


High vitamin D linked



Patty DeDominic, 59,
Santa Barbara, CA
Height: 5'10"
NOW:
165 lbs

Patty lost
95 lbs!

Scientists have uncovered the ultimate catch-22: (1) Circulating vitamin D is associated with fast and easy fat burn; (2) Fat cells lock up vitamin D, creating a lack of the nutrient in virtually 100 percent of overweight women, so even if they supplement and sun, they can still fall short. **New science reveals how you can break this vicious circle, lose the stubborn weight, regain your energy and achieve optimal health.**

Two years ago two researchers—one from McGill University in Canada, the other from Childrens Hospital Los Angeles—set out to do a study to determine if vitamin D could help young adults gain peak bone mass. They recruited 90 women in California between the ages of 16 and 22 and put them through extensive body scans to

It worked for me

"I feel 25 years younger!"

What does he mean I could be malnourished? wondered Patty DeDominic as she sat in her doctor's exam room. Eating too much, not too little, had driven Patty's weight gain over the past 20 years. It's what had led to pain so intense that she'd sought X-rays to make sure she didn't have any broken bones in her feet. *I can't be starving for vitamins, she thought. I get plenty to eat—that's the problem!*

Yet when the test results rolled in, Patty learned she was deficient



THEN: 260 lbs

to 80% less belly fat

examine how their vitamin D levels correlated with height, weight, body-fat distribution and bone mass. The researchers didn't find what they were looking for—there was no correlation between low circulating vitamin D levels and low bone mass—but they did discover a strong, shocking link between low vitamin D and belly fat.

"Our first surprise was that 60 percent of these young women in this very sunny area had vitamin D insufficiency," recalls lead author of the study Richard Kremer, M.D., Ph.D., a professor of medicine at McGill University. Scientists have long known that up to 80 percent of women in northern latitudes can have suboptimal vitamin D levels (below 30 ng/ml), especially in the winter and increasingly as they get older. But research done in the last few years has found that women in southern climates are also often low in the nutrient. And studies reveal that vitamin D insufficiency can be a problem at any age—especially for naturally dark-skinned women (whose skin requires more sun to synthesize equivalent amounts of the vitamin) and women who have a high BMI.

"Our second surprise was how strongly vitamin D levels correlated with fat," Dr. Kremer continues. "We were using comprehensive imaging instruments, and when we put all the data together, we found a very strong negative correlation between circulating vitamin D and all the parameters of fat—BMI, weight, abdominal fat and subcutaneous fat." Women with D levels that were low but not necessarily deficient had 40 percent more subcutaneous fat (the jiggly kind) than women who got enough of the vitamin. But the real shocker: Women with insufficient vitamin D levels had 80 percent more abdominal fat than their high-D peers.

How D dials down fat

Although vitamin D (as synthesized by the skin from sunlight and/or taken as a supplement) is indeed a nutrient, once in the bloodstream, it's activated by the kidneys into a hormone called *1,25-dihydroxyvitamin D* (1,25-D). "If you don't have enough circulating vitamin D, the level of this hormone could be lower," observes Dr. Kremer. "And this is critical because 1,25-D is

a hormone that actually controls the growth of cells—not just in fat but also in cancer. So if you don't have enough, you sort of lift off the brake a little on this growth, then the cells can go wild." (See box below for more information on diseases that low levels of circulating vitamin D have been linked to.)

If 1,25-D tells fat cells to get smaller, the expectation would be that folks with high levels of the stuff would lose weight more easily. And that's exactly what University of Minnesota researchers found: "What's interesting about our weight-loss study is that we didn't recruit people to be insufficient in vitamin D—we recruited people who were overweight, and they happened, on average, to have inadequate D levels," explains the study's lead author Shalamar Sibley, M.D., an assistant professor of medicine at the university. Dr. Sibley and her team measured the baseline levels of both the precursor form of vitamin D, or 25(OH)D, and the active form (1,25-D) in 38 people (20 women) before putting them each on a diet that cut 750 calories a day from what they were calculated to need. ▶

in vitamin D, and likely had been for several years.

She quickly upgraded her diet and supplemented with 2,000 IU of D₃ daily. "I noticed a difference right away," says Patty, who trimmed off 10 pounds a month.

After losing 95 pounds, Patty, the author of *How I Lost It* (Kindle, 2010), is finally in the driver's seat with her health. "I haven't had a single arthritis symptom in two years." Plus, she confidently models new clothes for her husband, who lost 35 pounds himself. Patty shares, "I feel 25 years younger!"



Taking 2,000 IU of D daily can reduce risk of developing...

An upper respiratory infection

90%

All cancers*

70%

Rheumatoid arthritis

42%

Multiple sclerosis

40%

Type 2 diabetes*

33%

*when paired with 1,000 mg of calcium

SOURCES: (1) *The American Journal of Clinical Nutrition*, 2008. (2) *The American Journal of Clinical Nutrition*, 2007. (3) *Arthritis & Rheumatism*, 2004. (4) *The Journal of the American Medical Association*, 2006. (5) *Diabetes Care*, 2006.

weight-loss discovery

Then they monitored the subjects for 11 weeks, measuring their fat distribution with bone densitometry (DXA) scans.

"We found that, for whatever reason, people's baseline vitamin D levels did predict fat loss—abdominal fat loss in particular," says Dr. Sibley. For every 1 ng/ml of the precursor form of vitamin D, women lost about 1/2 pound more weight. That might not sound like a lot until you consider that most American women have vitamin D levels ranging from 12 ng/ml to 32 ng/ml. If you're at the low end, you'd lose almost a pound a week less than if you're at the high end.

Dr. Sibley is quick to point out, "We're certainly not making a blanket statement that everybody should go out and take vitamin D to lose weight. Our findings need to be followed up with the right kind of controlled clinical trial." Sure, but most of us have nothing to lose—except a pound a week of belly fat!

How fat dials down D

While the above studies suggest how taking vitamin D could help you lose, that's only half the story: Part two involves the way in which fat itself dilutes and disperses vitamin D stores in the body. "Fat cells are really

happy to take on vitamin D," explains Michael F. Holick, M.D., Ph.D., a professor of medicine, physiology and biophysics at the Boston University School of Medicine and author of *The Vitamin D Solution* (Hudson Street Press, 2010). "If you've got a lot of fat, the amount of vitamin D you're taking in may be the same as a thinner person, but it's diluted substantially, so you're going to have less vitamin D in your bloodstream." That's because the nutrient is stored in a larger number of fat cells, and those cells are bigger. "The larger cells have a higher fat content," says Dr. Holick. "Even if you burn them, you're not mobilizing much vitamin D at all."

Indeed, study after study shows that the higher your percentage of body fat, the less circulating vitamin D you're likely to have, making it more difficult to lose the fat—it's a classic vicious cycle. Most cruelly, spending time in the sun helps heavy women much less than it does their skinnier counterparts. In one study, 73 percent of women with the lowest levels of body fat reached sufficient D levels during the summer, while only 31 percent of those with the most body fat did the same. "When we exposed overweight people to simulated

sunlight in a tanning bed, they raised their blood levels of vitamin D by about 45 percent compared with a normal-weight person," says Dr. Holick of a study he led. "The synthesis is the same, but the level that reaches the bloodstream is different."

"Right now we have a major study in the works looking at the connection between vitamin D and fat metabolism," says Dr. Holick. That's welcome news to John J. Cannell, M.D., founder and executive director of the Vitamin D Council. "Everybody has assumed that vitamin D is stored in fat, so the fatter you are, the lower your D levels because the vitamin is stored. But that's an assumption based on association," says Dr. Cannell. "It could be the opposite—that vitamin D reduces fat and that's the reason people with higher levels are skinnier."

How much do you need?

Recent research suggests that for every 100 IU of vitamin D a woman takes, she can expect her circulating levels of D to rise by 1 ng/ml. Combined with the results that the University of Minnesota researchers found, this suggests that an average woman can lose a pound a week for every 2,200 IU of vitamin D she takes daily. That's in line with what Dr. Holick recommends: "Women should ideally be on a minimum of 2,000 units a day—and that can be on top of their calcium with vitamin D and the D they're getting from their diet and/or sensible sun exposure," he says. "If you're overweight, I'd recommend two to three times that much, up to a maximum of 10,000 IU daily."

But isn't that too much?

"One of the reasons people don't take enough vitamin D is because 1,000 units seems like a lot. But it's really only 25 micrograms," observes Dr. Cannell. "If vitamin D were discussed in terms of its micrograms, people would realize that the 400 IU the government recommends is only 10 micrograms—basically a meaningless amount."

How vitamin D solves the belly-fat puzzle

It promotes fat metabolism

D cuts output of the parathyroid hormone, revving the liver's breakdown of fat.

It drains fat cells

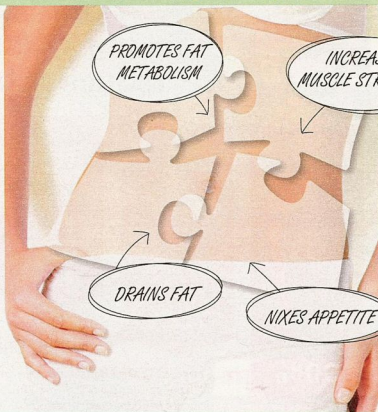
The hormone form of D activates receptors in fat cells that suppress growth.

It nixes appetite

D increases sensitivity to leptin, a hormone that sends satiety signals to the brain.

It increases muscle strength

D has been shown to reduce the accumulation of fat in muscle tissue, a factor linked to increased strength.



Dr. Holick puts it in perspective this way: "If you went out in a bathing suit and spent enough time in the sun so that you were slightly pink 24 hours later, you would have synthesized between 10,000 and 25,000 IU of vitamin D."

Another way to think about it is in terms of evolution: Our ancestors were naked apes in tropical Africa whose full bodies were exposed to the sun daily. Today we cover almost all our skin surface with clothing or sunscreen. And according to Dr. Holick, even a

low dose of SPF 15 sunscreen blocks 99 percent of vitamin D synthesis.

Getting tested

While Dr. Holick advises that a daily dose of 10,000 IU or less of vitamin D is safe, you should check with your doctor, who will likely test your levels. Be sure to ask for a "25-hydroxyvitamin D test," which tests for the *circulating* form of the vitamin. Dr. Holick cautions, "Many doctors test for the active form [1,25-vitamin D], but some people have serious vitamin D deficiencies

even when their activated levels appear to be normal."

What should your circulating vitamin D levels be? Most experts consider anything under 20 ng/ml to be deficient and levels under 30 ng/ml to be insufficient. Says Dr. Holick, "While vitamin D levels of over 30 ng/ml are considered sufficient, many experts—myself included—recommend blood levels of D that are closer to 40 ng/ml, which is what's associated with a decreased risk of cancer and autoimmune disease."

Flip for a vitamin D slimming plan

It worked for me

"I discovered how strong I could be!"

"You'll be in a wheelchair by the age of 20." Those words, spoken to overweight high school-aged Holly Legere by a doctor, seemed to forever taint Holly's outlook. She figured, *I guess I shouldn't have a lot of hope for my future.*

What followed were decades of "poor me" thinking. It was after Holly faced the heartbreak of an unfaithful husband, financial ruin, arthritis, fibromyalgia and multiple back surgeries that she finally realized, *I have to put my health first. No one else is going to do it.*

Holly made a combination of healthy changes, including starting each day with oatmeal and treating her doctor-diagnosed vitamin deficiency with 2,000 IU of vitamin D₃, plus magnesium and calcium. Slowly the fatigue and depression that had defined her life gave way to hope.

Against all odds, Holly managed to rewrite her future. She lost 160 pounds, which she has kept at bay for 10 years. Once plagued by pain, now this Pilates teacher says, "I can lie on my back and put my legs over my head to touch the floor. I'm doing things I never thought in a million years I would do!" Holly adds, "I've defied everything the doctors said would happen. I found the freedom that comes with being healthy!"

Holly Legere, 50,
Delta, B.C., Canada
Height: 5'9"

NOW:
145 lbs

Holly lost
160 lbs!



THEN: 305 lbs

How much do the top vitamin D docs take?

Intrigued by that very question, Robert Heaney, M.D., a professor at the Creighton University School of Medicine in Omaha, passed around a sheet at a CDC meeting focused on vitamin D that queried nine of his colleagues as to how much vitamin D they took in supplement form daily. The amounts ranged from 3,000 IU to 10,000 IU with an average of 5,000 IU.

How alkalizing amplifies D's fat-blasting effects

The minerals and foods that can optimize your healthy weight loss

With all the benefits that come with having healthy vitamin D levels—80 percent less belly fat, 40 percent less fat of all kinds, a lower risk of developing cancer, multiple sclerosis and type 2 diabetes—we wondered if there wasn't something else that could help optimize the nutrient's function. And there is: keeping one's body at a slightly alkaline pH level. "The average American diet produces about 30 to 50 points of excess acid waste a day," observes James E. Dowd, M.D., an associate professor of medicine at Michigan State University in East Lansing and author of *The Vitamin D Cure* (Wiley, 2009). "And this excess acid not only puts a huge strain on your kidneys—which have to process it into waste—but also on your entire body, which undergoes a stress response in an effort to neutralize the waste so it can be safely excreted."

It's that all-body stress response that results in abdominal fat, insulin resistance, increased internal inflammation and mineral deficiencies. "Your body uses the natural antacids magnesium, potassium and calcium as a last resort to neutralize excess acid waste so it can be flushed out in the urine," explains Dr. Dowd. "But this often creates a deficiency in these crucial minerals."

How does that relate to vitamin D and all the fat-blasting good it can do? "If you don't have enough magnesium

to jump-start your bodily functions, you won't be able to produce the activated form of vitamin D," Dr. Dowd explains. So magnesium functions as a critical helper of vitamin D, which in turn, helps calcium. Researchers have found that when you're low in vitamin D (below 20 ng/ml), your ability to absorb calcium drops by 50 percent. In other words, without enough magnesium, your body can't activate enough vitamin D. Without enough vitamin D, your body can't absorb enough calcium. That's why Dr. Dowd recommends supplementing with all three—magnesium (500 mg), calcium (1,000 mg) and vitamin D—if you eat a typically acidic American diet.

Which brings us a strategy that's even better than covering your bases with supplements: alkalizing your body with food and drink. "When you reduce intake of acid-promoting foods, like fatty meat, cheese and grains, and increase consumption of alkalizing fruit and veggies, your body is able to maintain the magnesium levels necessary for vitamin D to function optimally," says Dr. Dowd, whose diet philosophy can be summed up as "greening up and graining down." He advises eating three times as much fresh produce (especially greens) as lean meat by weight. And avoid grains, cheese and salt as much as possible to enjoy the greatest benefits. 🍃

Suzanne Pantazis, 47, Cranbrook, B.C., Canada
Height: 5'6"

NOW:
149 lbs



**Suzanne lost
102 lbs!**

THEN: 251 lbs

It worked for me

"My pant size dropped from a 22 to an 8!"

Over the years, Suzanne Pantazis had fallen into the rut of thinking she wasn't worth the time required to improve her health. Luckily, her two children inspired her to make a change. The first step: avoiding processed foods and opting for alkalizing fare. She also started taking 1,000 IU of vitamin D, and worked up to 4,000 IU daily.

Right away Suzanne's body showed its gratitude. "There were lots of weeks when I lost 6 pounds!" she raves. Plus her cholesterol dropped, her body aches eased, her brainpower improved and her energy soared. "I'm much more joyful now," says Suzanne, who went on to lose 102 pounds and is the author of *A Better Life Awaits* (LifeSuccess Publishing, 2010). Instead of doubting her worth, she's celebrating it. She relays, "Someone I used to work with came into the office and asked to see Suzanne. When I said, 'I am Suzanne' his jaw dropped. What more could I ask for?"



All of vitamin D's cofactors in one place

FIRST pick: Twinlab's Tri-Boron Plus (\$10 for 240 capsules, at VitaminShoppe.com). We like this supplement because it combines a daily dose of 1,000 mg of calcium, 500 mg of magnesium, 400 IU of vitamin D (we take an extra 2,000 IU of D separately), the RDA of zinc and several trace minerals. But it's split into two doses so you don't get more calcium than you can absorb at one time.