The Test That Can Save Your Life

We asked our author—who has been a fitness guy for a long time—to test-drive the latest technology to find out how his heart, lungs and other internal organs were holding up. Here's his report.

"Even though I have a very good family history, I was still worried about this test. No one in my family has died of heart disease or any form of cancer that body scans detect. My concern came from knowing that my 'markers' aren't particularly healthy, and that they can be a warning sign for heart disease. I have high cholesterol, somewhat high blood pressure and a pretty fast resting heart rate. What would the test show?" *—Steven Stiefel*

Getty Images/Adam Gault

NEW IMAGING TECHNOLOGY allows airport security to strip-search you without ever asking you to remove your clothes, security cameras to catch you running red traffic lights in the dead of night and your gender and numerous genetic maladies to be determined before you exit your mother's womb. All of this is impressive—and some is a little scary. Big Brother is watching—and capturing your every move, no matter where you are.

But not all imaging innovations are necessarily the nightmare that George Orwell envisioned. And that's what I'm telling myself as I wind through an industrial

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area in Torrance, California, to willingly slide myself into the latest piece of imaging technology: a body-scan machine. Yes, at some level, I'm anxious.

Body scans and computed tomography (CT) are voluntary diagnostic tools that can help you detect heart disease and various forms of cancer. Potentially, this technology may allow you to extend your life through early detection of many of these common killers. Did I say I was anxious?

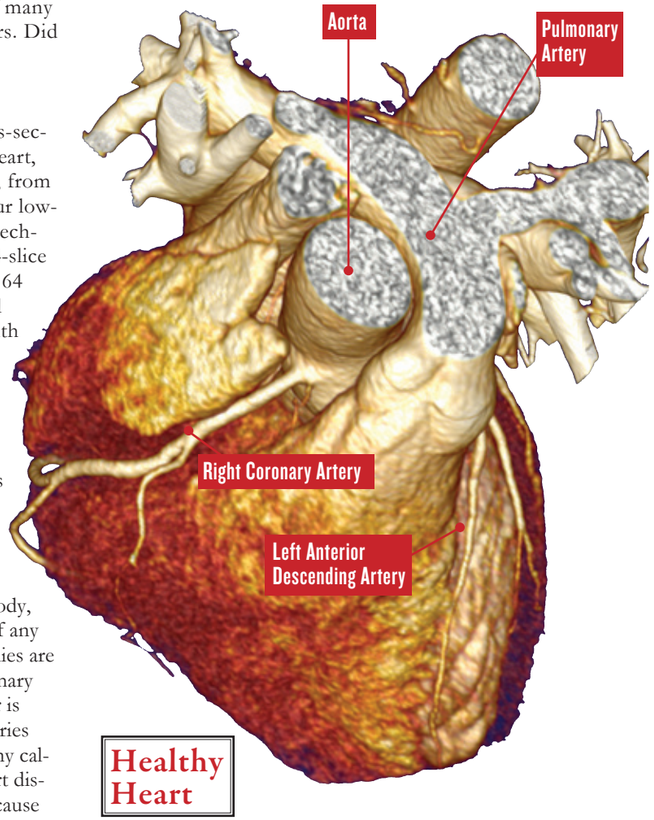
how it works

A body scan takes cross-sectional images of your heart, lungs and other organs, from your upper torso to your lower abdomen. The best technology available, the 64-slice Lightspeed VCT, takes 64 separate cross-sectional images of your body with each shot. These images are spaced about 0.6 millimeters apart, so each 64-shot image covers about four centimeters—that's less than two inches—of your torso.

After the scan is complete, doctors and technicians view your body, image by image, to see if any abnormalities or anomalies are present. One of the primary things that they look for is calcification in your arteries or heart. "If you have any calcification, you have heart disease—the number one cause of death," says Dr. Matthew Budoff, director of Cardiac CT at the Los Angeles Biomedical Research Institute, part of the Harbor-UCLA Medical Center, located in Torrance. "This is the best test we have for diagnosing or ruling out heart disease and identifying blockages in the arteries."

The Cardiac CT facility has data on more than 100,000 scans that it has conducted to date, and the test is said to be 99.9 percent accurate. This means that if your heart and arteries come back clean, you have less than a one-in-1,000 chance of dying from heart disease over the next five years, explains Budoff. Obviously, a clean bill of health can be very reassuring. On the other hand, identification of plaque or calcification in your heart or arteries can be a wake-up call, letting you take control of your health before heart disease takes over your life—or ends it abruptly.

Another key finding from body-scan images can be a mass in another organ—this may indicate some sort of tumor. When any mass is detected, patients are generally referred for follow-up tests to determine more about these troubling images. "Body scans are great for finding lung cancer—the number two cause of death," says Budoff. "They're also good for detecting bowel cancer—the number three cause of death." The test can also help detect breast, pancreatic, kidney, liver and other cancers with varying accuracy. So, the question is, Should you get a body scan? And it doesn't take a heart surgeon to surmise why I'm anxious.



Healthy Heart

scan redux

I've now had two scans. Six years ago, I had a body scan with Dr. Budoff, and at that time no calcification was present. The only somewhat-troubling results were some dark spots on my lungs—not masses, mind you, just scar tissue. "Were you a smoker?" Budoff asked at the time. No, I just live in pollution-saturated Los Angeles.

The editors of *Maximum Fitness* knew about my first scan and asked me to do a follow-up. I was excited about the article and anxious about the scan results. I'm 46, and the proper amount of time had elapsed since my previous test.

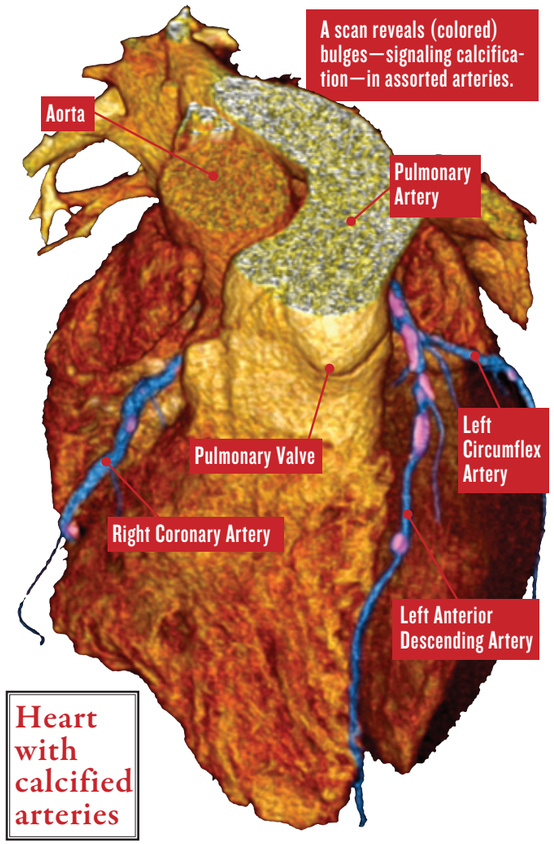
Before you get your scan results, there's always the fear that you're going to get an undesirable diagnosis. Not knowing you have a ticking time bomb inside you certainly doesn't help prevent that catastrophic end game, but just taking the test forces you to confront your mortality. If a body scan reveals that you are unfortunate enough to have a significant health problem, though, at least you may have the time to make the choice (or not) to take early, appropriate action.

Going into this second test, my apprehension was amped by some of my risk factors: I know that my total cholesterol levels are fairly bad for my age, ranging from about 220 to 260, while the "good" range is 170 to 196 (I get them checked annually). My blood pressure is on the high side of normal, averaging about 125/82 (but rising to as high as 140/90+). My resting and exercising heart rates are quite high. These aren't the most desirable markers for avoiding heart disease, but the biggest positive is that my family history has been very good in this area. As well, I've been serious about fitness, training and eating correctly for much of my life.

When I went in for my previous scan, the Harbor UCLA clinic used a single-slice electron beam test (EBT)—the test that delivers the lowest radiation dose for a single-slice test. Since then, the Harbor UCLA lab has upgraded to the 64-slice technology. This new test now takes only about one-third of the time that the older EBT took. An even bigger advantage is that you get more images, spaced closer together, with even less radiation exposure.

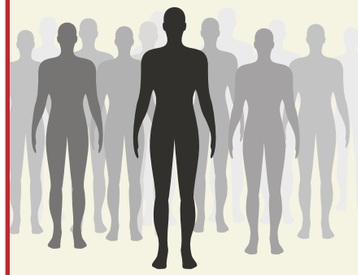
Before the test, you're asked to drink an iodine-and-Crystal Light concoction that helps improve the imaging but may cause some digestive distress over the next couple of days. The scan itself lasts less than 10 minutes. You lie on a bed on a conveyor-belt-style contraption and hold your arms overhead to get them out of the image and expose your torso. The technician electronically moves your body through the imaging window, which is about three feet in diameter. It is quite open, not confining in the least, as are so many more-traditional MRI tubes. You hold your breath while the image is taken to provide a clear, unblurred picture.

After the procedure, the technician tells me that my images look good—this is the first feedback that a



Heart with calcified arteries

Getty Images/ SMC Images (hearts)



is a scan right for you?

So who should get a heart or body scan, and what type of scan should you get? Dr. Matthew Budoff, director of Cardiac CT at the Los Angeles Biomedical Research Institute, makes the case that knowing your markers (such as cholesterol or blood pressure) is important, but these only suggest tendencies. "Scans give you a diagnosis," says Budoff. "They tell you whether or not you have a disease. It's a much more direct answer than markers provide."

In addition to markers, the two biggest issues to consider are your age and family history.

The average person probably doesn't need to get a body scan before the age of 40. Then, with a clean bill of health, you don't need another one for at least five years. If you have a family history of heart or lung disease, you should consider at what age that disease tends to strike. Consider getting a scan a few years earlier than age 40 if your relatives have suffered from these diseases at earlier ages.

Another rule of thumb is to use your family history to determine which type of scan to get. If you have a propensity for heart disease but not lung and colon cancers, you may opt to get just a heart scan, reducing both the cost and the radiation exposure. If lung disease is rampant in your family history, though, you may be better served with a full-body scan.

clean up your bill of health today

Seven ways to improve your scan results—and lengthen your life

The results of your heart or body scan are linked very directly to your lifestyle choices over the years before your test. Regardless of whether you've already had a scan or you're planning to get one, these tips can help improve your results—and your long-term prognosis.

1 Control your calorie balance One of the best ways to improve your scan results is to keep your body weight under control. To lose weight, you need to burn more calories than you consume. "The best way to do this is to increase your activity and cut calories," says Dr. Morteza Naghavi, founder and president of the Society for Heart Attack Prevention and Eradication (SHAPE). "Comprehensive metabolism management is more effective than restricting calories alone." That way, you will be able to eat a healthy amount of food, won't feel deprived and will be able to manage your weight.


Keep your body weight under control.

2 Do cardio All forms of exercise are important for heart health and body weight management, but cardiovascular training (aerobic activities like walking, jogging, running, swimming and gym-equipment exercise) helps improve your heart health and reduce body fat. Try to perform at least 30 minutes three times a week.

3 Include weight training Weight training helps increase your muscle mass, increased muscle mass helps increase your metabolic rate and an increased metabolic rate helps decrease body fat, improving your heart health. Try to include at least three sessions a week.

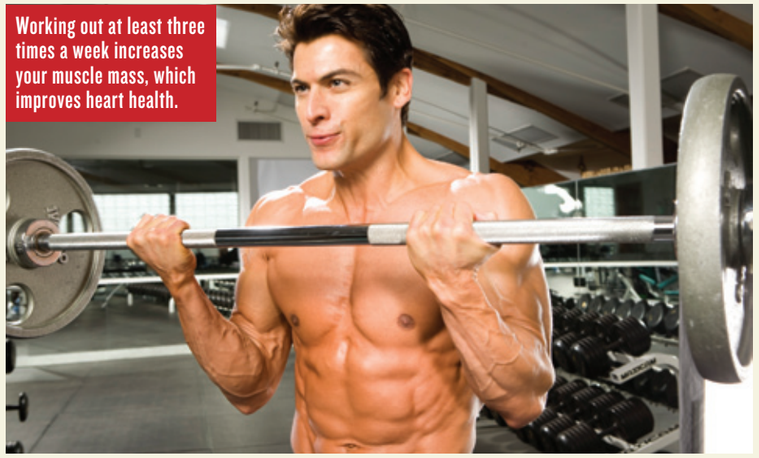
4 Reduce your "bad" carb intake Not all carbs are created equal. All carbs create an insulin response, which can have many negative effects, including the storage of body fat. Complex carbs like brown rice, oatmeal, yams and whole grain bread products have much less of an effect on insulin spikes than simple carbs like sugar and bleached flour. "For best results, replace simple carbs with complex carbs," suggests Naghavi, "but watch out for extra calories—complex carbs should not come at the expense of excess calories."

5 Eat plenty of healthy fats The more healthy fats you consume, the more you support your heart health. The best sources of healthy fats include avocados, olive and canola oils, nuts, seeds and salmon and other fatty fish. Make sure to emphasize these foods in your diet.

6 Reduce saturated fats and (especially) trans fats Make sure that you don't take in too many unhealthy fats from fatty cuts of beef and other fatty meats and fatty sources daily. Of primary importance, avoid excess amounts of chemically altered trans fats, such as those found in baked goods—typically listed under ingredients as "hydrogenated fats."


Intense cardio can help, but remember to work your way up to avoid triggering a heart attack.

7 Include intensity cycles in your cardio training One of the most beneficial forms of exercise is intense cardio. Studies have demonstrated that performing intense bouts of cardio exercise for as little as 15 minutes a week provides enormous benefits. One caution is to slowly work up to intense exercise so that you don't trigger a heart attack, cautions Naghavi.


Working out at least three times a week increases your muscle mass, which improves heart health.

Michael Butler (top); Robert Reiff (bottom)

patient receives—and I note that I'm a bit calmer. The second feedback comes from Budoff himself. Ten minutes later, he tells me that my results are identical to the ones I had six years earlier (read sigh of relief): no calcification and some dark spots on my lungs. Again, because of the spots, Budoff asks if I used to smoke; when I say no, he explains that this is not significant and may be due to normal aging. Based on the lack of calcification in my heart and arteries, Budoff concludes, "You have less than a one-in-1,000 chance of having a heart attack or stroke over the next five years." (More relief.)

I'm relieved—ecstatic even. So, I wonder: Why isn't everyone getting a body scan and taking control of their health?

The third set of data arrives about two weeks later in the mail. A specialist has reviewed the images and, in my case, drawn the same conclusions that both my technician and Budoff came to: I'm going to live—or, at least, I'm unlikely to die from heart disease or lung cancer anytime soon.

I'm relieved—ecstatic even. So, I wonder: Why isn't everyone getting a body scan and taking control of their health?

the prevent defense

In American sports, the "prevent defense" is a strategy that the leading team will often use to try to seal the game. The unfortunate side effect is that it often allows the trailing team to get back into the game because the defense tactic only prevents big scoring plays. The trailing team simply strings multiple small and midsize plays together, more or less scoring at will—albeit more slowly.

When it comes to medicine, the "prevent defense" is even worse. The medical offense simply leaves the field where the prevention of disease is concerned. "Medical schools have ingrained doctors with the idea of diagnosing problems, not preventing illness," says Budoff. Most of our doctors only look for existing problems; they aren't trying to prevent potential illnesses and diseases by finding them in their early stages before symptoms appear. Budoff further explains that most screening tests aren't covered by insurance, and most Americans don't seek them out, believing that if their doctor doesn't suggest a test—and if their insurance company doesn't cover it—there's no need for it.

But nothing could be further from the truth. "Medicare doesn't cover most screening tests," says Budoff. "That's strange, considering that 85 percent of heart attacks occur in the Medicare-age population and most cancers occur in that population as well. You'd think screening would be a good idea." In fact, the only screening tests that doctors perform and insurance companies routinely pay for are mammograms, prostate exams (which are generally included in the exam fee) and colon exams.

From a pragmatic perspective, this makes little sense to Budoff, who has published

risks and limitations

Before you trot down to your local mall or fly-by-night scan business (or even a legit clinic with outmoded technology) and load yourself up with a high-risk scan, it's important to know the downsides. These are some of the factors to consider before going under the beam.

Radiation exposure Perhaps the biggest drawback to getting a body scan is the amount of radiation your body will be exposed to. "A heart scan delivers about 0.7 millisieverts of radiation to your body," says Budoff. **A body scan delivers three to five millisieverts—roughly four to seven times as much radiation as a heart scan.** "To put this in context, the average American naturally encounters about three to five millisieverts of radiation a year—this comes from radon, the sun, television, flying and microwave ovens," explains Budoff. "When you get a body scan, you're doubling your annual radiation exposure," he says. For this reason, Budoff recommends getting a body scan only once every five or six years or so.

Naghavi takes a more conservative approach. "Our SHAPE guideline initiative doesn't recommend body scans," he says. "We only recommend two tests: a coronary CT scan for detection of asymptomatic coronary atherosclerosis and a carotid ultrasound for carotid atherosclerosis." For more on this, you can visit the SHAPE website at www.shapesociety.org.

While Budoff and Naghavi differ on the amount of radiation exposure that is acceptable for a preventive test, both would agree that you should avoid older tests, such as four- or 16-image scans, which can deliver up to 40 millisieverts of radiation. "There are only two types of machines you should use for body scans: 64-slice and EBT scans," says Budoff.

Expense At about $500 a pop, many people are put off from seeking out and financing their own body scan. Heart scans may run you about $250. While there has been resistance in the insurance industry to cover scans, that inherent barrier is beginning to erode. If your family history dictates that you are prone to preventable illnesses that body scans can detect, you may want to invest in a diagnosis before symptoms or traumatic events occur.

Medical limitations While heart scans can provide valuable, life-extending information to those with calcification, body scans can detect lung and colon cancers, allowing for earlier treatment, but not all forms of cancer can be beaten with early detection. "Body scans are good at detecting pancreatic cancer, but treatment is still poor," says Budoff. In other words, knowing that you have pancreatic cancer doesn't necessarily help you live longer. "You have more lead-time bias," says Budoff, "but you will probably die on the same day, whether or not we find pancreatic cancer through a scan."

Of course, that's not true for many other forms of cancer, such as lung and colon cancers, which respond better to treatment the earlier they are found. The take-away message is that heart scans and body scans have their benefits, but they are only as helpful as the medical technology that addresses the maladies that scans uncover.

For some, 10 minutes in this machine has revealed the chances of dying from heart disease with 99.9 percent accuracy.

some 250 articles, chapters and books on non-invasive CT angiography and is considered a leading authority on CT. While it's great that some procedures are covered by most insurance companies, they detect diseases that are less lethal than heart disease and lung cancer. "Mammograms detect breast cancer, which isn't a major cause of death," says Budoff. "Prostate exams find prostate cancer, which isn't a top 10 killer of men. Colon cancer is the number three killer." But numbers one and two–heart and lung deaths–go unscreened, uncovered by most insurance companies, even though we have a heart and lung test that can detect these diseases and allow us to treat them in their earlier stages. Currently, we're not focusing on prevention of the most common diseases; we're focusing on what's less likely to kill us.

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Of course, this doesn't mean that we should take our eye off these lesser killers either. But it does beg the question: Why aren't insurance companies focusing on detecting the diseases that kill their patients most frequently?

heat seekers

Much of this is political—not in the partisan sense but in the heat-seeking sense. Most insurance companies don't cover body scans or heart scans of any sort, even though this could lead to cost-saving measures in the long run. Medicare covers some scans in some instances. United Health Care just started paying for heart scans on July 1, 2009. One major exception is the state of Texas, which requires that insurance companies cover coronary CT scans and carotid ultrasound tests. This law was scheduled to take effect on January 1, 2010.

"The Texas law was initiated by representative Rene Oliveira's personal experience with coronary artery disease," says Dr. Morteza Naghavi, founder and president of the Society for Heart Attack Prevention and Eradication (SHAPE). The representative's coronary screening test was denied by his insurance provider, and this helped increase awareness about the issue. Texas is not typically considered a "big government" state, but awareness of this issue in Texas has helped make CT scans available to its citizens through government-mandated insurance. Naghavi explains that this procedure isn't covered in other states because there is a problem with the current mindset of the health care system. "American health care is not health care; it is sick care," he says. Until we move to a mindset of health care, we will continue to face the challenges we are now facing, whereas more than 80 percent of our so-called health care budget is spent on the last two years of life." So, this brings up another question: What will it take for our health care system to recognize the benefits of preventive medicine? MF

You probably aren't covered for a scan, but you should still consider it—this test could save your life.