



Stay Lean and Keep Your Testosterone

by Parviz K. Kavoussi, M.D.

We know how important estrogen is for women, but did you know it's an important hormone for men? Yup, you guys have it, too. There is an enzyme in fat cells called aromatase; it takes testosterone made by the testicles and converts it into estrogen. The more fat cells a guy has, the more testosterone gets turned into estrogen. The less relative testosterone is kept around to act on tissues, the tougher it is to maintain muscle mass and lose fat mass. The more fat that is put on, the more testosterone is converted into estrogen, in essence dropping the testosterone level, which in turn makes it harder to burn the fat mass... and so the vicious cycle begins. That's why hitting the gym and getting regular cardiovascular exercise to keep the waistline in check is a great way to keep more of the testosterone that's being made as testosterone.

Getting testosterone levels up is an important step to help break the weight cycle, allowing the body to burn fat and gain muscle with the appropriate exercise regimen and diet. A low fat, low cholesterol diet and a fitness regimen will still benefit a man's testosterone level. If you decide to seek medical treatment for low testosterone, it is recom-

mended that you see a physician who is well-versed in all the risks, benefits, and treatment options available.

Is weight gain the only reason to worry about your testosterone level? It's important to maintain normal testosterone levels for a number of reasons. Men with low testosterone can suffer from the following issues: increased fat mass, decreased muscle mass, decreased exercise tolerance, decreased bone

neurologist Charles-Édouard Brown-Séquard claimed to have improved his own physical strength and intellectual capacity by self-injecting "liquid testiculaire" prepared from animal testicles into his body.

Those same principles have been a bit more refined over time, and medical testosterone replacement therapy is one way of getting the testosterone level up. How does this work? In essence, it fools his body into thinking it

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mass, worsened erectile function, decreased sex drive, depressed mood, irritability, tiredness, lack of motivation, sleep disturbances, worsened spatial cognition, hot flashes, impairment of fertility, and deterioration of skin and hair. Yeah, that one hormone does a lot of good stuff!

Although fitness will help a man maintain more of the testosterone that is produced as testosterone, there is a typical decline in testosterone production as men age. Normal aging can result in a progressive decline in testosterone production over the years, and at least 13 million men have been reported to suffer from the effects of low testosterone in the United States a year. From the age of 35, men can lose between 1-2% of their testosterone a year. The Massachusetts Male Aging Study reported a prevalence of 481,000 new cases of low testosterone in American men between the ages of 40 and 69 each year. By the age of 50, 30% of men are already below the normal range and by age 60, 60% of men suffer from low testosterone. Carefully evaluating each individual and then appropriately raising his testosterone level can help improve each man's quality of life by improving body composition and strength, exercise tolerance, increasing bone mineral density, modestly decreasing total and LDL (bad) cholesterol levels, improving sexual desire and erectile function, and improving energy levels and decreasing fatigue.

So what's a guy to do when diet and exercise aren't doing the trick and his testosterone levels are still staying low? Fortunately, medical science has made leaps and bounds since the nineteenth century, when the French

made that testosterone. The pituitary gland is essentially the master of the testicles and tells them what to do. FSH (follicle stimulating hormone) secreted by the pituitary prompts sperm production and LH (luteinizing hormone) from the pituitary signals the cells in the testicles to make testosterone. These signals decrease their activity because they think the body is already doing a great job of making testosterone. Along with that, the signals which tell the testicles to make sperm drop as well.

Men who are no longer interested in fertility can be treated with direct medical testosterone replacement via topical gels and patches, intramuscular injections, and testosterone pellet insertion beneath the skin. Lower sperm production is not the only side effect of this treatment; direct testosterone replacement therapy side effects can include fluid retention in men with heart, liver, or kidney disease; enlargement of the breasts in men who are converting a lot of testosterone into estrogen; increase in red blood cell mass; and the risk of stimulating growth of locally advanced or metastatic prostate cancer cells in men with active prostate cancer.

Men with low testosterone levels who want to maintain fertility can be treated with other medications rather than direct testosterone replacement. One of these medications is Clomid, which was originally produced to treat women with infertility. We have since learned it works well in men, helping increase the signals from the pituitary gland to the testicles to make more testosterone while maintaining sperm production. Another class of

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diagnosis of low testosterone is so important; if testosterone is low to start with, the man is not getting the benefits from the hormone anyway, and that is when replacement therapy should be considered.

So what is considered low and what is considered normal testosterone? Normal testosterone levels fall in the 300 to 1,000 ng/dl (nanograms per deciliter) range. Hypogonadism (the official medical term for low testosterone) is defined by the FDA as a level below 300 ng/dl. Testosterone level is measured by a simple blood test. Right now, this is not a standard part of the average man's well check visit. Symptoms such as the ones listed earlier will cause most experts to suspect low testosterone, and most doctors believe that men presenting symptoms and a result below 350 ng/dl would benefit from increasing their testosterone level. This is a very individualized assessment, and doctors combine blood test results with patients' symptoms and thorough office evaluations to determine if replacement therapy is appropriate. There is no recommendation to test at any certain age; while the

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aging process affects a man's testosterone level, an age-adjusted range has not been established thus far. The costs of replacement therapy vary depending on the insurance plan of each individual. *afm*

medication that can help increase testosterone levels in men while maintaining fertility potential is aromatase inhibitors. These block the enzymes in the fat cells from converting so much of the testosterone into estrogen. Human chorionic gonadotrophin (hCG), a glycoprotein hormone found in the pituitary gland in both men and women, can also make the testicles work harder to produce more testosterone while maintaining sperm production. Although great data in long-term clinical trials is lacking, most experts consider testosterone replacement to be a life-long therapy. If a man stops testosterone replacement, his body will not get ramped up to produce his own testosterone. In fact, it is thought that levels will at the very least continue to decline as they would have had treatment never been initiated in the first place, and some of the cells that were making testosterone may not do as good of a job if testosterone replacement is stopped after long-term use. That is why the initial evaluation to make an accurate

aging process affects a man's testosterone level, an age-adjusted range has not been established thus far. The costs of replacement therapy vary depending on the insurance plan of each individual. *afm*

For further exploration of this topic, the following sites are unbiased and informative:

- www.sexhealthmatters.org/low-testosterone
- www.urologyhealth.org/urology/index.cfm?article=132

Dr. Parviz Kavoussi is fellowship trained in reproductive urology and andrology and practices at Austin Fertility & Reproductive Medicine with a focus on male infertility, sexual health, and microsurgery. He has published peer reviewed articles in journals, written chapters in urologic textbooks, given lectures and scientific presentations around the world, reviewed articles for publication in the Journal of Urology and Journal of Sexual Medicine, and sits on the American Society of Andrology public affairs and policy committee guiding the best clinical practices in male infertility and sexual medicine.



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