YOUR NEW PRIME

30 Days To Better Sex, Eternal Strength, and a Kick-Ass Life After 40

BY CRAIG COOPER

Chapter 2: Skip the T Party: Why Supplemental Testosterone Is a Deal with the Devil

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The Precursor: Viagra

It may be difficult for some of us to remember, but there was a time when talking about your member—much less admitting you had a problem with it--was a major taboo. Sure, locker rooms, bars, and other guy-only haunts have always been home to big-fish stories about sexual conquests and the caliber of our equipment, but in mixed company, talking about your willy just wasn't considered gentlemanly.

Then, like a tidal wave, Viagra came on the scene.

You probably remember it like it was yesterday: the year was 1998. Scientists at Pfizer, investigating the health benefits of a drug called sildenafil, found that, while the drug didn't boost cardiovascular health as they'd hoped, it had a huge effect on potency. The new drug, now called Viagra (rhymes with Niagra, as in a huge, endless, gushing flow of insurmountable power), was marketed as a cure for erectile dysfunction—and an empire was born. In the first few weeks after it was released, close to 40,000 prescriptions for the drug were filled, and in 2008, sales reached nearly $2 billion.

It made no difference that Viagra was, and remains, a ready-made punch line (Jay Leno told 944 Viagra jokes between 1998 and 2002). By selling ED as a serious medical condition on one hand, and hiring former presidential candidate Bob Dole and NASCAR star Mark Martin as tongue-in-cheek Viagra spokesmen on the other, Pfizer helped fuel one of the biggest blockbuster drugs in pharma history.

At the same time, they also discovered an untapped, highly lucrative

market: us. Aging men, looking for the twentieth-century equivalent of the skink lizard. Those millions of prescriptions were the first indication that guys of a certain age were not only willing but eager to discuss and reveal problems with sexual functioning, now that a simple and apparently harmless solution was available to help them out. Recreational use became common. Jokes or no jokes, the drug was a phenom.

The Viagra craze confirmed, once and for all, that if there's a drug out there that can make men our age feel better about insecurities relating to our manhood, we're willing and ready to buy in.

Funny thing: in the last few years, even as more of us are aging into Viagra's target demographic, sales of the drug have flagged. Was it overhyped? In his 2003 book The Viagra Myth: The Surprising Impact on Love and Relationships, urologist Abraham Morgentaler argued that Viagra works at a cost to the man taking it--and to his relationships with his sexual partners. It can't save a failing marriage. It can't restore a failing sense of identity or loss of potency outside the bedroom. Indirectly, it may even lead to more insecurity: researchers in Australia found that Viagra commercials created sexual anxiety in men. Manhood, no surprise, is deeper and more complex than the ability to perform sexually, over and over again, at the drop of a little blue pill, and perhaps this drop in sales suggests that consumers have started to figure that out.

None of that matters to the drug manufacturers, of course: for now, they're continuing to pull in substantial profits from the pill—and to play blatantly on our insecurities at the same time. I recently met an actor who has made a small fortune starring in ads for ED medications: he's build like a linebacker: six five, 240 pounds, single-digit body fat. The only indication that he's over 35 is a slight salt-and-peppering in his hair. Subtle these advertisers are not.

Most disturbing to Pfizer is the fact that the patent for Viagra is due to

expire in a few short years—2019, to be exact. Even with sales down from the heyday of the late 2000's, that will mean a huge nosedive in profits for companies that make sildenafil-based ED drugs.

As a result, big pharma has been scrambling to find the next Viagra—the newest, latest version of manhood in a pill.

That drug is supplemental testosterone, a drug that the FDA has only officially approved to treat hypogonadism—a serious medical condition in which a man's body, due to injury or chronic disease, produces little to no testosterone—but which is increasingly being prescribed off-label to treat far less serious, but far more common conditions: low sex drive, weight gain, depression, low energy—a symptom list that conveniently bundles some of the more ubiquitous male health concerns under one name: "Low T."

Long-term, prescription testosterone hasn't been tested or studied rigorously. It has many very troubling side effects that are proven—and may have others we don't know about yet. Perhaps most ironically of all, T may be completely ineffective at improving the problems the manufacturers claim that it will.

Welcome to testosterone replacement therapy—an industry expected to swell to $3.8 billion in the next three years, almost doubling the value of Viagra at its high-water mark.

Let the buyer beware.

The Allure of T

Testosterone was discovered and isolated back in the 20's and 30's--right around the time that our Dads were born. Back in 1939, two scien-

tists, who later won Nobel Prizes for their work, discovered that giving the drug to neutered chickens caused the birds to turn, physiologically, into roosters. Voila: instant chicken virility.

As far back as the 1940's, athletes, soldiers, and other professionals whose jobs required physical strength and stamina have been using T in one form or another to gain a competitive edge in their chosen sport or activity, and the drugs delivered. From German athletes at the Olympic Games in 1972 right up through high-profile pros like Lance Armstrong, Ben Johnson, Alex Rodriguez, Barry Bonds, Floyd Landis, and Marion Jones, athlete after pro athlete has used steroids, often in the form of testosterone, for one simple reason: they work.

"Steroids are incredibly effective," says Harvard-based steroid expert Dr. Harrison Pope in a recent documentary on performance-enhancing drugs. "A young guy who eats badly, sleeps badly, smokes, drinks too much alcohol, misses half of his gym workouts and takes steroids can blow away the most dedicated, most gifted athlete who does not take steroids in terms of building strength and muscle mass."

Steroids accomplish this by accelerating recovery from exercise. Strenuous exercise causes breakdown in muscle tissue from which the body usually requires about 48 hours to recover—longer as we age. Like anabolic steroids, T accelerates and accentuates that recovery ability, allowing you to work out harder and bounce back more quickly from challenging workouts. It also hastens tissue regeneration system-wide, leading to faster recovery from injury and fewer of those aches and pains you may have decided were your lot in middle age. Result? A level of muscularity and leanness that's tough to achieve any other way.

Few of us are even serious amateur athletes, much less pros. And unless we're willing to turn to the black market, exercise like maniacs, and take levels of T up to ten thousand times the therapeutic dose (which

some athletes do), we're not going to achieve those superhuman results anyway. But athletes on the field of play nevertheless embody many of the qualities that New Primers are striving to bring into our daily lives: strength, focus, determination, power, and a will to succeed and thrive under pressure. As a group, they also tend to look healthier, more vibrant and more alive than your typical cubicle-dweller. And unlike the pros, we don't have to worry about drug testing. If so many of our highest performers rely on these drugs to reach the heights they've risen to, could supplemental T help nudge us a little closer to our own potential as well?

It works for chickens. It works for athletes. Most of us remember, dimly, that it worked for us, too, back when we sprouted from pipsqueaks to hulks over the course of a few short years, back in our adolescence. It's natural and it seems to work, a mean to remain youthful and vigorous Peter Pans forever. What's not to love about this stuff?

Taboo to Legit

Like pro athletes, we New Primers want to stay sharp, competitive, on top of our game. And we, too, have mortal bodies that can feel like they're limiting us. Most of us aren't as strong, fast, or enduring, and many of us are more prone to injury than we used to be.

On the inside, we're changing too: after about age 30, production of T drops 1% per year (one large study of healthy men found that men over 70 had barely over half the mean testosterone of men under 40.) This drop appears to occur right about the time most men start to experience a drop-off in sex drive, energy, capacity to concentrate, muscle mass, athletic performance, and other indicators. Drug companies have encouraged the implicit connection between declining T and decreasing performance by coining the phrase "manopause" or "andropause" (see sidebar:

"Andropause: Real or Imagined?") to describe it.

Whether they are in fact, linked, is an open question.

Through a impressive PR sleight of hand, the "anti aging" industry has managed to peel back the taboo from testosterone use, beginning by referring to it as "testosterone supplementation," "testosterone replacement therapy," or, more nebulously, "hormonal optimization." Many guys may remember the ads for the Las-Vegas-based anti-aging clinic Cenegenics featuring Dr. Jeffrey Life, a balding septuagenarian GP with the incongruously muscular and ripped physique of an Olympic gymnast. The large print in these ads talked about workouts and nutrition; the small print talked about "optimizing" hormones.

In an interview with Merrill Osmond right around that time, talk-show cardiologist and Oprah protégé Dr. Mehmet Oz described low T as "relatively easy to fix," with creams, patches and the like, making no mention of possible drawbacks.

In 2013, Charles Staley, a highly respected and sought-after fitness coach (who also happens to be over 50), wrote, in an article for the online magazine T-Nation that older lifers, as a matter of course, should "Restore Optimal Testosterone Levels":

I'm not talking about steroids here, which are expensive, illegal, and potentially dangerous. I'm referring to Testosterone Replacement Therapy, (TRT), which is legal, medically supervised, safe, and a lot easier to do than most guys think.

Staley's article signaled a tidal shift. Suddenly a well-regarded fitness expert—a guy who preaches clean living, good eating, and hard work—was giving supplemental T for health-minded older guys the thumbs-up.

Just as Viagra helped usher in a new acceptance of and willingness to

discuss ED, TRT has helped bring “low T” into common parlance. Google it and nearly a half-billion sites pop up (the first of which, inevitably, are ads for prescription T). Media stories and symposia on problems associated with low T are ubiquitous. At one, professor of Urology Dr. Larry I. Lipshultz warned, “Right now the prevalence of low testosterone is approximately 39 percent for men over 45, which translates to close to 14 million men in the United States.”

At the same time, ads for prescription testosterone products like Axiron, Androgel, Androderm, Testim, and Fortesta are ubiquitous: since 2009, marketing of T drugs is up 3000%. “Pump up your T!” one ad for an aerosol version of the drug cleverly exhorts us. “Power, performance, passion!” proclaims another. “You may qualify for a free testosterone test!” promises yet another (I did—simply by inputting my age and checking a box that said I had “low energy.”). All the ads feature virile, stubbly guys doing virile, stubbly things like brandishing power tools and driving speedboats.

The marketing blitz is working brilliantly: from 2001 to 2011, the number of testosterone prescriptions written in the US increased tenfold, while online pharmacies in Canada, many catering to Americans, issued millions more. The taboo has lifted, and the floodgates have opened. T seems to be the cure for all our problems. But is it really?

SIDEBAR: Andropause: Real or Imagined?

Around age 51, women experience a shutdown of the reproductive system that can bring with it a familiar rash of symptoms, including mood swings, changes in sexual desire, hot flashes, and other delights that many of us will witness firsthand, in our wives and girlfriends, if we haven’t already.

Around this same time, many men experience similar symp-

toms--changes in mood, sexual functioning and potency, even hot flashes—that can appear to be a male version of the same thing. Some people even give this time-of-life change a name: andropause. Is the new term warranted?

Proponents say yes, pointing to a condition called hypogonadotrophic hypogonadism: in healthy males, a drop in circulating testosterone causes the hypothalamus and the pituitary gland (both in the brain) to release the hormones GnRH and LH, which essentially give your nuts a swift (painless) kick, causing them to ramp up production of T. However, as we get older (starting in our early 40's), GnRH and LH don't get released as readily when T is low. When all three hormones—testosterone, GnRH and LH are low, that's hypogonaotrophic hypogonadism (I'll just call it hypo-hypo from here on. I just made that up, but it's easier to type).

If T falls unchecked below a certain point, eventually GnRH and LH get it in gear and supply your testes with the stimulus they need to make more T. The boost they provide, however, is short-lived: eventually, T remains low despite high GnRH and LH—and that's when you get what some clinicians are now calling andropause, a hormonal shift that does in fact mirror what women undergo in menopause.

Here's the difference: unlike women, men maintain the ability to reproduce late into life, even past the point of hypo-hypo. Most of the time, the drop in T is not a precipitous cessation, as is a woman's hormonal shift, but a gradual decline that begins many decades before. Though the hypo-hypo hormonal shift will occur in most men at some point, an early drop is not a sign of permanent change. There are, in fact, are many proactive steps most men can take to boost testosterone at virtually any point in their lives—steps that are outlined in the previous chapter.

The acronym ADAM ("androgen decline in aging males") or PADAM ("partial androgen decline in aging males") is probably more accurate—and encouraging--than a term that equates a gradual downward trend in male hormonal levels with the much faster drop, and more drastic change, in women's bodies around the same time.

Maybe I'm nitpicking, but the words we use to describe our experiences have power. They make us see ourselves, and thus behave, in particular ways. To me "andropause" sounds like a change that's unavoidable, irreversible, and drastic. The word itself literally means an end to manhood. If you believe that, how much more likely are you to think it's all over for you—professionally, personally, sexually—and that your best days are behind you?

And we all know that's not true. Let's free ourselves from the myth of andropause and start taking pro-active steps to turn things around for ourselves naturally.

T: Worth the Hype?

Most men have a total, or serum, testosterone level that falls between 300 and 1000 (that's in nanograms per deciliter of blood, for the nerdishly-inclined out there). Doctors define hypogonadism—low testosterone—as a condition in which testosterone drops beneath a limit—a level that, significantly, no one really agrees on--and causes noticeable symptoms, including, but not limited to

- Low sex drive
- Infertility
- Erectile dysfunction

- Fatigue and low energy
- Difficulty concentrating
- Depression
- Irritability
- Low sense of well-being
- Weight gain
- Loss of muscle mass and strength
- Slowed rate of facial hair growth
- Hot flashes, sweats.
- Increased likelihood of obesity, diabetes, high blood pressure, and high cholesterol.

In medical circles, clinical hypogonadism is becoming more common. As I mentioned in the last chapter, the average man's testosterone is 25% lower today than it was in the 1980s—so the problem of lower T (though not necessarily clinical hypogonadism) appears to be systemic--environmental or societal--as well as individual.

Of course, the T industry wishes to prescribe as much testosterone as possible, and recently it's been found that 25% of men who are given the drug are never tested for low T at all, and it's unclear whether the remaining 75% had levels low enough to warrant therapy. Anti-aging clinics also, notoriously schedule testing appointments for 3 PM—the time of day when most men's T levels are at lowest (when doctors normally test for low T, they schedule the appointments in the morning, when levels are at their peak).

Some amount of drop-off in T is expected with age, but in truth, many factors can cause T levels to decline, including:

- Injury to the testicles
- Testicular cancer—or treatment for testicular cancer
- Hormonal disorders
- HIV/AIDS
- Chronic liver or kidney disease
- Pituitary disorders
- Inflammatory diseases
- Type-2 diabetes
- Obesity
- Opioid pain medications and glucocorticoids (like prednisone)
- Sickle-cell disease
- Alcoholism (particularly consumption of beer).
- Stress
- Lack of sleep
- BPA (a chemical often found in plastics)
- Soy in the diet
- Lack of exercise
- Sedentary lifestyle

Glance over that list again: with the exception of serious conditions like HIV and testicular cancer, many of us encounter a host of these root causes—environmental, behavioral, and otherwise--on a daily basis. They're woven into the fabric our everyday lives. So arguably, the trend towards substantially lower T in men reflects a bigger trend towards a sedentary, stressed-out, sleep-deprived, overfed-but-nutrient-deprived lifestyle.

The million-dollar question that the supplemental T industry doesn't want us to ask is—are we fat, sleep deprived, depressed, and diabetic because we have low T? Or is our T low because we're fat, sleep deprived, depressed and diabetic? In most cases, the only honest answer to this question is we don't know. Just as high or normal T can be both a cause and an effect of radiant health, low T can be a cause and an effect of poor health.

If you're truly, measurably hypogonadal—your T is low and you are experiencing symptoms that are interfering with your career and relationships, then you have a condition that requires legitimate treatment by a physician. But the rest of us—those of us who have gained a few pounds here and there and may be feeling stressed out, depressed, and uninspired—would be much better served going to the local gym than to the nearest "anti-aging" clinic and jumping on the T train.

Quick analogy: if you've ever visited Los Angeles, you've probably encountered a Scientology evangelist or two, who ply unsuspecting passers-by with questionnaires asking if you ever "feel awkward in public," or "experience feelings of anxiety," or "feel run-down." If you answer 'yes' to any of the questions—which everyone does, since awkward public moments and anxiety and fatigue are part and parcel of being alive--the solution they offer is Scientology. Ads for depression medication strike a similar note: do you sometimes feel down? Do you get the blues? In

many ways, the current run on testosterone therapy reminds me of this same brand of hucksterism: an ill-defined, made-up solution to an ill-defined, made-up problem.

SIDEBAR: Estrogen: A Troubling Precedent

Years ago, estrogen was marketed as the fountain of youth for women entering, and passing, middle age: literature on the drug promised a reduction of menopausal symptoms, prevention of osteoporosis and colon cancer. Like testosterone today, it seemed to be a harmless solution to a common problem, and doctors began prescribing it liberally.

Now that decades of data has been collected on women taking estrogen (commonly alongside the hormone progestin), the drug has increasingly found to be associated with a greater risk of strokes, blood clots, gallstones, ovarian cancer, dementia, and urinary incontinence.

The benefits, many women have decided, are simply not worth the many risks.

At present, few clinical trials of T extend past three years, leading some physicians to rightly question whether the current run on supplemental T may be repeating what happened with prescription “E” all those years ago. Short answer – our generation are the guinea pigs for an unproven and overprescribed threat to our masculinity.

What Supplemental T Will and Won't Do

Surf around on a few websites advertising prescription T (there are lots of them out there), and what do you see? Plenty of virile-looking middle-aged men staring thoughtfully into the middle distance. A few women looking at them with a practiced mix of concern and lust (However will he satisfy me? she seems to be thinking.) A list of the symptoms of Low T (or manopause, or andropause). You might even see the results of a study or two confirming that the drug in question does indeed boost testosterone. On the site for Androgel, the current bestseller among T-replacement gels, I found this quote:

In a clinical study of 274 men who had Low Testosterone, some used Androgel 1.62% and some used placebo. Of the men who used Androgel 1.62% once daily for 16 weeks, 82% had their testosterone levels returned to normal compared to 37% of those who used placebo.

The drugs work, in other words, in that they raise your T levels (though in this case a placebo appears to work pretty well too). But does Androgel give its users more energy, amp up their sex drive, make them stronger, more muscular, more virile? Does it give them stronger, more frequent erections? Will it, in fact, turn them into the paragons of masculinity they're hoping to become?

The site, wisely, makes no explicit claims about any of these things. At best, the companies tap-dance around the issue with qualified statements, buried several clicks deep in the site, like "may increase" and "could improve...". Why are they so circumspect? Because prescription T may or may not do any of the things we hope it will.

Let's take the claims for Low T one at a time:

1. T will boost my sex drive and performance: This can be true—if your testosterone is actually low and you are experiencing a dip in libido as a result. A 2007 German study concluded that there was a "consistent but weak positive effect of testosterone on sexual functioning" in hypogonadal men taking supplemental testosterone. In men with normal levels of T, supplementation doesn't appear to do much for sex drive.

This may result from the hormonal system of checking-and-balancing: When you flood your system with lots of testosterone, your body converts a portion of it to estrogen, the female hormone (that's why so many male bodybuilders develop gynocomastia, or "man boobs", on top of their overbuilt pecs). Higher estrogen may dampen or raise your sex drive—it all depends on how your system responds.

As for sexual performance, in a 2003 study published in the Journal of the American Geriatric Society, supplemental testosterone did not reliably improve sexual functioning in older men with normal or slightly low t levels.

More T, it seems, isn't always better, especially when it comes from a needle (or a patch, or a pill). And indiscriminate use of T can be seriously bad news: Many East German athletes from the 1976 and 1980 Olympics who were unwittingly given testosterone as part of their training regimen are still suffering from the ill effects today.

2. T will improve my mood. This is one of the biggest claims that you hear about T: it lifts you out of the doldrums. But here again, the actual findings aren't clear-cut. One 2004 study of young men on a round of supplemental T found that the effects of 1000 mg of a T solution produced "detectable but minor mood changes" (my emphasis). On the positive side, the subjects reported feeling less fatigue and inertia; on the negative side, they and their partners also reported more anger and

hostility. Overall, however, the study concluded that the psychological effects of T on these young men were "limited." (the wording in the study suggests that the researchers were hoping that T would have no psychological side effects so it could be green-lit for other uses.).

A 2008 review study summarized the findings on T's effect on mood as follows: "Most [studies] do not support testosterone as a broadly effective antidepressant, but it may be effective in carefully selected populations, such as hypogonadal men, antidepressant-resistant men, men with early onset depression, and/or HIV-infected men."

The upshot: although low T can bum you out, artificially enhanced, super high T doesn't make you super-happy.

3. T will make me stronger. Surprisingly, the jury is still out on this, too. T does seem to increase muscle mass, decrease fat mass, and improve bone mineral density—all great outcomes if your T is low. But the 2003 study cited above—which is a meta-analysis of data collected from many other previous studies—found that the studies linking T with strength are inconclusive. A 2012 study supported these findings.

Strength, as many coaches and athletes are keenly aware, is as much a function of prior learning and training as it is the quality and size of your muscle tissue. Even tests of "pure" strength, like the barbell bench press or deadlift, can require decades to perform with technical proficiency. So it may be that, without training, a few extra pounds of muscle bulk here or there won't do much for your ability to move weight.

4. T has minimal, and manageable, side effects.

The first ten seconds of the ads for T always sound great and are super convincing. It's the rest of the ads that scare the life out of me. The pages and pages of small print, warning us about such conditions as

- Acne
- Sleep apnea
- Heart failure
- Infertility
- Hair loss
- Increased risk of prostate cancer
- Liver problems
- Blood clots
- Breast growth
- Increased risk of heart disease
- Worsening of urinary symptoms

My personal (least) favorite? “Women and children should avoid skin contact with treated areas, as accidental transfer may cause unwanted hair growth.” Yikes.

Under the best of circumstances—a scrupulous doctor’s constant, careful supervision—the side effects of T can be at least managed - somewhat. But let’s be clear: T is a serious, system-altering drug, and more and more, ethical doctors are voicing concerns about how little research exists about its long-term effects. Here are a few of the worst ones:

- About 40% of men taking T develop polycythemia, or high blood cell count, which causes a thickening of the blood—which in turn, can increase the risk of blood clots, stroke, and heart attack. One study, published in 2010, found that older men taking T had nearly five times the risk of cardiovascular problems as men taking a placebo. Another

from 2013 concluded that cardiovascular risk went up for men over 65 who took the drug. As of 2014, the FDA launched an initiative to reassess the safety of prescription T.

On a side note, a phlebotomist I'm friendly with--who has taken my blood repeatedly for testing purposes—told me that some of her most dedicated clients are bodybuilders. They need transfusions frequently, she explained, because the massive loads of steroids they take make their blood sludgy.

- Though testosterone therapy doesn't cause prostate cancer, research indicates that it may make an existing prostate cancer worse, or hasten its growth. That's worrisome, especially giving mounting evidence that many of us over 40 are walking around with slow-growing prostate cancer that probably won't affect us during our lifetime—unless, of course, some external factor causes its growth to accelerate.
- The side effect that many doctors and advertisers do mention—at least in passing--is that supplemental T causes your testicles to shrink, and your own natural production of the hormone to shut down. However you feel about a smaller pair of onions (some guys might be relieved), lower natural T production is no joke. It essentially means that, once you start, you're on prescription T for the rest of your life. Like those East German Olympic athletes, who are still suffering the consequences of unwittingly doping some 30 years ago, your body has changed forever. This is part of what makes anti-aging clinics such a safe business proposition: unlike Viagra, which you may be able to take or leave, T skews your system permanently so that, now and forever, your body needs supplemental T. That's why my four-word summary of supplemental T is that it's a "deal with the devil": it makes you an addict.

The rest of your life is, we hope, a long, long time. Are you willing to keep it up with the patches, sprays, roll-ons, or injections till then? Laying aside the cost (testosterone therapy run more than $500.00 a month) and the inconvenience (a safe and smart supplementation program requires frequent self-injections, more frequent doctor consults than you're probably used to, and, unless you have a thing for bearded ladies, serious discretion about whom you hug with your shirt off). Given all that, do you really want to be unable to produce your own T, and more or less hooked on an expensive drug...for the rest of your life?

- Another great irony: by shutting down natural T production, supplemental T also decreases fertility. Adding testosterone to the body spurs a process that impedes sperm production—in some cases, perhaps even permanently. In one 2013 study, 34 men who had been seeking treatment for infertility and agreed to stop taking the supplemental T they had been prescribed as part of their treatment. The result? Sperm count jumped from 1.8 million to 34 million per milliliter in most of the subjects. In six of them, it didn't bounce back at all. T has even been studied as a possible method of birth control—because a reported 90% of men can drop their sperm count to zero while on it. Take home lesson? If you think you might want more biological kids—ever—don't touch T.

Finally, because T hasn't been researched long-term, there really is no telling what the side effects of the drug will ultimately be, and, indeed, whether supplemental T for more or less healthy men eventually goes down in history as a huge mistake that we could have avoided.

The bottom line on all this: **for men with clinical hypogonadism (low T**

count and symptoms), supplemental T can be a godsend. For the rest of us, it's a huge mistake. Although many ethical physicians prescribe T judiciously (only after a patient has complained of telltale symptoms and a test reveals unquestionably low T), an increasing number have started prescribing T without even so much as a blood test, and only upon hearing of the vaguest symptoms ("low energy," "just not as excited about sex anymore..."). Though state regulations dictate what constitutes low T, the sizable window for "normal" levels allows doctors to top off a patient right to the upper limit of 1000 mcg/dL—a sky-high T level that could represent four times his natural production.

I'm not going to get into a full-scale discussion of medical ethics, but supplemental T administered in this way is a big-time gray area. The anti-aging industry argues that any drop in T affects quality of life in substantive ways and should therefore be treated aggressively (in the same way that, say, acne is treated in teens), risks and side effects be damned. Research, however, reveals that therapeutic levels of T is far from the cure-all that it's hyped up to be, that the known side effects are considerable, and the unknown ones may be far worse.

SIDEBAR: A Shot of T: Better than Nothing?

So prescription T might not be all it's cracked up to be. But surely it's better than nothing, right? If we're taking T, at least we're taking action that's guaranteed to have some effect...right?

Shockingly—no. A couple of years ago, Columbia psychiatrists Stuart Seidman and Steven Rose conducted a randomized, double blind test on 30 men who were experiencing depression and erectile problems. Half the men they gave T shots, the other half shots of a similar-looking placebo.

Many of the men saw their symptoms improve. But the men who received a placebo were just as likely to see improvement as those who received actual T.

All well and good for vague symptoms like depression and erectile dysfunction—but what about the effect of a placebo on your actual, measurable level of T, you ask? Guess what: placebos improve that too. In experiments conducted by one drug company, just over 80% of men with low T who took a T gel saw their levels increase—but a full 37% of the men had their levels restored to normal by a placebo.

The lesson? T levels are highly variable--throughout the course of a day, a week, a life--and extremely subject to all kinds of subtle physical and psychological shifts, including the suggestion that something you're eating or doing or taking might cause your levels to rise, and your symptoms to abate.

This is not to say that prescription T does nothing. Many men will see some benefit from taking the drug, albeit one that comes with many drawbacks. But makers admit that, in order to get the full range of benefits, you'll have to change your lifestyle as well: start working out, eating better, throwing yourself into life.

So if you're going to have to do it anyway, why not just change your lifestyle and skip the extra T?

Natural Solutions

It doesn't take a physician to see that 300-1000 mcg/dL is a pretty huge window. One man could have a T level that's 400% of another and both could still be considered normal—and even feel normal. One very solid, super-successful guy I know—a celebrity whose name and face you'd

recognize—has T levels that barely move the needle. And yet, he's a lean, muscular, energetic guy, and a gifted athlete—with a wife and two amazing little girls to boot. Perhaps his estrogen is microscopically low; perhaps he has low cortisol. It doesn't matter; it's just the way his system works. On the flip side, artificially enhanced high T is no guarantee to happiness, health, or effectiveness in the world, either—just ask your average retired WWF athlete or NFL player. So in many ways your T number (like, say, your weight) is actually pretty meaningless: you can feel great or lousy with T on the higher end and the lower end.

Testosterone isn't like some other hormones, for which optimal levels are well known and understood, explains Dr. Steven Kaplan, director of Men's Health at the Iris Cantor Men's Health center in New York City. For testosterone, he says, "We don't know the sweet spot."

Add to that the fact that simple activities like taking a walk, arguing with your spouse, watching a football game, or even assuming a different posture (see last chapter) can raise or lower your testosterone levels by up to 30%, and it's easy to see that testosterone levels aren't a static number, alterable only through external intervention but highly individual and also highly variable within individuals as well.

That leads me back to an assertion I alluded to earlier: that **for optimal health, most of us don't need more drugs, but better habits and a better, more thought-out working and living environment.**

Low T…or Bad Choices?

Hormones don't operate in a vacuum: they balance one another out to keep you on an even keel. One hormone makes you sleep, another wakes you up; one makes you hungry, another tells you you're full, and so on. As

a whole, your endocrine system works like an orchestra of skilled musicians, each one responding subtly to the actions of the others, and to the movements of the group as a whole. Boost any one hormone artificially and a cascade of other hormones rushes in to compensate for the imbalance.

As a way to treat common physical and psychological symptoms, then, testosterone therapy is an exceedingly broad brush, a generalized, one-size-fits-all solution to what are, much more likely, extremely individual problems that stem from our individual inheritance and environment. Prescribed for such conditions, T therapy is the equivalent of tossing a hand-grenade into the midst of that well-coordinated hormonal orchestra and expecting it to perform better.

Virtually every symptom that the anti-aging industry tells us is due to low T can be—and most likely is, caused not by diminished levels of a single hormone, but by our epigenetics—those myriad environmental and behavioral factors that interact with our DNA, profoundly influencing our health and outlook. As the chart below shows, symptoms like weight gain, depression, and low sex drive can have so many different causes that pointing to low T as a scapegoat starts to make very little sense:

"Low T" Symptom	**Possible Environmental / Behavioral Causes**	**First-line Solution**
Weight gain	Poor diet, lack of exercise, sedentary job or lifestyle, age-related loss of muscle mass, drinking, poor sleep, environmental toxins.	Smarter food choices, regular, intense exercise, stand-up desk and lifestyle, time management and better sleep patterns.
Erectile dysfunction	Abdominal fat, stress, relationship problems, smoking, alcohol, fatigue, poor sleep, performance anxiety.	Weight loss, de-stressing techniques, time management to allow better sleep and connection with partner.

"Low T" Symptom	Possible Environmental / Behavioral Causes	First-line Solution
Low sex drive	Stress, poor communication, depression, lack of self-esteem, obesity.	De-stress, counseling, connection, exercise, smarter dietary choices and weight loss
Irritability	Stress, lack of connection, relationship strain, poor diet, smoking, consumption of alcohol.	De-stressing techniques, counseling, connection with spouse and friends, socializing, re-evaluating life goals.
Low energy	Lack of investment in career, lack of passion and wholeheartedness in work/relationships, lack of exercise.	Reinvestment in aspects of life that excite and enthrall you, greater passion and commitment to family and job, potential life change.
Bone loss	Lack of intense exercise, poor diet, lack of sunlight and poor vitamin D levels.	High-impact exercise, calcium-rich foods and vitamin D supplementation.

As Dr. Bland points out in The Disease Delusion, the medical model we now use was built around the process of diagnosing discreet diseases with discreet causes and prescribing single-action medications, like vaccines, to fix them. For communicable diseases like, say, typhus and polio, this works brilliantly. For chronic diseases with multiple causes, like depression and diabetes, it's much less effective.

In the case of Low T, the "disease" isn't discreet at all, but often the result of a series of reflexive habits that, given time and focus, you can change. Before you fill your T prescription, know that the symptoms of low T—and quite possibly low T itself—may not be the problem at all but a symptom of a bigger physical, emotional, or psychological problem you need to address.

Just as men afflicted with ED in the early 2000's eventually found that Viagra wouldn't fix their failing marriages or poor communication with their partners, so artificially-enhanced serum testosterone won't find you a new career, put new life into a loveless marriage, or fix a relation-

ship a son or daughter. Low energy, low T, and all these other problems very often are beacons in a complex network of physiological indicators signally a system in distress. I'll readily admit that it may be tougher to address those problems than to take a few injections or wear a patch now and then—many of the "first-line solutions" in column three above, I realize, aren't exactly easy fixes. But they're very often the true cause of the problem

Rather than gloss these issues over with a quick-fix solution like supplemental T, it's up to you, the individual, to find and fix those problems so you can move on with your life, and truly make these years Your New Prime.

SIDEBAR: HGH: The Other Magic Drug

Testosterone isn't the only prescription drug offered up as the fountain of youth by the burgeoning anti-aging industry. At many "Low T" clinics, HGH—or human growth hormone—is the foundation of the program, especially in image conscious Southern California where it is the drug of choice for celebrities and movie stars.

There's a reason for that. When your HGH is topped off, it promotes cellular repair, muscle and bone growth, and aids in the breakdown of subcutaneous fat. Like testosterone, HGH ramps up significantly in adolescence, peaks between age 20 and 30, then drops precipitously. Very low HGH levels can cause a host of negative effects: higher total and bad cholesterol, lower good cholesterol, less muscle tone, strength, and mass; more fat, reduced sports performance, decreased cognition. No wonder it's such an easy sell to middle-aged men who feel they're losing a step.

In the body, HGH is manufactured by the anterior pituitary gland at the

base of the brain, and secreted in pulses throughout the day. In a lab, it's derived from E. coli bacterial or mouse cell lines in a form that is "bioidentical," or chemically indistinguishable from the stuff your brain pumps out. In order to work, you need to inject it (not swallow it) regularly into your calves, glutes, or thighs—once a day being standard protocol.

Like testosterone, it seems to 'work' in a broad sense, though each person's response to injected HGH is individual: some report improved complexion and eyesight along with less fat and more energy, muscle mass, and capacity to exercise; others feel and see very little difference.

Downsides? Expense, for one. You'll shell out about $750.00 per month for the normal regimen—assuming you're taking it legally, under a doctor's supervision. Go rogue and who knows what you'll wind up taking—or how many years in the slammer you'll get for trafficking in illegal medications if you're caught (usually about five years). Controlled doses of HGH are relatively safe—some report short-term, temporary disruptions in blood sugar regulation, but take too much over a long period of time and you may start to get that suave Neanderthal look that women love so much: the big-brow, big-jaw, big-hands evident on Barry Bonds after his years on performance-enhancing drugs. It's not a look that's terribly popular on single's night. Plus, it's permanent—and can ultimately lead to kidney failure, heart disease, high blood pressure and diabetes—just the kinds of age-related problems you're trying to stave off.

Want a completely free, totally natural HGH boost that comes with zero negative side effects? Hit the gym and hit the sack. Studies show that both aerobic exercise and resistance training result in an EIGR—exercise-induced growth hormone response—as long as you work

intensely for at least ten minutes. The biggest natural hit of HGH, however, occurs while you're sleeping—so if you're skimping on Z's, you're skimping on GH as well. Still another reason to get your 7-8 hours in!

POSTSCRIPT: If All Else Fails

Let's say you're clinically hypogonadal, and wind up on testosterone therapy. Or you've tried everything in the previous chapter and your T levels are still dragging and you still feel run-down and turned-off. Or let's say, perhaps, you've already been on prescription T for a long time, and it's too late to turn back.

First—my sympathies. Yes, I've now spilled a ton of ink (I'm almost done, don't worry!) discouraging you from going on T. But if you are on it already for whatever reason, fear not: there are still measures you can take to ensure your long-term health and well being. Here they are:

- **Control the Controllable.** T may or may not have given you the positive mid-life change you wanted, but the advice on exercise, diet, stress relief, and lifestyle elsewhere in this book certainly will. If therapeutic T is benefiting you, Your New Prime lifestyle will only amplify those benefits. Even the most adamant anti-aging advocates admit that T doesn't work by itself—you've got to get in there and do most of the heavy lifting yourself—literally and figuratively.

  And it is possible that, with the right supervision, you may be able to wean yourself off of T, especially if you manage to lose large amounts of belly fat that can be such a drain on your T levels. It's certainly worth discussing with your doctor.

- **Test accurately.** First and foremost, make sure you get tested! Many clinics and physicians don't issue tests—though how they can get

away with this is beyond me. Second, when you go in to have your levels checked, make your appointment early—preferably around 8-11 am, when levels peak. Many clinics schedule testing appointments in the afternoon, when T levels naturally dip, which may detect your levels as artificially low. Finally, make sure you get a blood test (not a "spit" test, which is less accurate).

If you do receive a "low" reading, the Endocrine Society recommends a second test for confirmation, possibly one that measures both bioavailable T (a measure of the testosterone in your system that's usable by the body) and total T (which includes the substantial percentage of your testosterone that's bound by another hormone and thus unusable by the body).

- **Monitor your levels.** You get what you pay for at anti-aging clinics. Cheap ones don't offer frequent monitoring of PSA (prostate-specific antigen) or bone mineral density, two key health indicators that can be affected by T therapy. The following chart shows the major health organizations' recommendations for monitoring these and other key levels once you're on testosterone therapy:

Organization	First follow-up	DRE	PSA test	Testosterone Levels	Hermatocrit	BMD	Lipids
American Association of Clinical Endocrinologists	Every 3-4 months in first year	Every 6-12 months	Annually		Every 6 months for 1.5 years, then annually	Every 1-2 years	At 6-12 weeks, then annually

Organization	First follow-up	DRE	PSA test	Testosterone Levels	Hermatocrit	BMD	Lipids
American Society for Reproductive Medicine	At 2-3 months	In first 2-3 months	At 3 and 6 months, then annually	At 3 and 6 months, then annually	At 3 and 6 months, then annually	At 2 years	
The Endocrine Society	At 3 months, the annually	At 3 months, then annually	At 3 months, then per routine guidelines	At 3 months	At 3 months, then annually	At 1-2 years	
European Association of Urology	At 3 months	At 3 and 6 months, then annually	At 3 and 6 months, then annually		At 3 months, then annually	Every 1-2 years	

BMD: Bone mineral density

DRE: Digital rectal exam

PSA: Prostate-specific antigen

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Note that most of these organizations don't recommend testing lipid levels, liver function, or, interestingly, testosterone levels. The Endocrine Society, however, recommends that the goal of T therapy should be to raise levels to the "mid-normal range," as monitored throughout your treatment. Don't let your clinic sell you on anything more.

More pressing: you should definitely get bone mineral density, PSA, and Hermatocrit tested and have a digital-rectal exam (sorry, fellas) soon after you go on T. Then have them done regularly—at least once a year—after that. Some doctors recommend a full prostate biopsy prior to initiating T therapy and to have estrogen levels monitored as well, since T can profoundly affect estrogen levels. Discuss these options with your doctor.

Don’t be a tough guy: these aren’t tests you want to put off. Be a smart patient, and if your clinic doesn’t adhere to a testing schedule that looks like the ones above--walk away. Saving a few bucks on your TRT is a bad reason to jeopardize your long-term health.