

Chapter 5

Exhaust Natural Ways of Elevating Testosterone First

Testosterone Restoration Therapy

A 2010 study concluded that besides aging alone that lifestyle and different comorbidities were associated with total testosterone decline suggesting that age related total testosterone decline could be partially prevented by the management of risk factors and adjusting lifestyle related health behaviors.

Testosterone in the major sex hormone in the human body, it's production starts in the brain and ends in the testes in men and the ovaries in women. The adrenal glands located on top of the kidneys also produce testosterone in limited amounts. The brain and the testes work in concert to keep production in the normal range. When testosterone levels are low the brain signals the testes to make more and when there is enough testosterone, the byproducts of testosterone production signal the brain to stop. The regulation of this production referred to as the Hypothalamic-Pituitary-Testicular Axis can be disrupted at any point causing either primary or secondary hypogonadism. Provided you have an intact H-P-T axis and sufficient Leydig cell function in the testes to produce testosterone in the first place these twelve testosterone restoration therapy tips can help boost cellular communication and your body's natural production of testosterone.

1. Eat Healthy Fats

The consumption of healthy fats encourages and is necessary for the production of adequate testosterone while a low fat diet will reduce testosterone levels. Healthy fat is so important that it is used by all the cells in the body to construct the cellular membrane and it serves as the source material from which testosterone is made. Research has demonstrated that a diet with less than 40% fat will lead to a decrease in testosterone levels. Consume these healthy fats on a regular basis to ensure hormone production:

- Walnuts
- Almonds
- Pistachios
- Olive oil
- Flaxseed better than flax oil
- Avocado
- Green Leafy Vegetables
- Salmon, Tuna, Trout, Sardines (long chain omega-3)

If you like supplementation route instead be sure to choose long chain omega-3 fats from seafood sources, these provide a rich source of omega-3 and are also associated with decreased rate of sudden death.

Benefits of Fish Oil:

- Increased nitric oxide production
- Reduce triglyceride levels by 20-30%
- Improve cell membrane flexibility
- Improved insulin sensitivity
- Associated with increased cognitive function
- Decreased endothelial cytokine levels
- Decreased platelet activation
- Decrease inflammation
- Decrease clot formation
- Inhibition of ICAM and VCAM markers of endothelial dysfunction

Daily supplementation requires 1 gram per day, which is equal to 3 servings of fish per week. The best seafood sources are salmon, sardines, trout, shrimp, and crab. If you suffer from metabolic syndrome, arrhythmias, or wish to decrease your dementia risk than supplement with 1 gram per day. If you suffer from high triglycerides or inflammatory conditions like Rheumatoid Arthritis or Crohn's then supplement with 3 grams per day.

Keep your ratio of EPA/DHA to 60/40. EPA has greater anti-inflammatory effect and triglyceride lowering effect and also is converted to DHA. If you are taking anticoagulants, fish oil may increase your bleeding risk if you are taking greater than 2 grams per day.

2. Follow a Low Glycemic Nutrition Plan

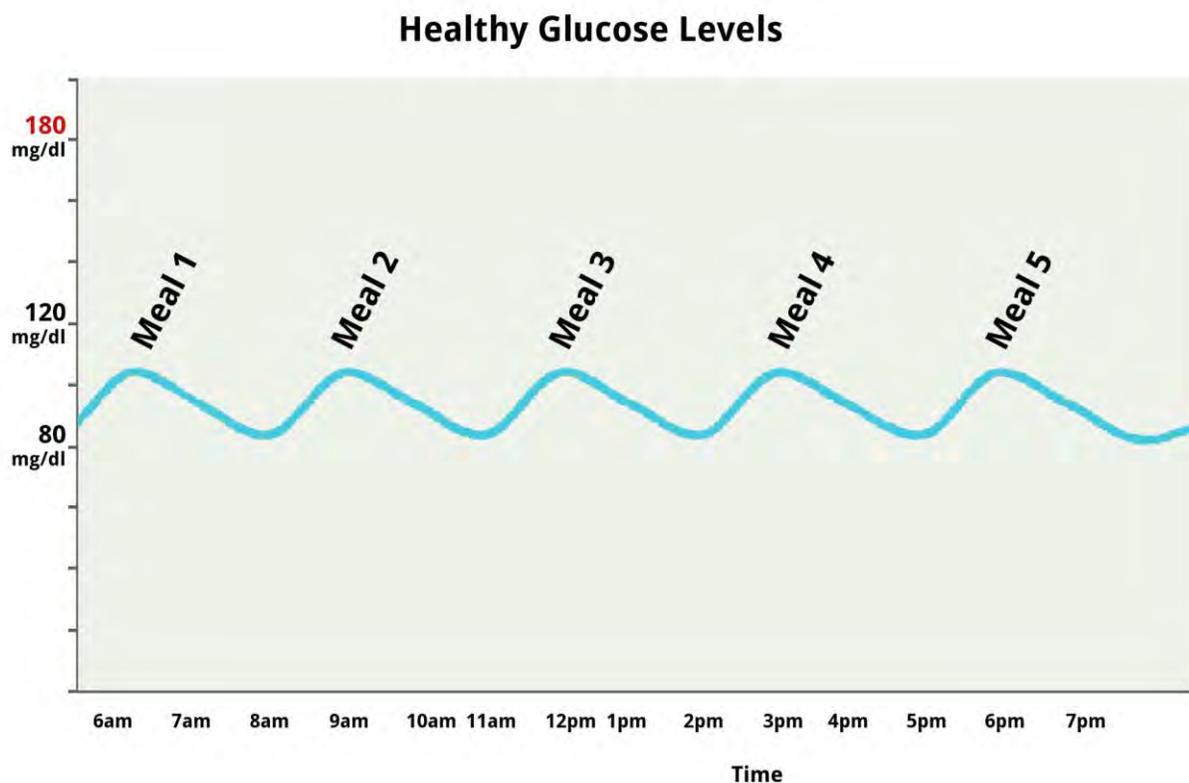
The cornerstone of all health is nutrition. Consuming foods that cause high blood sugar spikes will drop your testosterone production and the resultant high insulin levels from the high blood sugar will compete with growth hormone for the same receptor site, making it difficult to have strong, healthy, lean muscle. There are numerous benefits to following a low glycemic nutrition plan such as having high energy levels, an efficient immune system, maintaining a healthy weight, a lean and muscular profile, control over food, and potential for increased longevity.

When a low glycemic meal is consumed, blood glucose elevates much slower and consistently which allows the pancreas to moderate insulin release. Since there is less insulin circulating in the blood stream, fewer cells absorb glucose and glucose levels never fall below an ideal range. Food cravings and low energy crashes diminish once you adjust to the low glycemic nutrition plan, as the body is consistently able to utilize body fat as its primary source of energy.

Consuming balanced low glycemic meals help to maintain a consistent balance of hormone levels which then allows the body to function in an ideal environment.

Insulin Competes with Growth Hormone

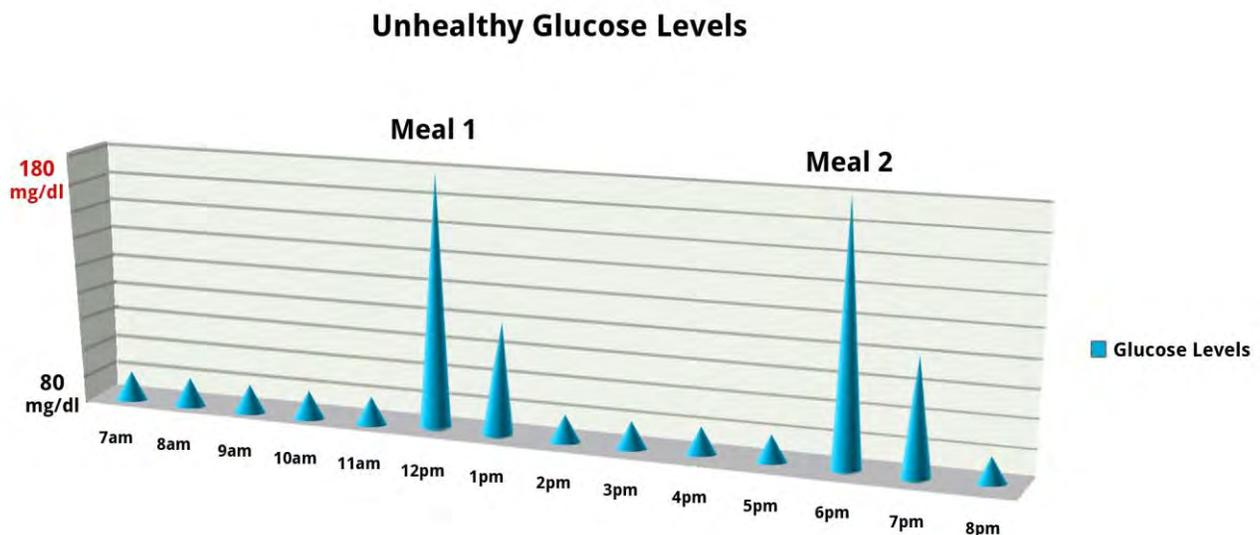
These two hormones use the same receptor site to communicate with cells and only one hormone can be “functionally” elevated at a time. Controlling your insulin levels with a low glycemic nutrition plan will allow growth hormone to be high and functional.



Healthy frequent meals equal steady state glucose and insulin levels, increased metabolism and decreased cravings. Steady state glucose and insulin levels equal increased fat utilization and decreased fat production.

The other side of the coin!

When processed carbohydrates are consumed, the body breaks down, absorbs, and then transports them thru the bloodstream in the form of blood glucose to the cells to be used as energy. However, most cells cannot absorb glucose without the presence of insulin. When blood glucose rises, so does insulin. This is a natural, physiological process that only becomes an issue when high glycemic foods are consumed on a regular basis.



High glycemic foods increase blood glucose rapidly, resulting in high insulin levels. Insulin is a “storage” hormone. It not only promotes the absorption of sugar, but, because there is already enough free energy in the bloodstream in the form of glucose, insulin inhibits cells from releasing their stores of fatty acids. Fatty acids comprise stored fat tissue. Therefore, when insulin levels are high, the body cannot utilize body fat as an energy source.

Insulin does not immediately dissipate as glucose levels fall. In the presence of insulin, cells will continually absorb glucose, causing blood levels to fall to an unhealthy level. Because the brain can only utilize glucose for energy, food cravings and low energy become typical experiences.

Effects of a high glycemic diet:

- Erratic energy levels
- Food cravings
- Fatigue
- Weight gain
- Increased abdominal fat
- Increase in cellulite
- Decreased testosterone production

3. Supplement with Vitamin D

Vitamin D, a steroid pro-hormone, is essential for the healthy development of the nucleus of the sperm cell, and helps maintain semen quality and sperm count. Vitamin D also increases levels of testosterone, which may boost libido. In one study, overweight men who were given vitamin D supplements had a significant increase in testosterone levels after one year.

When Vitamin D levels decline during the fall and winter months, so do your testosterone levels. Supplementing with Vitamin D during these months will help ensure adequate hormone production. If you live north of Florida then you are most likely vitamin D deficient. It is the most common vitamin deficiency I see on a daily basis and the effects from supplementation are profound.

Benefits of Vitamin D:

- Increases calcium absorption
- Improves bone health
- Decreases autoimmune disease rates
- Improved Blood Pressure Control
- Lower Cardiovascular disease rate
- Blocks progression of pre-cancerous cells

Vitamin D Sources:

- Cod Liver Oil
- Calcium Rich Foods
- Egg Yolk
- Sunshine exposure
- Supplementation

Which should you take Vitamin D2 or D3? Well both are converted into 25-hydroxyvitamin D, but Vitamin D3 is about 5 times more potent than Vitamin D2. Now goal of Vitamin D therapy is to reach a level of at least 40-70ng/ml and the average individual needs an intake of 2,000 IU daily to reach a blood level greater than 40 ng/ml.

4. Correct your Magnesium Deficiency

An incredibly common deficiency seen in America and a 2001-2002 NHANES study demonstrated that 57% of the population is deficient. Great sources of magnesium are almonds, green leafy vegetables and avocados! Supplementation with Magnesium glycinate 200-400mg daily will do the job. Magnesium glycinate is a chelated form of magnesium that tends to provide the highest levels of absorption and bioavailability and is typically considered ideal for those who are trying to correct a deficiency. An important note is that calcium supplementation blocks the absorption of magnesium! Current recommendations are to supplement with a 2:1 calcium/magnesium ratio, however the appropriate ratio of calcium to magnesium is 1:1. An incorrect ratio of calcium to magnesium may not only pose a risk to your bones but also to your heart. If you have too much calcium and not enough magnesium your muscles can go into spasm. So excessive amounts of calcium without the counterbalance of magnesium can lead to abnormal heart rhythms, coronary vasospasm and sudden death. If you are magnesium deficient your heart simply cannot function properly, which will affect all areas of your performance.

5. Correct your Zinc Deficiency

Next to vitamin D deficiency, zinc deficiency is incredibly common. Low levels of zinc are associated with low levels of testosterone. The mineral zinc is important for testosterone production, and supplementing your diet for as little as six weeks has been shown to cause a marked improvement in testosterone among men with low levels. Zinc also inhibits aromatase, which converts testosterone into estrogen. Zinc also plays a crucial role in pituitary function and in the cellular communication process in the H-P-T axis.

Be sure to consume these foods to help boost your T levels!

- Nuts, especially cashews
- Dark chocolate
- Spinach
- Seafood like crab, lobsters, and shrimp
- Lamb
- Raw Milk, Raw Cheese

Deficiency can also be easily corrected with a high quality daily phytomultivitamin that also contains chromium and selenium. If you decide to use a zinc supplement, stick to a dosage of around 40 mg a day, as this is the recommended adult upper limit. Taking too much zinc can interfere with your body's ability to absorb other minerals.

6. Run Sprints or High Intensity Interval Training (H.I.I.T.)

Running sprints or short bursts of intensity lasting approximately 6 seconds dramatically increase the levels of testosterone and the catecholamines: adrenaline and noradrenaline.

You might be surprised to know that exercise boosts testosterone, no matter what your age. In a new study, researchers looked at both younger and older men who did 21 weeks of intense training. They measured significant increases in lean body mass and testosterone.

A HIIT session consists of a warm up period of exercise, followed by six to ten repetitions of high intensity exercise, separated by medium intensity exercise, and ending with a period of cool down exercise. The high intensity exercise should be done at near maximum intensity, 90%. The medium exercise should be about 50% intensity. The number of repetitions and length of each depends on the exercise. The goal is to do at least six cycles, and to have the entire HIIT session last between fifteen and twenty minutes. HIIT is considered to be an excellent way to maximize a fat loss workout. HIIT increases the RMR, resting metabolic rate, for the following 24 hours. HIIT turns on your metabolic fire! Specific hormones that are released during this type of training are growth hormone and catecholamines, which contribute significantly to decreases in body fat. Catecholamines are fat destroying hormones that have been shown to liberate both intramuscular and subcutaneous fat. Steady state exercise only results in small increases in catecholamines. HIIT is a powerful stimulator of growth hormone. Growth hormone limits lipoprotein lipase, which is a fat storage enzyme,

excellent. What is another powerful stimulator of GH, getting a full night of sleep. HIIT has been extensively studied and is significantly more effective at fat reduction than steady state exercise and also increases the levels of circulating testosterone.

Exercise Pausing and Increased Fat Loss

The type and intensity of exercise you perform directly affects how adrenaline and noradrenaline are released from the adrenal glands and the nerve terminals playing a major role in fat loss - and less fat means more testosterone. This is why I'm such a fan of High Intensity Interval Training. It's short, it's fast, and it's done with great results.

Taking a closer look we see as exercise intensity goes up so does the release of adrenaline and noradrenaline. Once you cross the lactate threshold then adrenaline and noradrenaline release explode. Now after you finish a HIIT Session take a *5-minute break after your initial 20 minutes of HIIT* and rest. This is recommended because there is a large release of fatty acids into the bloodstream about 5 minutes after your HIIT training ends.

Now if we do nothing those fatty acids that were released during the 5-minute break will be *re-stored* in the fat cell and in some men, especially estrogen dominant men and women fat likes to re-store below the waist. So...that's why after your 5-minute break you get back on the treadmill and run at a slower pace about 50% effort for 10-20 minutes to utilize the free fatty acids floating in the bloodstream. Now they are gone for good and you are feeling lighter and leaner than ever and making more testosterone! This simple strategy can literally bust you through any plateau in your training yet it is one of the least utilized.

7. Lift Heavy Weight

There are numerous resistance-training programs you can follow; hypertrophy plans, strength plans, strength and endurance plans, body weight workouts, rage workouts, Fibonacci sets and more. All of these plans will cause a specific adaptation to the imposed demand. Resistance training or weight training is a potent stimulator for testosterone production. Be sure to include some form of weight training 2-3 times per week to help boost your body's natural production of testosterone. Interestingly, rest periods of 90 seconds between sets has the greatest effect on post workout testosterone and growth hormone levels.

8. Avoid Chronic Stress

It is vitally important to rest your body as well. Adequate rest promotes recuperation and recovery. Excessive training, stress, and/or inadequate amounts of sleep contribute to elevate cortisol levels, which is antagonistic to and reduces testosterone levels. Your body unfortunately will produce cortisol instead of testosterone so high exposure to stress and high levels of cortisol lead to low testosterone. This is the last thing you want when it comes to maintaining peak performance and testosterone levels. Appropriate rest and recovery also promotes healthy growth hormone levels. Also, avoid too much of a good thing. Excessive or chronic training can lead to overtraining syndrome, which is counterproductive to a balanced hormonal environment.

9. Consider Controlled Fasting for Calorie Restriction

I know, “what do you mean don’t eat”? Not quite, you get to eat, it’s just that we like you to eat during a specific window of time during the day and then abstain from food during a period of time when you are most likely relaxing and preparing to rest for the evening. So, Why?

Controlled fasting boosts testosterone by increasing the expression of satiety hormones including insulin, leptin, adiponectin, glucagon-like peptide-1 (GLP-1), colecystokinin (CKK) and melanocortins, all of which are known to potentiate healthy testosterone actions, increase libido and prevent age-related testosterone decline.

The substantial impact of calorie restriction on mitochondria, the little powerhouses of our cells, is rather profound as well. Clive McCay from Cornell University in the 1950’s recorded an increased life expectancy of close to 35% in rats fed a calorie-restricted diet. The longest controlled study of calorie restriction on a primate has been a 25-year study at the University of Wisconsin studying the effects of calorie restriction on monkeys and the results are amazing. The calorie-restricted monkeys have demonstrated healthier profiles and life expectancy.

But what about eating breakfast? “Isn’t it the most important meal of the day?” Well, breakfast just means to “break the fast” and we still are “breaking the fast” just a little later in the morning. It is still an important meal and we will get to that in just a minute.

Wikipedia defines fasting as: *An act of willingly abstaining or reduction from certain or all food, drink, or both for a period of time. An absolute fast is normally defined as abstinence from all food or liquid for a defined period, usually a single day, or several days.*

I personally use a controlled fast daily as a way of giving our bodies a break from all the digestive work and as a way of giving myself freedom from food. It’s amazing how much you can accomplish when you do not have to take breaks to eat.

You may think that you’ll have no energy and that you will starve. But, quite the opposite happens. Your energy levels and productivity will skyrocket! You will more than likely feel unbelievably energized too! You have more than enough energy stored in your body to exist for this very brief period, 12-18 hours without solid food. During this controlled fast I drink plenty of water with lemon to stay well hydrated. Also at any time during this period, you are in control, you can choose to end your controlled fast whenever you like and still amazing benefits.

It’s easiest to start with the simplest controlled fast, the 6pm to 6 am. You are asleep for most of this 12-hour period; you should be hitting the rack around 10 p.m. Then work your way to a 16-18 hour fast. You are always in control and can choose to end your fast whenever you like. When you choose to eat, remember to eat appropriately and not overeat. Chances are you will feel full quickly even with a small amount of food.

Planned Controlled Fasting Schedules:

Schedule 1: 6pm to 6am (the easiest)

Schedule 2: 6pm to 10 am (move from a 12 hour to 16-18 hour)

Schedule 3: 6pm to Noon

Schedule 4: 8pm to Noon

Schedule 5: Any 16-18 hour period that fits your schedule.

Short-term fasting has been shown to have the following health benefits, which were found after as little as 12-24 hours of fasting!

- Decreased body fat & body weight
- Maintenance of skeletal muscle mass
- Decreased blood glucose levels
- Increased glucagon levels
- Increased lipolysis & fat oxidation
- Decreased insulin levels & increased insulin sensitivity
- Increased cellular cleansing
- Increased norepinephrine & epinephrine levels
- Increased growth hormone levels
- Decreased food related stress
- Decreased chronic systemic Inflammation

These are all drinks that would be allowed during your fast:

- Black Coffee
- Green tea
- Herbal tea
- Water
- Sparkling Water

So what happens when you fast?

During the first 24 hours of fasting circulating glucose, fatty acids, triglycerides, and liver and muscle glycogen are used as energy sources. However, the total of these energy stores in the average 70kg man is about 1200 kcal. And this is less energy than is needed for basal metabolism for a 24 hour period. Glucose from the liver is derived from hepatic glycogen and since there is only about 70 grams of glycogen in the average human liver, glycogenolysis can only sustain glucose levels for about 8-10 hours in the presence of exercise this period is even shorter. To compensate for the depletion of glycogen, gluconeogenesis begins with a flux of substrate from muscle and fat stores to the liver and to sites for utilization. Glycerol released from fat stores and lactate, pyruvate and alanine derived from muscle are the precursors for hepatic glucose synthesis.

Triglycerides that come from adipose tissue can be catabolized into fatty acids and ketone bodies by most tissues. However over the short run tissues such as the brain can only use glycolytic pathways to obtain energy. Since the conversion of fatty acids to carbohydrate is insufficient, these glycolytic tissues must utilize either glucose or substrates that can be converted to glucose. Amino acids derived primarily from skeletal muscle constitute the major endogenous substrate for glucose production for

this purpose. Since there is no storage form of protein in the body, a long-term (>24 hours) fasting individual will sustain a daily loss of functional protein.

The provision of adequate fuel substrate to critical tissue, particularly the brain, has priority during energy deprivation or fasting. Brief periods of fasting lead to acute adaptive responses that sustain the supply of glucose to the tissues that require it and to minimize the amount of protein breakdown to meet this need. To accomplish this, certain tissues such as the heart, kidneys, and skeletal muscle change their primary fuel source from glucose to fatty acids and ketone bodies. Other tissues such as bone marrow, renal medulla and peripheral nerves switch from full oxidation of glucose to anaerobic glycolysis, which results in the production of lactate and pyruvate.

These compounds can be converted to glucose in the liver with energy derived from fat oxidation and then released for consumption. The Cori cycle enables energy stored as fat to be utilized for glucose synthesis and thus conserves protein energy that would otherwise be necessary for the new synthesis of glucose.

Anabolic phase (a few hours after the meal)

- Primary hormone is insulin

- Plasma substrates are increased glucose, triglycerides, branch chained amino acids, and a decrease in free fatty acids and ketones.

Active process is glycogen storage, protein synthesis, and triglyceride production.

Catabolic phase (about 5-6 hours after a meal)

- Initiated by fall in insulin.

- Primary hormone is glucagon.

- Plasma substrates are a decrease in glucose, triglycerides and an increase in alanine and glutamine, free fatty acids, and ketones.

Active processes are glycogenolysis, gluconeogenesis, proteolysis, lipolysis, ketogenesis. Once the body has digested, stored, and metabolized your last meal, it begins utilizing the many options in meeting your energy requirements and optimizing hormone levels. Your body is then busy using all of the stored energy sources, which means you are losing weight, decreasing inflammation, stabilizing hormones, and increasing cellular cleansing. Short periods of fasting 12-18 hours will provide incredible health benefits for you over the short and long term and give you control over food.

10. Eat Red Meat

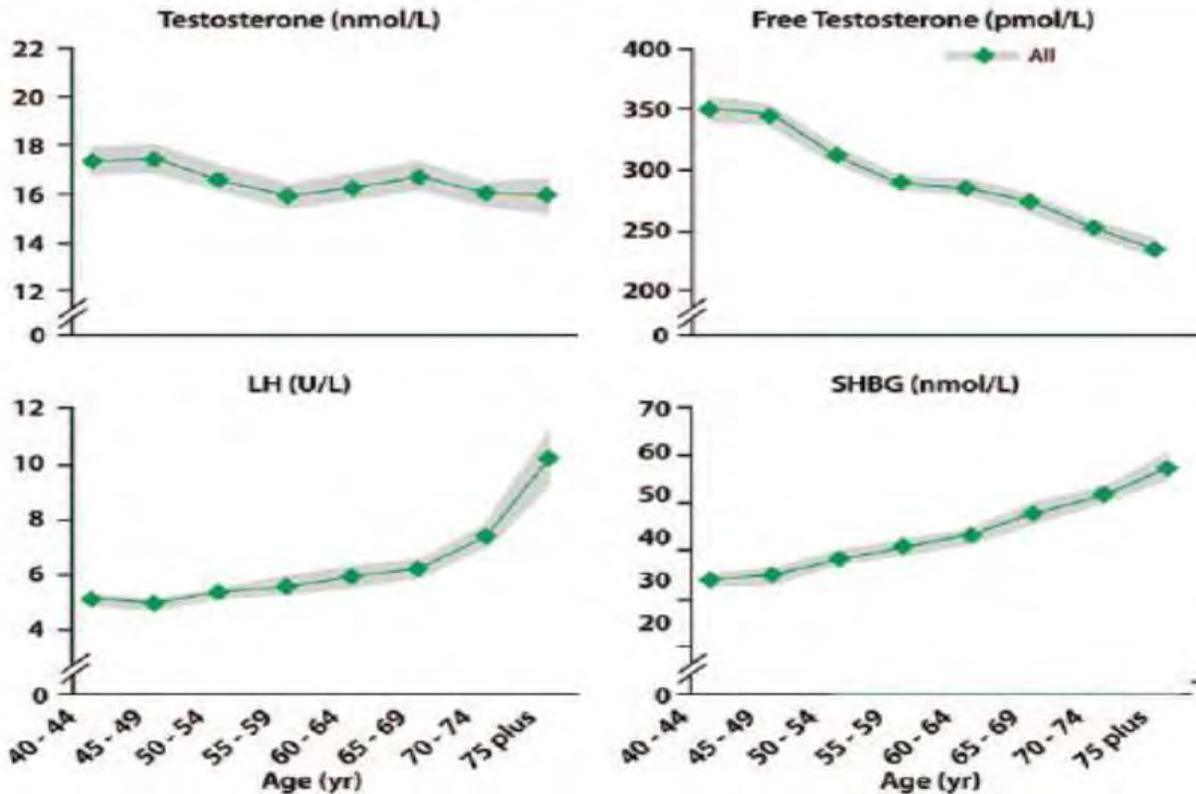
Eating lean red meat will not kill you. However, low testosterone from not eating red meat just might. A study of vegans vs. omnivores measured each group's testosterone and SHBG. The vegans had 23% higher SHBG and 3% lower free testosterone, not a good combination for manliness. Red meat contains saturated fat, which has a strong correlation with higher testosterone and zinc that helps you produce testosterone. Choose free-range grass feed beef because it has more B vitamins. B vitamins help your body to make testosterone and absorb zinc so you can make more testosterone.

I tried a vegan diet for approximately 2 weeks, it actually was quite invigorating and I did notice several benefits such as clearer skin and better reading vision. However, I did notice a decrease in my endurance and strength by the end of the second week. Going into the vegan diet my total testosterone was 810 ng/dL and Free T was 16.9 pg/dL with a SHBG of 44 nmol/L. After the 2-week period my levels had plummeted to a TT of 511 ng/dL, FT of 7.0 pg/dL, and SHBG of 60 nmol/L. Needless to say but a 1-½ inch porterhouse steak with organic butter hit a hot cast iron skillet that night! No more veganism for this guy.

11. Lower Your Estrogen Level

As men grow older they produce more aromatase. As a result more testosterone is converted into estrogen. While normal levels of estrogen are necessary and beneficial to men for their overall health, excess estrogen can lead to feminizing effects, narrowing of coronary arteries, increasing clotting factors, and crashing a man's libido. Being overweight, drinking too much alcohol, aging, zinc deficiency, consuming estrogen-producing foods, genetic predisposition, and exposure to endocrine disruptors can all play a role in increasing estrogen levels. Consequently as estrogen levels raise so does the level of SHBG (Sex Hormone Binding Globulin), which preferentially binds more testosterone and further increases estrogen levels. It is a vicious cycle. Unfortunately the direct manipulation of the SHBG level is not an easy or predictable task. Many a man with a functional H-P-T axis has been effectively neutered by having their free testosterone nearly completely bound by an age related increase in SHBG.

Testosterone and Age



Wu et al, JCEM 93:2737, 2008

So what can you do to lower your estrogen level?

- Correct any zinc deficiency
- Maintain a lean body mass
- Limit or eliminate alcohol consumption
- Remove endocrine disrupting chemicals
- Consume a cruciferous vegetable with every meal
- Promote liver health and its detoxification pathways
- Use estrogen lowering supplements if necessary

12. Check Your Intracellular Nutrient Status

Overwhelming scientific evidence has substantiated that vitamin deficiencies are associated with multiple disease processes and the overall condition of an individual’s health. Vitamin, mineral and antioxidant deficiencies have been shown to not only suppress immune function but also contribute to chronic degenerative diseases such as arthritis, cancer, dementia, cardiovascular disease, diabetes, and hormone deficiencies

In particular low levels of vitamin D and low free testosterone levels are both associated with increased mortality. Studies show an intricate association between vitamin D and androgen metabolism suggesting that a deficiency of both hormones may be associated with adverse clinical outcomes.

This brings us to the necessity of precision testing with personalized precision health care. While making all of the above adjustments to your lifestyle and nutrition is commendable and will certainly help you optimize your personal hormone status, knowing instead of guessing will always deliver better results. This is why I strongly recommend having an intracellular nutrient test performed. They are relatively inexpensive and the health information you gain is invaluable. This test is available at Spectracell Laboratories and through the Alpha Male Medical Institute.

Below is the intracellular nutrient test of a patient with three significant deficiencies that are related to infertility, immune function, protein synthesis, energy metabolism, fatigue, cellular communication, cellular integrity, detoxification, hormone regulation, hypogonadism, and more.

Knowing this critical information allows your physician to make precise adjustments to your supplementation. This is much better than a “shotgun” approach to vitamin and mineral supplementation, which is what most individuals do with little or no success.

Micronutrients	Patient Results (% Control)	Functional Abnormals	Reference Range (greater than)
<u>B Complex Vitamins</u>			
Vitamin B1 (Thiamin)	101		>78%
Vitamin B2 (Riboflavin)	58		>53%
Vitamin B3 (Niacinamide)	99		>80%
Vitamin B6 (Pyridoxine)	71		>54%
Vitamin B12 (Cobalamin)	21		>14%
Folate	40		>32%
Pantothenate	12		>7%
Biotin	51		>34%
<u>Amino Acids</u>			
Serine	34		>30%
Glutamine	58		>37%
Asparagine	43		>39%
<u>Metabolites</u>			
Choline	27		>20%
Inositol	71		>58%
Carnitine	62		>46%
<u>Fatty Acids</u>			
Oleic Acid	67		>65%
<u>Other Vitamins</u>			
Vitamin D3 (Cholecalciferol)	55		>50%
Vitamin A (Retinol)	78		>70%
Vitamin K2	70		>30%
<u>Minerals</u>			
Calcium	34	Deficient	>38%
Manganese	59		>50%
Zinc	36	Deficient	>37%
Copper	55		>42%
Magnesium	52		>37%
<u>Carbohydrate Metabolism</u>			
Glucose-Insulin Interaction	51		>38%
Fructose Sensitivity	37		>34%
Chromium	44		>40%
<u>Antioxidants</u>			
Glutathione	38	Deficient	>42%
Cysteine	53		>41%
Coenzyme Q-10	95		>86%
Selenium	82		>74%
Vitamin E (A-tocopherol)	91		>84%
Alpha Lipoic Acid	89		>81%
Vitamin C	59		>40%
<u>SPECTROX™</u>			
Total Antioxidant Function	50		>40%
<u>Proliferation Index</u>			
Immunidex	59		>40%

Analysis of this individual reveals these particular deficiencies and their impact to his overall health and vitality.

Calcium

Calcium is the most abundant mineral in the body, with 99% residing in bones and teeth. As a component of hard tissues, Calcium fulfills a structural role to maintain body size and act as attachments for musculoskeletal tissues. The remaining 1% of calcium is present in blood and soft tissues. Functions of non-skeletal Calcium include: enzyme activation, second messenger roles (transmitting hormonal information), blood clotting, cell and cell organelle membrane function (stabilization and transport), nerve impulse transmission, and muscular contraction, tone, and irritability. Calcium levels in the blood are maintained within very strict limits by dietary intake, hormonal regulation, and a rapidly exchangeable pool in bone tissue.

Zinc

The primary role of zinc is to activate almost 200 enzymes with vital roles in cell regulation, immune function, acid/base balance, DNA, RNA, and protein synthesis, lipid metabolism, eicosanoid production, and digestion. Zinc also is a component of insulin (energy metabolism), thymic hormones (immune function) and gustin (taste acuity).

Glutathione

Glutathione is implicated in many cellular functions including antioxidant protection and detoxification. It is also essential for the maintenance of cell membrane integrity in red blood cells. Intracellular glutathione concentrations are principally derived by intracellular synthesis, as few cells directly uptake glutathione from the surrounding extracellular fluid. The high concentration of glutathione in virtually all cells clearly indicates its importance in metabolic and oxidative detoxification processes. Glutathione may be considered the “preeminent” antioxidant.

For many of us, despite following all of these recommendations, you may still suffer from testosterone deficiency from one of the many causes or conditions:

- Viral Infection
- Radiation/Chemotherapy
- Genetic conditions
- Leydig cell dysfunction
- Various Medications
- Excessive Alcohol
- Aging
- Hemochromatosis
- Chronic Systemic Disease
- Diabetes
- Chronic Obstructive Pulmonary Disease
- Metabolic Syndrome
- Tumors
- Environmental Toxins

Testosterone deficiency is associated with the onset and/or worsening of these medical conditions:

- Cardiovascular disease
- Dementia
- Bone demineralization
- Joint & Tendon degeneration
- Diabetes & Metabolic Syndrome
- Depression
- Vascular endothelial dysfunction
- Increased CIMT and vaso-reactivity
- Obesity

If you are following a healthy nutrition plan, exercising regularly, drinking plenty of water, getting adequate rest and recovery but are still noticing these symptoms, then you may be suffering from testosterone deficiency despite doing all the right things:

- Poor memory, concentration, or focus
- Moody or depressed
- Lack of motivation or drive
- Lack of stamina
- Poor recovery or increased recovery time from exercise
- Loss of muscle mass or difficulty maintaining muscle mass
- Increasing belly fat or difficulty losing belly fat despite exercising
- Fatigue especially in the afternoon or after eating
- Poor libido
- Decreasing erectile quality
- Loss of hair or reduced shaving
- Hot flushes or sweats

The first step is to get the correct lab work and have a physician experienced and knowledgeable in the diagnosis, treatment, and management of male hormone deficiencies and all of its various nuisances and intricacies.

Testosterone deficiency presents with a recognizable symptom complex that is highly amenable to hormone therapy if a reliable and predictable treatment plan is consistently administered.

Testosterone is supremely important for the health and vitality of men and women. Optimizing its production by following these ten vital steps will help to ensure your personal health and well-being.

As you may come to notice in all of my writings there is always mention of the pillars of human existence that support the foundational principles of all human health. Those pillars Nutrition, Exercise, Water, Rest, Recovery and Hormone Optimization and must be cared for daily to ensure your personal health and fitness. We may not be able to stop Mother Nature but we sure can try and slow her down!

PUTTING IT TOGETHER

1. Perform your screening labs to obtain your baseline biomarkers and to check the status of your hypothalamic-pituitary-testicular axis.
2. Perform Intracellular Nutrient Testing and correct your personal deficiencies.
3. Perform Food Sensitivity Testing and eliminate your personal food sensitivities from your diet to decrease immune system response and inflammation.
4. Follow the low glycemic-nutrient timed-controlled fasting nutrition plan.
5. No Alcohol
6. Practice sleep hygiene
7. Limit caffeine intake
8. If you are contemplating having a vasectomy-DO NOT DO IT!
9. Strategically exercise
10. Follow the aforementioned recommendations in Chapter Five

DR. ROB'S Fast Five Supplements for Boosting Testosterone Naturally

This is a base supplementation plan that is a great place to start until all of your testing is completed and you can begin to personalize your supplementation strategies.

Testralin™: two tablets twice daily

Tribulus Synergy®: two tablets twice daily

Omegagenics™ Mega 10™: one tablet twice daily

Zinc A.G.™: one tablet daily

Endura®: one scoop daily during exercise

These supplements can help to naturally increase your testosterone and take you to the next level but none of these supplements are as important as following the basic foundations of human health and wellness. ***Eating healthy nutrition, regular meaningful exercise, drinking plenty of water, and getting appropriate periods of rest and sleep are the foundations of human health.***

I encourage you to talk with your Doctor about any and all of the supplements you wish to start taking.

All of the supplements listed in this chapter are available in our store
<http://www.alphamaleinstitute.com/the-alpha-male-store/>

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.