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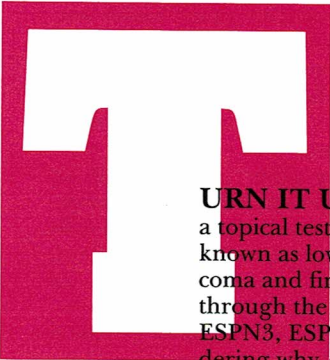


It's the ailment  
you didn't know  
you had. But  
are Big Pharma  
and endless TV  
commercials  
selling you a  
real cure or one  
you don't need?

# How Low T Became the Disease Du Jour



BY TYLER GRAHAM



**TURN IT UP.** That's the slogan of AndroGel, a topical testosterone gel that treats a condition known as low T. If you've just woken up from a coma and find yourself in a hospital bed, flipping through the new abundance of ESPNs—ESPN2, ESPN3, ESPNX et al.—you're forgiven for wondering why American men are suffering an epidemic of free-falling testosterone. No doubt you'll question why this cataclysmic event strikes not just the men of the most powerful nation on earth but its handsomest and most well-off men—guys who, if the marketing visuals are to be believed, sport high school physiques, drive mint-condition sports cars and land starring roles on soap operas.


Testosterone is not unique to humans. The sex hormone is 500 million years old and is found in just about every vertebrate (reptiles, amphibians, mammals and birds). It masculinizes species, and that's why men have 20 times more testosterone than women. In humans this means more muscle mass, broader facial structure, wider shoulders and a deeper voice. Men who are born with low levels of testosterone have more feminine features, and women with higher levels tend to be more masculine. High testosterone is tightly correlated with many desirable traits, such as a strong sex drive, endless energy, a sharp, sound mind and aggressiveness, that make taking on the challenges of day-to-day life more pleasurable. But turn on the TV and the message is clear: Today's T levels are in a nosedive. Legions of guys don't have the energy to perform in the bedroom—or the boardroom—the way their fathers did just a generation ago.

Think of it as the male version of menopause. Indeed, some doctors call it “andropause” or “manopause.” New York urologist Dr. Harry Fisch, who hosts a talk show on Howard Stern's SiriusXM network, calls it “menoporsche,” because a lot of guys think it's easily fixed by purchasing a shiny

new fast-moving product of German engineering. Marketers prefer the colloquial, bro-ish “low T.” It sounds friendly and unscientific, like something you'd hear in a locker room. Dr. Abraham Morgentaler, author of *Testosterone for Life*, says he coined the term when his patients were embarrassed by the difficulty of pronouncing *testosterone*.

After the age of 30, men lose about one percent of the hormone per year. Many believe this is natural and easily explained by an evolutionary mechanism. As his sex hormone drops, a man's enthusiasm for such risk-taking pursuits as fistfights and car racing wanes. Which, as you head into middle age, is a good thing if you're interested in raising your children into adulthood. The theory extends to marriage as well: The less testosterone you have, the more committed you are to your wife. Nature designed men to slow down as they get older. Some like to say low T is a condition previously known as aging, and they speak to why its treatment has become such a lightning rod. Are drug companies slowing and monetizing the natural progression of life? Others ask what's wrong with a little hormonal nip and tuck when we already treat poor eyesight, worn-out joints and baldness.

Johnson & Johnson's greatest invention, the saying goes, was not Listerine but halitosis. The company ran ads in the 1920s educating unmarried women about a new scourge, a hard-to-pronounce scientific term for bad breath that was likely responsible for their single status. The phrase *often a bridesmaid but never a bride* originated in an advertisement for Listerine back when it was used as a treatment for gonorrhea and as a surgical antiseptic. Today the United States and New Zealand are the only countries that allow direct-to-consumer pharmaceutical advertising, known in the trade as DTCPA. That's why you'll find no shortage of



testosterone-therapy ads during *SportsCenter*. A 2013 study by the health care research firm CMI/Compas shows that 81 percent of physicians think this marketing is responsible for overuse of prescription meds. The issue is serious enough that the FDA is conducting its own review of DTCPA and is expected to issue a report later this year.

In 2012 Big Pharma spent \$107 million on DTCPA for testosterone treatments. The industry also funded disease education and awareness sites such as IsItLowT.com to promote the idea that men across America may be feeling older not because of aging but because of a testosterone deficiency. The Is It Low T? site asks 10 seemingly catchall questions, including “Do you have a lack of energy?” and “Are you falling asleep after dinner?” Answer yes to the two questions about sex drive or three overall and you probably have low T. The site is also geared toward women since guys are notoriously non-proactive when it comes to their health. Surprisingly, no drug is advertised on the site. Low T isn’t a formally recognized condition, and that means manufacturers can’t actively market their drugs to treat it. (The FDA remains silent on the types of ads broadcast on ESPN.) They instead educate consumers about the condition and encourage them to talk to their physician, who can prescribe AndroGel, the drug made by the site’s owner, AbbVie. Dr. John Morley, director of endocrinology and geriatric medicine at the St. Louis University School of Medicine, originally created the quiz for Organon BioSciences more than a decade ago. He told *The New York Times* the company asked him to make it short and sexy; he added that he has “no problem calling it a crappy questionnaire.” This marketing muscle has paid off handsomely. Sales of testosterone therapies jumped from \$324 million in 2002 to \$2 billion in 2012. Experts predict the drugs will be worth another \$2 billion by 2017.

Aside from AndroGel, which is applied to the shoulders, there are a handful of other delivery systems, and those—rather than the hormone itself—are what the pharmaceutical industry has patented and monetized. Injectables are the oldest and least expensive, but a lot of guys are squeamish around needles; hence the new market for other applications. Axiron is applied under the arm like a deodorant. Fortesta, a gel, is applied to the inner thigh. Testim is also applied to the shoulders. Androderm is a patch. Testopel, a pellet, is injected near the hip and lasts as long as six months. Got low energy and decreased sex drive or just not feeling as young as you used to? You’ve got options! But if you’re wondering why testosterone is applied to hidden, out-of-the-way parts of the body, the answer is twofold. Its pungent smell has been compared to stale urine, but more important,

it’s not inert, and it can rub off on children and spouses. For kids this means a risk of early puberty, and for women it means hair growth in unwanted places. Exposure to testosterone therapies can also cause health problems for pets, especially female dogs, whose vulvas swell up like balloons. (Google Image search it, or don’t.)

It all seems simple. Big Pharma creates a new disease, and *cha-ching!* But a growing number of scientists think the natural decline of testosterone as we age isn’t so natural after all. It seems from generation to generation men’s T levels have been plummeting. At the ages of 40, 65 and 70 most guys will have lower levels of the hormone than their fathers had at the same age. Some endocrinologists suspect novel estrogenic compounds in the modern environment play a role; these compounds include pesticides, phthalates in personal care products, BPA in plastic food containers, phytoestrogens in plants such as soy and flame retardants in our computers, couches and mattresses. Research shows that vets exposed to flame retardants in Vietnam and men who work in factories with high phthalate exposures have lower serum levels of testosterone.

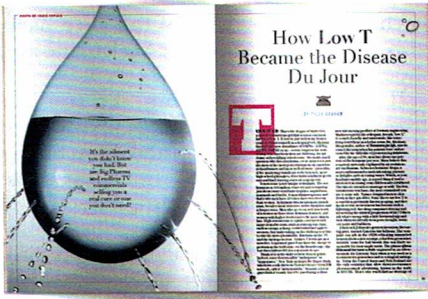
But others point to the declining state of America’s collective health. Low testosterone is also associated with high blood pressure, high cholesterol, elevated blood sugar, pre-diabetes—in other words, the same symptoms as being overweight. A well-conducted 2006 study published in the *Journal of Clinical Endocrinology & Metabolism* looked at more than 1,500 men and, after accounting for age, body mass index and marital status, found that men’s testosterone levels dropped 22 percent from the late 1980s to 2004. The study’s authors blame the decline on an increase in poor health and also cite environmental factors. Dr. Gary Wittert, professor of medicine at the University of Adelaide in Australia, co-authored

another study, presented at the Endocrine Society’s 94th annual meeting, that backs up this assertion. It evaluated 1,382 men over five years and found a strong correlation between being overweight and having lowered testosterone. “The bigger the belly, the lower the testosterone,” says New York urologist Fisch. “It’s pure and simple. We know these guys have to lose weight, and if they do, their testosterone will go up.” Simple ways to boost testosterone naturally include cutting out refined carbohydrates and processed foods, lifting heavy weights, sleeping more and exposing yourself regularly to the sun (high vitamin D levels are strongly correlated with high levels of the sex hormone).

Jim Oborny is 50 years old. He is the chief executive of a social-media development firm in Chicago, and one might guess he’s from the Windy City: He looks Polish and has the accent and build of someone plucked out of a 1990s “Da’ Bears” skit on *Saturday Night Live*. Oborny’s a big guy, to be sure, but nowadays

A growing number of scientists think the natural decline of testosterone as we age isn’t so natural after all. Environment may play a role.

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## HOW LOW T BECAME THE DISEASE DU JOUR

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his beer belly has nearly vanished and he has a disarmingly lithe kick to his step. “My brother and my grandfather died at 49,” says Oborny. “When I was turning 49, I said to myself, I’d better do something about my health.” He visited Dr. Mark Rosenbloom, one of the nation’s most vocal proponents of testosterone therapy. Rosenbloom took blood tests and prescribed Oborny a low-glycemic diet, regular exercise, supplements and testosterone therapy. A year later Oborny’s blood profile had improved so much, he stopped taking statin medications. His blood pressure and blood sugar level are normal for the first time in years. He continues to lose body fat and gain lean muscle mass and owns a bunch of suits that no longer fit. “I run into people who haven’t seen me in a while, and they go, ‘Oh my God, Jim, what are you doing? You look great!’”

Rosenbloom founded Lifeorce Medical Institute in 2010 in an office building in Northbrook, Illinois, outside Chicago. A picture on his desk shows the doctor sand-

wiched between Sylvester Stallone and Bill Clinton. The photograph was taken at a fund-raiser at Stallone’s Florida home. Rosenbloom recounts accidentally hitting a button in the couch that revealed a large-screen TV in the corner of the room, which immediately started playing porn. Luckily, the set was muted, and he clumsily figured out how to turn it off after a minute or two. He says everyone was so engaged in conversation that no one noticed.

Rosenbloom previously worked as an emergency room physician, but he didn’t like the late, stressful hours of the ER and was fed up with treating patients with chronic diseases who simply wanted to be patched up to go out and abuse themselves some more. “My patients now are all interested in improving their lives,” he says. “It’s much more rewarding to work with people who are losing 40, 50 pounds and reversing hypertension and high cholesterol.” He trained in Las Vegas with Cenegenics, a company that promises physicians they can secure their financial futures and break free from the medical insurance world. The most famous proponent of Cenegenics is Dr. Jeffrey Life, 75, whose before and after photos are plastered all over billboards, the internet and the backs of magazines. Life (his real name, apparently) looks like a creation of science fiction, as though a mad scientist attached the head of a clean-shaven Wilford Brimley atop the physique of a 20-year-old fitness model. Physicians spend about \$15,000 for age-management-medicine certification from Cenegenics. Rosenbloom completed the program, but he decided not to become an affiliate and instead created his own brand of life-extension medicine.

Rosenbloom blames America’s surging health care crisis—obesity, diabetes, heart disease, hypertension etc.—on the current

payment structure. He believes the pharmaceutical companies have too much power over physicians and patients. “Modern medicine is a business, and it works best if there’s a constant influx of patients with chronic diseases,” he says. “There isn’t a strong incentive to actually make people healthier so they consume fewer medications and medical services.” He educates his patients about diet, explaining that juice is just as unhealthy and fattening as soda and that doing 30 minutes of cardio every day for exercise is outmoded and counterproductive. “We teach our patients how their diet is sabotaging their health goals and how they need only 12 to 15 minutes of exercise a day if they’re doing high intensity.” Rosenbloom prescribes testosterone only after he has tested for a deficiency, and he regularly monitors his patients’ levels to prevent adverse reactions. Although he and other like-minded physicians aren’t running pill mills for hormone therapy, a recent study in *The Journal of the American Medical Association: Internal Medicine* showed that 25 percent of men receiving testosterone treatment haven’t been tested for a deficiency. “It’s not the medications that are the problem,” says Fisch, “but the doctors who overprescribe the medications to guys who don’t need them.”

Testosterone therapy has a long list of side effects. Some of the most common are back acne and testicular shrinkage. The male sex hormone is made in the testes; when it’s supplemented, the glands shrink like underused muscles. In November 2013 *JAMA* published a study showing a 29 percent increase in risk of heart attack, stroke or death for men taking testosterone. The drug raised the blood platelet count, increasing viscosity and boosting the risk of a cardiac event. The study was alarming, but like a lot of scientific papers that make sensational headlines, its findings were undermined by the report’s limitations. Researchers studied about 9,000 men with an average age of 64, most of whom already had heart disease. Men who took testosterone had a one-in-four chance of having an event, compared with men without the treatment, who had a one-in-five chance. Furthermore, men’s testosterone levels fluctuate throughout the day, and it’s unclear if the men studied had a proper diagnosis of low T. Either way, this study correlates testosterone therapy and heart health only in men around 60 years old who have a history of coronary heart disease.

But the controversy doesn’t end there. *JAMA* published two corrections to the study, and last August the Androgen Study Group, representing 29 medical societies around the world, claimed the study was so faulty it should be withdrawn. In September an FDA panel recommended tightening testosterone labeling to prevent excessive off-label use. And in October the European Medicines Agency announced it had found no evidence that therapy raises the risk of heart problems, though it emphasized the therapy should be used only for people with officially diagnosed low testosterone (a.k.a. hypogonadism). Many doctors who prescribe testosterone therapy also include a diet and exercise regimen, which isn’t controlled for in these types of studies.



“Sorry, the ad was for a different type of beaver.”

It's reasonable to consider that men who received testosterone and followed through with diet and exercise modifications may have had less chance of a cardiac event. And so the argument goes, back and forth.

Dr. Adriane Fugh-Berman, one of the most vocal opponents of testosterone therapy, likes to point to its absurd history. It goes back to at least 1889, when French neurologist Charles-Édouard Brown-Séquard became famous for injecting himself with liquefied guinea pig and dog testicles and reported renewed strength and vigor. Serge Abrahamovitch Voronoff, a Russian doctor who practiced in France, followed suit by grafting the testes of monkeys onto his patients after running out of his supply of human tissue from executed criminals. Fugh-Berman is director of Georgetown University Medical Center's PharmedOut program, which promotes evidence-based science to prescribe medications and educates physicians about pharmaceutical companies' marketing tactics. Her statistical gun sight has no shortage of targets, as the efficacy and safety of many of today's most popular prescription medications are being questioned. She and Rosenbloom wrote opposing op-eds in the *Chicago Tribune*.

Fugh-Berman argues that no one can define normal testosterone levels. It's generally around 300 nanograms per deciliter for men around the age of 20. But no one is certain what the normal, natural degradation is, nor how much it is influenced by environment or health status. According to researchers, healthy men can have levels between 270 and 1,070 nanograms per deciliter. To further complicate matters, testosterone fluctuates throughout the day de-

pending on your sex routine or—believe it or not—whether your favorite sports team won the big game. Researchers don't need to watch a tennis match to know who won—all they have to do is test players' testosterone levels afterward. The Endocrine Society says these daily variations are so large that no single testosterone measurement is adequate to determine an individual's level. But Fugh-Berman's real beef is that there are “proven harms and unproven benefits” for the men the advertisements target. She cites a lawsuit against Solvay, the creator of AndroGel, that documents internal discussions to grow the testosterone market by 36.5 percent. She worries about cardiac risk and another commonly cited concern, prostate cancer. But despite all the talk about prostate cancer in the literature, no prevailing study has proven causation. Cancers of the prostate are correlated with higher testosterone and treated with drugs that lower the hormone. Out of an abundance of caution, any doctor worth his salt tests PSA levels before administering the drug and keeps a watch on the gland for any signs of enlargement.

Stephen Braun is a former newspaper reporter whose career now mainly involves writing about science for corporations and institutions, including GlaxoSmithKline, the American Cancer Society and Boston University School of Medicine. In 2009 a reputable endocrinologist contacted Braun about ghostwriting a story on the dangers of low T under the doctor's byline in the magazine *Life After 50*. The doctor had been recruited by the PR firm HealthSTAR Communications on behalf of Abbott Laboratories (now AbbVie, the maker of AndroGel). Braun didn't know much about the subject

and followed the party line regarding symptoms such as low energy, low sex drive and low mood. Under the doctor's name, Braun published stories in prominent magazines including *Woman's Day* and *Businessweek*. None of the articles voiced skepticism. Braun also wrote a consumer-education booklet funded by Solvay. Later, in an op-ed for *JAMA Internal Medicine*, Braun described himself as a shill for the pharmaceutical companies. He turned whistle-blower after learning how easy it is for drug companies to influence physicians. He didn't want to be a cog in the wheel of AbbVie, a company the trade publication *Medical Marketing & Media* named “all-star large pharma marketing team of the year” for boosting sales of a product critics maintain is ahead of the science.

While Braun shaped the message of low T, sales reps such as Aaron Baxter, who worked at Endo Pharmaceuticals in Phoenix from 2007 to 2012, delivered the message to physicians. “Our company specialized in pain management, but then suddenly it bought a testosterone gel, Fortesta,” he says. “You can see the money. Baby boomers are getting older and they want to stay young.” He calls it part of what's known in sales circles as the “midlife crisis trifecta,” which also includes antidepressants and Viagra. When men with normal testosterone levels wanted Fortesta, Baxter advised them on how to game the test. “You take a sample and come in the next day after it wears off, and your testosterone plummets,” he says. On some insurance plans the gels can be expensive. “A lot of guys eventually go to the injectables. Truthfully, you can stack up much more on those. I know guys who'd do three vials at a time and get ripped,” says Baxter. He took the therapy himself and says it made him feel great. He had more energy and became leaner. He stopped taking the drug only after he got laid off and lost his insurance. “A physician in Gilbert, Arizona told me that one fireman came in with low T and then suddenly all the firemen started coming in, and they all wanted the injectables.”

Gaming the system in such a way is a problem if you happen to be a professional athlete; if you're not juicing with testosterone, your opponent may be, and he may have the upper hand. The UFC announced that Vitor Belfort (a.k.a. the Phenom) had received a therapeutic-use exemption for testosterone in advance of his 2013 victory against Michael Bisping. Not surprisingly, it's a controversial topic, and it was a concern in previous UFC fights with the MMA fighter Chael Sonnen. In fact, its use is widespread throughout professional sports, and some notable users include Jason Giambi, Alex Rodriguez and Floyd Landis. Even female athletes are being tested for testosterone these days.

No one knows the long-term effects of testosterone therapy. The problem is endemic throughout the pharmaceutical industry. It takes too much time and money to tease out how drugs impact the body over time. SSRI antidepressants used to be considered the gold standard for treating depression, but now the mechanism they're based on, the serotonin theory of depression, is no longer considered valid. The drugs have

been shown to be ineffective for people with moderate depression and over the long term may do more harm than good. The efficacy of statins is also being questioned. Half of all people who have heart attacks have normal cholesterol, but one in five who take cholesterol-lowering medications may experience side effects such as memory loss and severe muscle pain. Vioxx may be the most dramatic example of a drug whose long-term effects were unknown when it

was new to the market. Merck branded the drug in 1999 as a safer alternative to nonsteroidal anti-inflammatory pain meds because it caused fewer ulcers and less gastrointestinal bleeding. By any measure the drug was a blockbuster, but then came reports of cardiac events. Merck withdrew Vioxx five years later, but not before it had been used to treat 20 million Americans. The editor in chief of *The New England Journal of Medicine* says the company hood-

winked him. The journal *Lancet* says Vioxx caused more than 88,000 heart attacks that killed some 38,000 patients. In 2007 Merck agreed to one of the largest drug settlements in history, \$4.85 billion.

Of course there's no better analogue to testosterone therapy than estrogen therapy. Since the early 1900s doctors have treated women for the symptoms of menopause—hot flashes, vaginal dryness, low energy—with estrogenic compounds. Menopause, like low T, has a plausible evolutionary explanation. Humans, along with killer whales, are one of the rare species whose female members live well beyond their reproductive age, long enough to play an active role in helping raise their children's children; it's known as the grandmother hypothesis. But in the 1960s, observational studies indicated that women who took hormone-replacement therapy had a decreased risk of heart disease, stroke, dementia and osteoporosis. Menopause became known as a disease, and its treatment supposedly reduced the risk of heart disease. The first long-term clinical trials were published in 1998 and 2002 (the Heart and Estrogen/Progestin Replacement Study and the Women's Health Initiative), and they upended the observational data. They found that hormone-replacement therapy actually increases the risk of heart disease and breast cancer in postmenopausal women. Sales plummeted. As with testosterone therapy in younger men, the jury is out on how hormone replacement affects younger women over the long term. Today many doctors say there are safer versions of estrogen therapy, but there is no clinical data to support these claims.

The National Institutes of Health estimates 5 million men are being treated for low T, but drug companies estimate that as many as 13 million men over the age of 40 suffer from the disorder. "I'm not concerned about the long-term effects," says Baxter, the former sales rep. "You talk to the physicians and they'll tell you the benefits outweigh the negatives. I know tons of doctors who are on it, and it's not all about people getting jacked up." Baxter's matter-of-factness is interesting. Why is taking testosterone any different from taking Viagra, which has also been in the news for heart attack risks? Furthermore, why shouldn't a man be free to take a hormone that makes him feel younger and allows him to enjoy life more for the next 20 years—even if it means dying five years earlier? It's a risk many men say they're willing to take.

Dave Asprey is author of *The Bulletproof Diet* and host of the popular wellness podcast *Bulletproof Radio*, which focuses on helping people biohack their health. He concurs with Baxter. "My goal is as an old man, when I'm 80, to have the same testosterone levels I did when I was 30," he says. "And I'll act a lot more like a 30-year-old." He says there's no reason older men and women in today's world should have degraded levels of sex hormones. "Nature wants me to get out of the way for the next generation, but I don't want to do that. And when I do, I want to do it in full health."

