism can cause levels of phosphorus in the body to fall. The same is true of conditions that make it hard for people to absorb nutrients, such as Crohn's disease and celiac disease. Some medications can cause phosphorus levels to drop, including some antacids and diuretics (water pills).

Symptoms of phosphorus deficiency include loss of appetite, anxiety, bone pain, fragile bones, stiff joints, fatigue, irregular breathing, irritability, numbness, weakness, and weight change. In children, decreased growth and poor bone and tooth development may occur.

Having too much phosphorus in the body is actually more common and more worrisome than having too little and for this reason phosphorus supplements are usually not needed (unless prescribed by your doctor professional). Too much phosphorus is generally caused by kidney disease or by consuming too much dietary phosphorus and not enough dietary calcium. As the amount of phosphorus you eat rises, so does the need for calcium. The delicate balance between calcium and phosphorus is necessary for proper bone density and prevention of osteoporosis.

The best dietary sources of phosphorus are: Protein rich foods, such as meat, poultry, fish, eggs, dairy products, whey protein, seeds, nuts, legumes, mushrooms, dark chocolate, and whole grains.

Selenium

– recommended intake 150 mcg/day

Selenium is an essential mineral found in small amounts in the body. It works as an antioxidant to help fight damaging particles in the body known as free radicals. Free radicals can damage cell membranes and DNA, and may contribute to aging and a number of conditions, including heart disease and cancer. Antioxidants, such as selenium, can neutralize free radicals and help reduce some of the damage they cause.

Selenium plays a role in thyroid function and your immune system. It can help build up white blood cells, which boosts the body's ability to fight illness and infection. People with a number of conditions, ranging from rheumatoid arthritis to certain types of cancer, often have low levels of selenium.

One study suggested that selenium supplements might improve male fertility in men who had low levels of selenium. Selenium and other antioxidants play an essential role in how your body makes certain proteins found in sperm.

Taken at normal doses, selenium does not usually have side effects. An overdose of selenium may cause bad breath, fever, nausea, and liver, kidney and heart problems. The safe upper limit for selenium is 400 micrograms a day in adults. Anything above that is considered an overdose.

The best dietary sources of selenium are: Brazil nuts are the best source of selenium, simply eating a few Brazil nuts each day would easily meet your dietary needs for selenium. Other good sources include fish, like tuna, oysters, cod, red snapper, and herring. Red meat and poultry like beef, chicken, and pork. Eggs, whole grains, oat bran, wheat germ, sun flower seeds, chia seeds, sesame seeds, and peanut butter are also good sources of selenium.

Zinc

– recommended intake 25 mg/day

Zinc is an essential trace mineral, it is found in every cell of the body. Zinc has been used since ancient times to help heal wounds and it plays an important role in the immune system, reproduction, growth, taste, vision, and smell, blood clotting, and proper insulin, testosterone, and thyroid function.

Zinc also has antioxidant properties, meaning it helps protect cells in the body from damage caused by free radicals. Free radicals may contribute to the aging process, as well as the development of many health problems, including heart disease and cancer. Antioxidants can neutralize free radicals and may reduce or even help prevent some of the damage they cause.

In recent years zinc has become popular as a bodybuilding supplement because of the key role it plays in testosterone production. When you don't get enough zinc the body produces less Luteinizing Hormone (LH) from the pituitary gland. Luteinizing Hormone is what stimulates the testicles to produce testosterone, which is then released into your body.

It's rare for people in industrialized countries to be seriously deficient in zinc. But it's common to have less than optimal levels of zinc, especially for vegetarians. This is something you want to avoid as a bodybuilder since optimal zinc intake is critical for testosterone production.

If you do use zinc supplements to meet your daily intake of zinc, do not take them at the same time as calcium supplements or with foods high in calcium (i.e. dairy products). The reason for this is that they compete for absorption in the body and calcium is the more "essential" mineral and will get absorbed at the expense of zinc.

Even though zinc is an important mineral, more is NOT better. High doses of zinc can cause dizziness, headache, drowsiness, increased sweating, loss of muscle coordination, alcohol intolerance, hallucinations, and anemia.

Very high doses of zinc may actually weaken immune function. High doses of zinc may also lower HDL ("good") cholesterol and raise LDL ("bad") cholesterol. So stick to the 25 mg per day guideline.

The best dietary sources of zinc are: Oysters (best source), red meats, poultry, shrimp, crab, and other shellfish. Other good sources of zinc include dark chocolate, legumes (especially lima beans, black-eyed peas, pinto beans, soybeans, peanuts), whole grains, wheat germ, brewer's yeast, cashews, almonds, walnuts, pecans, peanuts, hazelnuts, pumpkin seeds, and flaxseeds.

Electrolytes...

Potassium

– recommended intake 5000 mg/day

Potassium is an electrolyte, which is a substance that conducts electricity in the body. Potassium is crucial to heart function and plays a key role in skeletal and smooth muscle contractions. It is needed for the proper function of nerve firing in response to stimuli, which makes it critical for normal muscular function.

Potassium has been shown to lower blood pressure and reduces the risk of stroke. In addition to that potassium helps prevent the formation of kidney stones. Many people mistakenly believe that kidney stones are caused from “too much” calcium in the diet. But more often than not they are generally caused from lack of potassium. Potassium attaches to calcium in the urine, preventing the formation of mineral crystals that can develop into kidney stones. Potassium also prevents the urine from becoming too acidic. This helps prevent uric acid or cystine kidney stones from forming.

Potassium may help reduce muscle soreness that results from training. Any deficiency in potassium levels may result in decreased strength, and the early onset of exercise induced fatigue. Potassium helps to regulate water balance and is also needed for the synthesis of dietary proteins. Signs of a potassium deficiency include muscle cramps, weak immune system, lack of energy, and a susceptibility to overtraining.

Consuming too much potassium is rare in healthy individuals because any excess potassium is normally excreted from the body through urine, sweat, etc. However problems may arise in those with kidney problems. If excess potassium cannot be excreted, conditions such as heart problems and in extreme cases even death. Potassium toxicity is usually only a problem if one consumes potassium supplements in excess and with older people who are generally less physically active and often drink less water than they should which poses a greater risk of too much potassium building up in their system.

The best dietary sources of potassium are: All fruits and vegetables. Especially foods such as; greens, spinach, potatoes and sweet potatoes with the skin, squash, celery, avocado, bananas, oranges, cantaloupe, apricots, and tomatoes. Meat, poultry, and fish are good sources of potassium. Especially beef, lamb, chicken, salmon, and tuna. Nuts such as almonds and peanuts are high in potassium as well. Dairy products are also good sources of potassium. Most will people get all of the potassium they need from a healthy diet that includes a lot of natural unprocessed foods.

Sodium

– Recommended intake 5000+ mg/day

Sodium is an electrolyte that is needed for muscle contractions, nerve transmissions, maintaining pH balance, and hydration. Sodium works along with potassium to regulate the fluid levels in the cells. Sodium pumps fluid into the cells while potassium carries by-products out. Sodium is more critical for health and athletic performance than most people realize.

The best article I've ever read about the value of sodium was written by Scott Abel called: [SODIUM: The unsung Hero to Performance and Looking Lean](#). I highly recommend that you take the time to read that article because it contains some eye opening information about sodium. But I'll summarize some of the key points here in this section. The bottom line, sodium is not the "bad guy" that the media has made it out to be!

Truth be told, the anti-sodium campaign began as a commercial tactic to sell different processed and packaged foods under the guise of being "healthier". Unfortunately, manufacturers care not so much about accuracy in advertising as much as they do about what works for making money. As soon as the low-sodium advertisements were shown to increase sales, food companies followed suit to the point where, by default, consumers started to believe that low-sodium was "good" and salt in general was "bad". People failed to see that they had been internalizing advertising and media hype, NOT actual scientific information.

When you reduce your sodium this translates into lower blood volume, and over time this is disastrous to an athlete. Even in healthy people, low blood volume produces numerous problems. Studies at the University of Bonn concluded that a low-sodium diet (and the resulting lower blood volume) was more dangerous to one's health than hypertension itself – the main reason people are put on low-sodium diets to begin with.

To put this in perspective, in the previous section we discussed all the health benefits of potassium. But did you know that it takes three molecules of sodium to get one molecule of potassium inside the cell. Potassium cannot enter the cell without sodium. Sodium acts to transport the all-important potassium into the cells.

If you have been following the anti-sodium campaign and purposely trying to avoid sodium then the quickest ways to enhance your athletic performance is to simply switch to a higher sodium diet. Once your body adjusts to a higher sodium intake you'll instantly notice that your physique looks leaner and harder, you'll get better muscle pumps, and you'll feel stronger in the gym.

The best dietary sources of sodium are: Table salt, sea salt, (salt is 40% sodium by weight), condiments such as ketchup, salad dressing, soy sauce, salsa, etc., pickled foods, dill pickles, olives, etc. Bread, crackers, and most processed foods, soups, and canned foods, etc. are made with salt.

Conclusion...

There is a lot more to proper nutrition than just calories, protein, carbs, and fat. The micronutrients that you consume are vitally important to your overall health and athletic performance.

This list is far from complete. Researchers are constantly discovering new information about food and nutrition. But the common theme to healthy well-balanced nutrition always comes back to eating natural, unprocessed, whole foods.

When you eat “real food” you are getting the natural nutrition that Mother Nature intended for us to eat – with all the protein, carbs, fat, vitamins, minerals, electrolytes, enzymes, phytochemicals and stuff that we’re not even aware of yet.

Adding supplements to your diet can help a bit, but it doesn’t replace good old fashion natural nutrition. Think of supplements as an insurance policy that will help fill in some of the gaps that maybe left in your diet, but don’t rely on them for your basic nutritional needs.

You’ve heard it a thousand times, but it needs repeating... Eat a well-balanced diet that includes a wide variety of unprocessed foods.

When you plan out your meals, make sure to include each of the following:

- A serving of protein (i.e. meat, chicken, fish, eggs, etc.)
- A serving of complex carbohydrates (i.e. potatoes, rice, beans, whole grains, etc.)
- A serving of vegetables (i.e. broccoli, spinach, cucumber, peas, carrots, etc.)
- A serving of healthy fat (i.e. avocado, nuts, seeds, olives, flax oil, fish oil, etc.)

By prioritizing these foods with each of your meals you’ll provide your body with the quality nutrition it needs. In addition to that it will naturally decrease your desire for eating unhealthy processed foods because you won’t be as hungry. Healthy eating is a lot easier when you focus on filling up on the good stuff, rather than simply trying to cut out the bad stuff.

The lacking area for most people is vegetables. I personally strive to eat green vegetables with every single meal. And for those times when I can’t eat green vegetables, I’ll have a **Greens Drink** instead.

Green drinks contain the extracts of several “Super Foods” that are very nutrient dense such as: wheat grass, sprouted grains, berries, and green vegetables. A single serving of a high quality Greens Drink has the same nutritional value as eating 10 servings of vegetables and fruit!

Studies show that phytonutrients, chlorophyll, polyphenols, carotenoids and other antioxidants found in greens help to protect the body from free radical damage. Regularly consuming green drinks will help to alkalize your body by neutralizing the excess acids that a modern diet commonly includes. When you start having green drinks you'll notice an increase in energy, and they will also help reduce your food cravings and urges to snack between meals.

Green drinks can help ward off illness, reduce the amount of infections and dramatically reduce the amount of yeasts, and toxins in the body. There are numerous benefits to taking green drinks ranging from those mentioned above, to aiding with the treatment of cancers, cardiovascular diseases and mental illnesses.

In my opinion Green Drinks are one of the best supplements for your overall health and fitness. They are right up there in importance with protein powder. I consider them a "must have" supplement for your overall health and wellbeing.

As for which brand of Greens Drink to get, you have a lot of options available. And in a lot of cases you do get what you pay for. Some of the bargain brand supplement companies out there want to piggy back on the popularity of Greens. So, they will make low quality green products that does contain some Super Food Extracts, but not in the amounts needed to provide you with the benefits that are listed above. You'll need to watch out for that.

In my opinion the gold standard of Greens supplements is Athletic Greens Powder. This is the most nutritionally dense and best tasting greens product that I've ever used. And I have tried a lot of different greens supplements.

When you go shopping around for Greens, I'd suggest that you refer to the label of the Athletic Greens Powder and use that as your benchmark for quality and compare product labels accordingly.

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Lee Hayward's Total Fitness Bodybuilding has been online and helping people build better bodies since 1999. Those who follow what I teach get great results. But those who take the NEXT step and sign up for personalized coaching with me – well, they're the people getting extraordinary results!

Not just because they are using the very best “cutting-edge” training and nutritional strategies, but they know that there is a helping hand, day-in and day-out to guide them along the way. They know that one-on-one support, positive encouragement, and expert guidance from an experienced coach is crucial to their success. As the saying goes, *“No one succeeds alone.”*

When you sign up for a customized fitness and nutrition coaching program I'm literally going to guide you through the process of reaching your personal bodybuilding and fitness goals... I'll show you EXACTLY what you need to do in order to build muscle & lose fat so you feel confident in your skin and know that you look your best.



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