



Testosterone

— Revealed —

How to Boost Testosterone Levels, Sex Drive, Muscle Mass and the Truth about Hormone Therapy



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Introduction

Low testosterone or hypogonadism (the condition where levels of testosterone in the body is lower than normal), is a common disease in most parts of the world. For instance, in the USA alone almost

- 10% men over 30,
- 15% men over 40,
- 25% men over 50,
- 35% men over 65 and
- 40% men over 75

face issues related to low levels of testosterone. The level of awareness about hypogonadism also leaves a lot to be desired.

A few hundred years ago, degenerative mental conditions like Alzheimer's and Dementia were thought of as age induced senility and loss of memory and other cognitive abilities and were considered normal as one aged. It is only recently that these were identified as bona fide diseases and the since then, the number of people found to suffer from these diseases has reached epidemic proportions.

Similarly, people have started paying due attention to hypogonadism only recently. Symptoms of hypogonadism are still considered a part of normal aging by a vast majority of people on earth, and it will take some time before it is treated as a disease and given due attention. This has also resulted in less research being done on the subject so far than what it deserves. Let us take a look at the history of testosterone treatment.

On June 1, 1889, Charles Édouard Brown-Séquard, a French physiologist over 70 years old, reported having injected himself with a substance extracted from the testicles of guinea pigs and dogs. The injections, in his own words, "had increased his physical strength and intellectual energy, relieved his constipation and even lengthened the arc of his urine"

In 1918, in San Quentin, a prison doctor called Dr. Leo L. Stanley, consistently reported “restored health and potency” after transplanting testicles of executed prisoners to those with depleted vitality. Dr Stanley eventually started substituting testicles from rams and goat and deer in less than vital prisoners and even that was a huge success. So much so that people from all walks of society actively sought him out. The prestigious Journal of Endocrinology also published his papers.

By 1935, researchers had identified testosterone as the essence of manhood.

The Journal of the American Medical Association published a paper on low testosterone level called "The Male Climacteric" on April 15, 1939. In it, testosterone therapy was recommended for the first time.

Back then, pushing testosterone via painful injections was the only delivery method. A patch was introduced in the 1990s but it met with limited success. In June 2000, Unimed Pharmaceuticals began selling “Androgel” a gel that just had to be rubbed into the skin. Gradually, many more delivery methods have come into existence and we shall find more about all that later in this eBook.

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Chapter 1: What is Testosterone?

A Primer

Testosterone is a hormone. A hormone is a chemical substance secreted by a tissue that travels via body fluids and affects other tissues. Hormones are, in effect, chemical messengers that communicate between tissues. Testosterone, though it is usually associated with males, is also present in females as well (in fact, it is essential for any human being irrespective of whether you are a male or a female). It is not a male monopoly.

Sex hormones – testosterone for males and for females – vary in the levels they are present in us. They vary by the hours and minutes depending on how much they are released by the respective glands.

In fact, you would see that some women have more than average facial hair and muscles. Sometimes, women have more than required amounts of testosterone. Excess testosterone prevents women from getting pregnant and needs to be treated.

But, at the end of the day, it is ‘the’ male hormone. This is what makes us men. It is the reason rugby, boxing, soccer, WWF, cricket, and many more sports like these are usually called male dominated sports. Let us find out the roles of testosterone in men. Testosterone is the reason for the existence of feminism.

Well, now let us take a deeper look at testosterone and see what actually happens in our body. Hypothalamus, a part of our brain, releases gonadotropin releasing hormone (GnRH from now on) to our pituitary gland. GnRH aids the pituitary gland in producing and releasing two hormones, follicle-stimulating hormone (FSH) and luteinizing hormone (LH), both known as gonadotropins. LH, along with (of all things!) cholesterol, aids the testes in producing testosterone.

Yes! Cholesterol is of some use at least! The ‘public enemy number one’, ‘the villain’, cholesterol. I was surprised to find out, cholesterol is an essential substance needed in a lot of other ways. In fact, it is needed for almost anything. But for now, let’s concentrate on testosterone only.

When the testosterone levels become adequate, the pituitary gland slows down the release of LH to cut off any further production of testosterone.

FSH is involved in regulation of sperm production.

The Role of Testosterone in Males:

- Testosterone plays a vital role even during prenatal development. It plays a role in determining the gender of the embryo as well. It is involved in the development of sex organs and the prostate gland and even has an effect on brain development.
- Testosterone is responsible for "brain masculinisation" in infants.
- During childhood, testosterone helps with the growth of pubic hair, auxiliary hair, and appearance of hair on the upper lips. Males do witness a growth spurt due to bone maturation right before adolescence.
- In adolescence, most boys get a deeper voice, their facial features develop male characteristics, muscle start increasing, shoulders tend to become broader, and the skin becomes oily due to enlargement of the sebaceous glands. All this happens due to a surge in testosterone production.
- Even before boys are adults, testosterone plays a role in sperm development.
- Testosterone is required to maintain normal levels of sexual desire in men.
- It catalyses metabolism, helping men shed those unwanted pounds, lower body fat, and acquire a leaner and fitter body.

Testosterone has many more roles in males and we have not heard the last about it yet. With time, we would have more clarity on this subject and a lot more options as far as treatments for conditions related to testosterone levels are concerned.

How Testosterone affects us

The endocrine system

Our endocrine system consists of glands which produce the hormones. The testicles produce testosterone. Hypothalamus in the brain tells the pituitary glands how much testosterone is needed and the testicles produce it. Testicles also produce sperm. Men with low T suffer from erectile dysfunction (ED) as well.

Sexuality

Rising levels of testosterone, during puberty, is responsible for the growth of testicles, penis and pubic hair. Deeper voice, muscle growth and enhanced sexual desire are also experienced during this time. Testosterone is a 'use it or lose it' thing. Its levels can drop if exposed to long term sexual inactivity.

Central nervous system (CNS)

Certain behaviors that we attribute to the CNS are regulated by testosterone. It determines aggression, dominance, competitiveness and self esteem. Taking part in competitive activities causes a spurt in testosterone. Low T can cause loss of confidence, lack of motivation, sleep disturbance and lack of energy.

Skin and hair

Testosterone is responsible for growth of pubic hair, armpit hair, chest hair, and hair on arms, chest, facial hair (beard), etc. Shrinking levels of testosterone may cause sagging skin and less body hair. Testosterone replacement therapy (TRT) is known for side effects like acne and breast enlargement.

Muscle fat and bone

An optimum (and above) level of testosterone is one of the requirement of developing a optimum muscle mass and strength. Testosterone enhances neurotransmitters and thus, aid tissue growth. It is also responsible for

protein synthesis. It increases the growth hormone levels, which, combined with exercise, gives us the muscles.

Testosterone also aids the bone marrow in production of red blood cells. People suffering from low testosterone levels (referred to as low T) break their bones more frequently. Testosterone also helps in fat metabolism and helps you stay in shape.

Reproductive system

Testosterone aids in reproducing as well. It aids in a healthy production and ample supply of sperm. Mankind would not exist but for testosterone.

Low Testosterone and Age

Testosterone is easily the most important ‘male’ hormone. This is what makes men what we are. The levels of this hormone rise during puberty, peaks in the late teens and levels off for some time. Testosterone levels start dipping in men after they are well into the thirties.

Most men have more than enough levels of testosterone, but in some men, low levels of this hormone are commonly observed. The medical term for this condition is known as ‘hypogonadism’. Testosterone affects men in various ways like reproductive system, bone density, muscle mass, stamina, and a lot of other ‘male’ behaviours which we mean when we say “men will be men”.

With age, as levels of testosterone in men decline, one may come across various symptoms. Most men in these situations experience fatigue, loss of libido (interest in sex), weight gain, loss in motivation, decreased mental sharpness, and less muscle mass. Declining testosterone levels (henceforth mostly referred to as low T levels) are also linked to heart and other vascular diseases. It also affects your blood sugar levels. Low T also increases the chances of prostate cancer and mortality rates are also high for people with low T.

T levels decline with age and we know how it affects men. Returning the T levels to the normal range has a lot of benefits as well. These include:

- Improved strength and endurance,
- Improved libido,
- Improved sexual function,
- Reduction of risks to the heart,
- Improved balance,
- Improved bone mineral density (results in less broken bones and critical to how you age),
- Obesity,

- Increased muscle mass,
- Improvement in mood,
- Improved insulin sensitivity (and thus less risks of blood sugar related diseases),
- Motivation to live,
- Maintenance of good sleeping habits, etc.

Interestingly, all these are associated with a good life. So, in short, maintenance of healthy levels of testosterone ensures that you live the good life even as you age!

Measuring Testosterone and Optimum Levels

One can check his testosterone levels via a blood, urine or saliva test, blood test being the most prominent medium. To get a useful picture, you need to measure the levels of:

- Total testosterone: the total amount of testosterone in your system, and
- Free testosterone: 96% of the testosterone produced by the body is bound together with proteins. The rest of it (4%, also called bio available or free testosterone) is available for the activities (of the kind mentioned above, also called androgenic use, about which we will discuss in the next chapter). It is this that matters as far as this book is concerned.

As you age, levels of testosterone fall. In fact, the levels vary at different times of the day. It is maximum in the mornings (that should account for your morning erections!), and least during the afternoons. So if you want to ever measure the levels, do so at the same time every day.

Testosterone is usually measured in ng/dl or nanograms per decilitre. A nanogram is 1/1,000,000,000 of a gram.

Any count in the range of 250 ng/dl and 850 ng/dl can be considered normal.

Age Range	Total Testosterone	Free Testosterone
25-34 years	668 ng/dl Total	10.3 Free
35-44 years	606 ng/dl Total	9.1 Free
45-54 years	562 ng/dl Total	8.3 Free
55-64 years	524 ng/dl Total	6.9 Free
75-84 years	471 ng/dl Total	6.0 Free
85-100 years	376 ng/dl Total	5.4 Free

As you can see, we become less and less capable as years go by. And people often say, 'time heals'!

Chapter 2: Food for Testosterone

There are many ways to boost your testosterone levels. Certain foods are known to aid higher levels of testosterone. You may resort to some supplements as well. Certain other activities like exercise, watching sports, etc can make a difference as well. Let us first see which of our normal day to day foods can help us with cholesterol.

Everyday Foods that Boost Testosterone Levels

Asparagus, considered a natural aphrodisiac and full of folic acid, potassium, and vitamin E, all needed for testosterone production.

Chia seeds contain huge amounts of omega-3's and they also slowdown the carbohydrates from converting into sugar. This aids testosterone production.

Pineapple contains a lot of bromelain which increase testosterone levels and helps to digest protein.

Brussel sprouts carry a lot of vitamins and minerals that are building blocks of testosterone. They contain a lot of indole-3-carbinol (DIM), a chemical that boosts DNA repair in cells and boosts production of testosterone by suppressing the aromatase enzyme. Aromatase enzyme is a testosterone killer. It converts free testosterone into estrogen. DIM lowers estrogen levels by 50% thus creating a huge boost in testosterone levels.

Cauliflower is also very high in DIM.

Raw chocolate contains a lot of magnesium, calcium, zinc, manganese, tryptophan, arginine, and catechins. It's also increases blood flow and clears up arteries. But be aware of the fact that the dark chocolate sold on grocery stores is far away from the real raw chocolate.

Olive oil helps our leydig cells absorb cholesterol which is then converted into free testosterone.

Coconut oil, with high levels of saturated fat (92%) and complex fats that works wonders for testosterone.

Citrus fruits are high in vitamin C which helps lower anti testosterone hormone, cortisol.

Celery has two very powerful androgens called androstenone and androstenol. Even the smell of celery significantly accelerates testosterone production.

Red meat, packed with cholesterol, saturated fat, and zinc, all of which are vital for a high testosterone level.

Cod liver oil is rich in testosterone friendly Omega 3 fatty acids which significantly boost testosterone levels.

Butter boosts testosterone.

Grass-fed beef is superior to industrial kinds, because it is richer in omega-3's, cholesterol, and vitamins. Industrial meats are filled with traces of synthetic steroids injected into the animals, mainly estrogen, to make those animals really big and fat.

Avocados has testosterone enhancing vitamins A, B, C, D, E, K, omega-3's, potassium, folic acid, and cholesterol. It makes avocado a super food as far as boosting testosterone levels is concerned.

Eggs boost testosterone naturally. They contain vitamin D, saturated fat, cholesterol, and omega-3's, along with a lot of quality protein.

Brazil nuts contain high amounts of zinc and selenium – both minerals important for testosterone production.

Bananas come packed with bromelain.

Garlic lowers cortisol, and thus indirectly brings testosterone levels up.

Oysters are packed with zinc, and aids testosterone production.

Onions help increase testosterone and sperm quality.

Pumpkin seeds are full of vitamins -E, -C, -D, -K, -B, zinc, magnesium, and potassium, all favorable for your testosterone levels. In fact most of the edible seeds are good for testosterone.

Bacon contains saturated animal fats and cholesterol essential for testosterone production.

Cayenne pepper is very high in capsaicin and is known for its fat burning benefits and also boosts testosterone levels.

Sauerkraut boosts testosterone levels naturally.

Kefir like almost all of the fermented foods contains a hefty dose of vitamin K2 which increases testosterone levels.

Mangosteen has very powerful anti-oestrogenic effects. Anti-oestrogenic substances make the body dryer and harder, but it also increases testosterone levels at the same time.

Watermelon contains citrulline which increases blood flow and erection frequency. Watermelon seeds are considered highly androgenic as well. Consider watermelons for a nice boost in testosterone and nitric oxide.

Spinach is anti-estrogenic and it also contains key vitamins and minerals essential for testosterone production.

Cabbage, a cruciferous vegetable that contains the DIM compound mentioned earlier.

Honey is very high in the bromelain and great for testosterone.

Wild fishes like salmon, come packed with magnesium, vitamin B, omega-3's, and animal protein. Wild salmon is known to lower the levels of SHBG (Sex Hormone Binding Globulin) which binds on to testosterone molecules making them unusable.

Supplements and Special Foods to Increase Testosterone Levels

Many supplements are available in the market under many brand names. I shall not go into the details as rating them without having used each one is fraught with risk of giving out wrong information. You can actually get to read the reviews on each of them over the Internet. First I shall mention them to let you know the names to look out for in case you consider using them, and then I shall review a list of substances that are the usual ingredients of these supplements in some form.

Some of the supplements are sold under these names:

- > Androderm
- > AndroGel
- > Android
- > Aveed
- > Axiron
- > Bio-T-Gel
- > Delatestryl
- > Depo-Testosterone
- > Ditate-DS
- > Fortesta
- > Metandren
- > Methyltestosterone
- > Natesto
- > Oreton
- > Striant

- > Testim
- > Testoderm
- > Testopel
- > Testred
- > Virilon
- > Vogelxo

There are many more brand names that these can be sold under, but I have only listed only the major ones in the USA, as it is almost impossible to list all names worldwide. Most of these supplements are based on a combination of the following substances.

Shilajit: A tar-like substance that grows in the high altitudes of Himalayan mountains was able to boost total testosterone readings by 23,5% according to research at Indian College of Medicine. 200 mg's of Shilajit used for 3 months was found to enhance sperm count by 61.4%, sperm production by 37.6% and sperm motility by 17.4 %.

DHEA is seen as a means of boosting testosterone levels and muscle mass. Research on those claims, however, is inconsistent. Some of the side effects may include breast enlargement, hair loss and cholesterol changes.

Mucuna Pruriens is an Indian super bean is the fact that it's not only a boosts testosterone, but also enhances levels of Human Growth Hormone and Dopamine, along with fertility, which makes it the best bodybuilding testosterone booster for men. It also

- > Significantly increases dopamine levels
- > Boosts total testosterone level
- > Reduces stress hormone cortisol
- > Increases Human Growth Hormone levels
- > Significantly improves semen quality
- > Decreases Prolactin Levels

D-Aspartic-Acid, also called DAA, D-Asp, D-AA is an amino-acid able to boost testosterone levels by 42%. This substance has been found to enhance testosterone levels by every study conducted on it.

Pine Pollen's consists of more than 30 minerals, almost all essential fatty acids, 15 types of vitamins, and plant sterols. Remember that these nutrients are all in their bio-active forms and thus in their most form. It is usually taken in tincture form because that allows the alcohol to become a carrier agent that helps these delicate molecules get absorb straight into your blood stream, without having to go through the gastrointestinal system.

Ashwagandha, one of the strongest adaptogens known to man, has a wide range of uses other than boosting testosterone. Ashwagandha decreases fat mass, increases lean muscle mass, and protects cardiovascular system in healthy individuals. It has at least 100 other benefits and has been one of the most widely used drug in Ayurveda, one of the oldest (and still in widespread use) medical science known to man.

Liquid Vitamin D3 is extremely beneficial for men, both for testosterone boosting capabilities and it's amazing contribution to your overall health as well. This vitamin actually regulates well over 1,000 body functions including but not limited to bone health, cardiovascular system, growth, and nitric oxide production. And much more.

Tongkat Ali is a common testosterone booster, and can be found in almost all of those testosterone supplements. Tongkat Ali has been found to increase sexual activity, sperm production, sperm motility, and testosterone levels while lowering cortisol at the same time.

Calcium-D-Glucarate, found in the skin of certain berries, like blueberries, a fiber that binds with estrogen molecules and then actually "flushes" these molecules out of your system trough your intestines. As we know, reducing estrogen increases testosterone.

Maca is a crusiferous vegetable found in the high altitudes of Peru. It increases sperm and luteinizing hormone (LH) production which in turn make testosterone. It also contains DIM.

It is also important to follow supplement cycling. Our bodies offer natural resistance to anything that we use for a long time, including testosterone

boosters. Natural resistance is the tendency of the body to get used to substances taken regularly and as a result, more and more of it is needed to produce the same effect, till you need abnormally large portions that may be harmful to the body. To avoid that, we should cycle these supplements or rotate the brands and/or use formulations with minor variations to make sure that we don't develop this kind of resistance.

Chapter 3: How to Maintain Healthy Testosterone Levels

We have talked a lot about testosterone, foods, special foods and supplements required to enhance testosterone. But the fact remains that testosterone is a natural hormone and you can maintain healthy levels naturally if you are aware of how your system works. This is obviously a better approach as compared to taking supplements after you suddenly find out one fine day that your body doesn't produce enough testosterone. I am sure we all agree that, "Prevention is better than a cure".

First, let's find out more about the factors that cause an imbalance.

Production of testosterone can be hit in case of any damage involving the pituitary glands, testes (if somebody kicked your balls hard), hypothalamus, glandular malfunctions, infections, radiotherapy or chemotherapy.

Aging, as we know is a reason we can do nothing about, but there are other diseases like obesity, diabetes and hypertension also negatively impact a healthy testosterone level.

You might have heard of xenoestrogens, or estrogens ("female" hormones) external to (or not produced by) our bodies but that effects us just like estrogen does. Xenoestrogens come in contact with us from the many industrial compounds or products we use.

Plastics, deodorants, insecticides, and many other everyday items contain these xenoestrogens and end up altering our hormonal balance. Practically, we lose our manliness every living minute. It seems that we cannot get one thing right without getting another 100 things messed up.

Another critical factor is our diet. Unbalanced diets not only promote obesity, hypertension, diabetes, but also deeply affects out hormonal system. In fact, many so called "healthy" recommendations hinder testosterone and boost estrogen, which is not a very good sign if you still want to remain a man 20 years down the line! You won't be wrong if you think that your manliness has too many enemies.

Eating industrial meat (poultry meat and other commercially sold meat usually come from animals fed with steroids to make them grow big) is known to bring down our T levels.

Remember, however, that along with many uncontrollable factors like age for instance, there are some factors that hinder testosterone production which we can control. For instance, you can control diet and lifestyle.

Diet

I hate the word diet. Many people follow various diets, but rarely stick to it for a long time. Changing diets affect people negatively. Rarely have crash diets offered people a long term solution. When I say diet, I mean awareness. I shall try to make you aware of the type of things you should eat and what not to maintain healthy testosterone levels. Once you have the awareness you can take your own decisions.

Cut down on sugar and carbohydrates: Pasta, pizza, bread, cereals, sweets, desserts, etc. Our modern lifestyles drive us to eat too much carbohydrate, especially, industrially made products loaded with tons of sugar and/or salt. When we eat too much sugar or certain types of carbohydrates, insulin rises. Too much sugar encourages too much insulin production. Excessive amounts of insulin mean less of testosterone. Let me explain.

Our hormonal system is amazing, but not almighty. It has limited resources. So, if it is forced to produce too much of one hormone, (insulin in case you consume too much sugar), it has to sacrifice on others. So, testosterone production gets hampered if the body has to produce too much insulin to digest or counter the sugar.

cruciferous vegetables help. Following the same logic above, we need to produce less of estrogen. However it is necessary for some brain functions. The ideal ratio of testosterone to estrogen in males should be 50:1.

Eating cruciferous vegetables like cabbage, broccoli, brussels sprouts or cauliflowers can take care of that. All cruciferous vegetables are rich sources of indole-3-carbinol (I3C), a phytochemical that converts "bad" estrogens (which hinder testosterone production) into good estrogens, thereby encouraging testosterone.

A diet rich in zinc helps by inhibiting aromatase, an enzyme which converts testosterone into estrogens. So we must get plenty of zinc in our diet, and that means oysters, meat, peanuts seafood, and dark chocolate. You can opt for zinc supplements too, but I prefer zinc rich food.

Trans fats should be totally eliminated from your diet. They are pure evil. Just research a little bit on the Internet and would understand. You would

find them in almost all kinds of fast food. Most industrially produced foods like potato chips, French fries, pastries, fried chicken, margarine, cookies, biscuits, etc comes with a lot of trans fats. Look for the words “hydrogenated”. If you see it, slowly place the pack back into the shelf.

Fats help with testosterone. It is utter bullshit that eating fats make us fat. “Eat fat and you would get fat” is one of the most irresponsible and misleading statements I ever came across. Less effective metabolism makes us fat. Fats are good for testosterone. Low fat diets are known to reduce testosterone levels.

Vitamins A, D, and K are great catalysts for testosterone.

- > Vitamin A rich foods are Whole milk, liver, eggs, dairy products like butter, etc.
- > Vitamin D is mainly found in sunlight. You can opt for supplements as well, but a little exposure to the sun is preferable. Cod liver oil is also a great Vitamin D source.
- > Vitamin K is found in spinach, Kale, collards, turnips, lettuce, etc.

Garlic is another storehouse of testosterone. It increases testosterone and decreases cortisol levels (thus helping produce more Testosterone).

Lifestyle

When we are stressed our body releases the hormone cortisol in order to cope with stress. Production of excess cortisol means less testosterone in our body. Your testosterone levels go down when you are stressed. So, relax.

Lead an active life. The hours spent staring at television or your computer brings down your testosterone levels. Activity is a must to maintain high levels of testosterone. Lack of regular activity makes you either skinny or obese. Both are bad for your T levels.

The right kinds of exercise to maintain your testosterone levels are weight training or pumping iron. Long jogs in the morning are not necessarily the best thing for ideal testosterone levels and too much of running is bad news for your joints.

Resistance training is a great option as well and it is great for bone density as we age. For middle aged men, resistance training is better than weight training. It makes you look a lot younger and improves your posture as well.

Interval training (a type of discontinuous physical workout punctuated with periods of rest) is a great option for boosting your testosterone levels as well, and is wonderfully suited to middle aged people.

Chapter 4: Hypogonadism and Testosterone Replacement Therapy

Hypogonadism is a condition or disease where your sex glands (testes in men and the ovaries in women) produce little or almost no testosterone. Treatment for hypogonadism depends on the reason you want it in the first place.

No effective means of restoring fertility have been discovered so far. However, assisted reproduction can help if you want a baby. For other purposes like improving sexual function, muscle strength, mood, vitality and prevention of bone loss (in short for reasons other than infertility), you may certainly consider undergoing testosterone replacement therapy or TRT.

Simply put, TRT is the method of injecting testosterone into your body when low T keeps you from doing things you have been doing all your life. It is a tempting option for aging men who are young at heart.

Warning Signs of Low Testosterone

The signs of low T are very hard to figure out because people tend to think of them as a natural part of aging. A vast range of symptoms can surface due to it and some of them are discussed below.

A typical diagnosis is when T levels drop below 300 ng/dl. Andropause or decline in testosterone production is to men what menopause is to women. The difference is that while menopause brings about a drastic decrease in estrogen production at a certain point of time, men experience a more gradual drop in levels of testosterone. It is natural to witness a drop in levels, but when the decrease is more than what it should be, the condition is called hypogonadism. The symptoms are:

- > Low sex drive
- > Breast enlargement
- > Difficulty achieving erection
- > Low sperm volume
- > Fatigue & lack of energy
- > Loss of muscle mass
- > Increase in body fat
- > Decrease in bone mass
- > Mood fluctuations

Men with low testosterone levels might possibly face a dip in self-confidence, feeling sad or depressed, memory problems, and a decrease in work performance.

Hypogonadism can be of two types.

Primary hypogonadism, also known as primary testicular failure, happens when the testes fail to function properly due to some issue originating in the testes itself.

Central (or Secondary) hypogonadism indicates issues with the hypothalamus or the pituitary gland. These are the parts of our brain which signal our testicles to produce testosterone.

Causes of hypogonadism include, but are not limited to:

- Kallmann syndrome
- Drop in testicular tissue
- Previous chemotherapy or radiation therapy
- Mumps infection affecting your testicles
- Injury to your testicles
- Testicular or pituitary tumors
- HIV/AIDS
- Klinefelter syndrome
- Hemochromatosis
- Undescended testicles as an infant
- Untreated sleep apnea
- Hereditary factors

Contact an endocrinologist if you suspect hypogonadism. But before you meet your endocrinologist, do take some time to be prepared with some answers. An endocrinologist would need some answers to find out the real problem you are facing and it is best to be prepared with these answers.

Visiting an endocrinologist

Be sure to write down any symptoms you may be experiencing, including those that may seem unrelated to hypogonadism. You never know what is related to what and it is best to mention everything to the doctor. Also note down important personal information like your lifestyle in general, any major stress that you face, recent changes to your body(internal and external), history of illnesses from childhood onwards (for instance, if you have suffered from mumps in childhood, it may affect your testes). It is important to list any medications you are taking and as many as you can remember having taken in the past. Some medicines are later found to have caused certain conditions. Also, if possible, make a list of all the questions that you have had regarding whatever you suspect.

There are certain questions one always wants answered in case one comes to know that he is diagnosed with any disease or condition. In case of hypogonadism, they may include:

- > Probable causes of your symptoms
- > Is this condition chronic or temporary?
- > Treatments available
- > Side effects of treatment
- > Best type of treatment
- > Any restrictions or diet you need to follow
- > References for further reading

Your doctor is likely to ask you a number of questions to decide if you are suffering from hypogonadism. Make sure you are prepared to answer questions like:

- > When did you start experiencing these symptoms?
- > Have these symptoms been occasional or continuous?
- > How severe are these symptoms?

- What, if something, seems to improve and/or worsen these symptoms?
- When did your puberty start? Was it earlier or later than peers?
- Any growth problems you had as a child or adolescent
- Any testicular trauma you might have experienced or trauma to your head
- If you had mumps as a child or teen and if you recall any pain in the testicles when you had the mumps?
- If you had undescended testicles as a baby
- If you had any hernia or genital surgery in childhood

Doctors usually diagnose hypogonadism based on symptoms and blood tests that measure your testosterone levels. As noted earlier, testosterone levels vary during the day and are usually highest in the morning. The blood test is usually done at around 8 AM in the morning.

If these tests confirm low testosterone, further testing may be needed to determine if the cause is pituitary abnormality or testicular disorder. The additional studies mentioned below can pinpoint the cause. They are:

- Testicular biopsy
- Semen analysis
- Pituitary imaging
- Hormone testing
- Genetic studies

Testosterone testing has an important role in managing hypogonadism. It helps your endocrinologist determine the course of further action and the right dosage of medication.

Delivery methods

There are many testosterone delivery methods. Some of the most frequently used ones are discussed below.

Patch: Patches containing testosterone (Androderm is a popular choice) can be applied to your back, upper arm, abdomen or thigh every night. The site is always rotated to lessen skin reactions. So, once you apply the patch somewhere (your thigh for instance), you can apply a patch there only after a 7 day interval.

Injection: Injecting testosterone is considered safe and effective. Injections are pushed into muscles. Your reactions might fluctuate in intervals depending on the frequency and potency of the injections. You can push one in yourself if you want or you may get a family member, nurse or doctor to administer these. Many brands (of injections) are available. You can do some research on it yourself, but please get it prescribed by your doctor.

Gel: Several gel preparations are available in the market. Depending on the brand, you can rub the gel on your upper arm or shoulder (AndroGel, Testim), use an applicator to rub it into your armpit (Axiron) or apply on your inner thigh (Fortesta). Your body absorbs the testosterone as the gel dries. Gel based TRT gives you fewer skin reactions than patches. Avoid taking showers or bath for several hours after you apply it to make sure it gets absorbed.

Caution: Avoid skin contact with others to prevent transferring the testosterone to another person till the gel is completely dry or simply cover the area after application.

Gum and cheek (buccal cavity): A chewing gum like substance, sold under the brand name 'Striant' (others brands are available) delivers the testosterone via your buccal cavity. It sticks to your gum line, allowing the testosterone to be absorbed to your blood.

Caution: taking testosterone orally for long may cause issues with your liver.

Implantable pellets: Testosterone pellets (example: Testopel) can be surgically implanted under the skin and replaced every three to six months.

The pros and cons of TRT

The Cons

Before embarking on TRT, do remember that although it is generally safe, it is not entirely free of side effects. Sometimes, it may be more of a trade-off. It is important that you are aware of the side effects. Some of them are:

- Sleep apnea (frequent night time awakenings and daytime sleepiness)
- Acne or oily skin
- Mild fluid retention in the body
- Enlarged breasts
- Decreased testicle size
- Reduced sperm count (leading to infertility in younger men)
- Changes in cholesterol and lipid level
- Catalyzing existing prostate cancer and stimulating non-cancerous growth in the prostate
- Blood clots in the veins (clots form due to increased red blood cell counts. Also, increases the risk of blood clots forming in deep veins, also called deep vein thrombosis, which may break loose, travel via blood to the lungs, ultimately blocking blood flow and causing pulmonary embolism.

Testosterone therapy, according to some studies, might increase your risk of cardiovascular issues like heart attacks, strokes, and other heart diseases, more so if the person is above 60. Other studies, on the contrary, suggest that TRT actually decreases the risk of similar problems. So, the last word on this is not yet out and a lot more studies are underway on this.

There is also a general opinion among health professionals and researchers that people with existing prostate cancer and those being treated for benign prostatic hyperplasia should avoid TRT. Most people believe that TRT

stimulates growth in prostate cancer cells and most studies actually do support this.

But as I said, the last word is not yet out on this. We continue to wait for it even as the debate goes on.

The Pro's

Testosterone can do wonders for you in many ways. Let us discover what you stand to gain (in case you need to) from Testosterone Replacement Therapy or TRT. Taking testosterone to close to normal levels can help you with many aspects of your life.

Libido: Regaining sex drive will makes life a lot more enjoyable, puts a spring in your step, while improving relationship with your partner. Erectile dysfunction (ED) is a symptom of low testosterone and is best treated in conjunction with TRT.

Erectile dysfunction: After 40, some men experience weak erections sometimes. Most often it is not age. It is the T factor. And when it does go up, premature ejaculation spoils the party. Somebody said “what goes up has to come down”, but this is disheartening. If I may put it this way, it leaves a lot to be desired. The anxiety makes it worse. Premature ejaculation is a common male sexual dysfunction. TRT can help.

Lack of energy: It was once considered a normal part of the aging process, but doctors discovered that testosterone plays a bigger role than we believe. If you have felt a lack of energy at times, you would certainly benefit from TRT.

Muscle mass and strength: While some decrease in strength can be attributed to age, some can be tied to a decrease in testosterone levels. As testosterone levels decrease, so does muscle mass. Testosterone aids in gaining and retaining lean muscle mass. TRT users experienced an increase in net muscle mass by up to 2.5 pounds.

Ability to concentrate: The ability to perform these tasks comes from your cognitive skill sets; this affects memory, which plays a major role in performance ability. Normal testosterone levels are good for your cognitive

skills and lower levels reduce your cognitive ability to perform everyday tasks. TRT improves your cognitive skills.

Mood and depression: Low testosterone encourages depression. The level of testosterone your brain receives determines your mood. Men suffering from hypogonadism display symptoms of depression. TRT helps.

Sleep: The less you sleep, the lower your T levels would be and vice versa. It is a vicious cycle, and you are the loser in every way. Higher T levels encourage better sleep.

You can sit with your doctor and find out the actual risks faced by you and then compare it to the benefits you get after TRT. That might tempt you to go for TRT. Millions of people have gone for it. If you interview them, you would find out that in spite of the few risks involved, the benefits far outweigh the side effects.

Conclusion

People say, *“If you know the why, you will embrace the how”*

I have tried to dwell on the how's and what's of testosterone in this book, you would notice that we have answered the why's for almost all the how's and what's of this book.

I did not know much about all of this until some months ago. Luckily, I happened to come across a physician who opened my eyes and encouraged me to take fresh a look at testosterone. I wondered how something so important can possibly remain so widely unknown, especially for men. The reason, I reckon is that it took the time to gain some acceptability in terms of benefits, side effects and methods of delivery. This eBook is a humble effort to bring in to the public domain as many relevant facts behind testosterone as possible.

As you may remember from the introduction, testosterone injections became commercially available in the 1940s. It took another 50 years to attract widespread attention. Patches came out in late 90s and gels, implants and other delivery methods are recent additions. So the world has just started to pay attention. The money will follow gradually and very soon, treatment for low T will certainly be more accessible.

But one factor that has worked wonders for Low T therapy and will continue to do so is the explosion of information. The Internet has been a godsend as far as the access to information about the benefits of treatment for low testosterone is concerned. Now, we get all the information we need in minutes.

But that has a downside as well. Along with endless information, you would also have access to a lot of informative material aimed at selling certain products and services, and such information, at their best, can be termed as “motivated” and thus, not completely accurate. You may call them “advertisement” as well. I hope you get the drift. So, do use your judgement and be careful about the sources of whatever you read.

Preview Of ‘Hair Loss Solutions for Men’

“Chapter 2: Hair Loss Myths

There are so many truths, half truths and non truths that circulate about hair loss it’s difficult to know where to begin. One key distinction we must make at this point is to be clear - we are addressing common male baldness of the scalp, not hair loss from the body as a whole. Going bald can have numerous effects on us but they are cosmetic and lifestyle based, hair loss from other areas of the body is an entirely different condition and one which requires specialist advice.

So, lets look at what’s true and quite simply...what isn’t!

Wearing a hat makes you go bald – This is one of the true classics, and is utterly wrong – there have been numerous studies and all have found no link between wearing a hat and going bald.

It only happens to older guys – Believe it or not the process of losing your hair can begin in your teens, for most guys their thirties are where it really starts to show noticeable effects. It can vary massively though, a very good friend of mine was noticeably balding by the time he was twenty two.

“Excess testosterone causes baldness – At best this could be a half truth as baldness is linked to hormone production but studies have rarely found evidence that it’s directly linked to having too much testosterone, it would be nice for all of us with less hair than we’d like to take comfort in the fact it’s because we’re too manly for hair but for the time being at least there is no hard proof of this.”

“The truth is going bald is caused by our bodies inner workings and very little else, having said that there are a number of reasons why we don’t simply wish to accept it, even if you’re an individual who shaves his head it’s nice to think you at least have the option of growing hair if you so wished.

“You inherit the baldness gene from your mom – For a time scientific research did indeed point to this being a fact, more recent studies have

found that this isn't the case though and both parents can in fact have an effect on baldness genes.

Too much hair washing causes baldness – There have been numerous studies into the subject and all have found no link between how many times you wash your hair or using too much shampoo to causing or accelerating baldness.

Using gel or hairspray makes you go bald – Similar to the hair washing studies - nothing has even been found that links gel and hairspray to baldness.

[Click here to check out the rest of "Hair Loss Solutions for Men: How to Cheat Hair Loss for Life" book on Amazon.](#)

Check Out My Other Recommended Readings

Below you'll find a list of my recommended readings that are popular on Amazon and Kindle as well. Simply click on the links below to check them out.

[**Colon Health and Wellness, The Ultimate Guide to Colon Health the Natural Way - Recommended Books On Amazon**](#)

[**Marathon Running Made Easy: Simple Strategies, Tips and Techniques for Running 26.2 Miles - Recommended Books On Amazon**](#)

[**2014 New Car Buyer's Guide: Top 10 Sedans and SUVs Reviewed - Recommended Books On Amazon**](#)

[**Hair Loss Solutions for Men: How to Cheat Hair Loss for Life - Recommended Books On Amazon**](#)

[**Dating After Divorce: Simple Steps to Overcoming Divorce and Learning to Date Again - Recommended Books On Amazon**](#)

If the links do not work, for whatever reason, you can simply search for these titles on the Amazon website to find them.