

Meet The Pills That Make Elon Musk and Jeff Bezos Look Like They Work Out

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13

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Many athletes and gym-goers are turning to a popular but potentially dangerous new pill to help them build muscle and gain strength: a steroid alternative known as SARMs.

The pills are widely marketed online as “legal steroids” that provide the muscle-building benefits of anabolic steroids without the troubling side effects. And while the products are legal — at least so far — their spread has alarmed health authorities, who say they are not necessarily safe.

Drug companies developed SARMs, which stands for selective androgen receptor modulators, as an alternative to anabolic steroids for people who suffer from age and disease-related muscle loss. But they are the subject of ongoing clinical trials and have not been approved for use by the Food and Drug Administration.

In October, the agency [issued a public advisory](#) cautioning that SARMs were unapproved drugs linked to “serious safety concerns,” including the potential for an increased risk of liver toxicity, heart attacks and strokes.

A month later, [a study published in JAMA](#) revealed that products marketed as SARMs were frequently misbranded and tainted with unlisted ingredients. Out of 44 products that were purchased online and analyzed, only about half contained an actual SARM, while 10 percent contained none at all. Roughly 40 percent had other hormones and unapproved drugs. Several contained a drug that was abandoned by GlaxoSmithKline a decade ago after it was found to cause cancer in animals.

The long-term consequences of using SARMs are largely unknown, and people who purchase products marketed as them cannot be entirely sure what they are putting in their bodies, said Dr. Shalender Bhasin, the director of research programs in men's health, aging and metabolism at Brigham and Women's Hospital and an author of the JAMA report.

"We don't know whether these compounds are safe," he said, "but we do know that some of them have side effects."

That has not stopped many people from experimenting with them.

Thaddeus Owen, 42, a self-described biohacker who lives in Saint Paul, Minn., began using SARMs in 2016 in combination with a diet and exercise program. He said that

the pills helped him pack on five pounds of muscle in four weeks, which he documented on his website, “PrimalHacker.” He argued that informed adults should be allowed “to experiment on ourselves and improve our biology,” but added, “this is definitely a use-at-your-own-risk type of supplement.”

Anti-doping officials have known about SARMs for some time and have seen an increasing number of elite athletes using them. Since 2015, the United States Anti-Doping Agency has imposed sanctions on more than two dozen track and field stars, weight lifters, cyclists, mixed martial artists and others for testing positive for a variety of SARMs, most frequently one called ostarine.

Last year, Joakim Noah, a center for the New York Knicks, was [suspended for 20 games](#) for testing positive for a SARM. The college basketball star Allonzo Trier of the Arizona Wildcats was also suspended for using SARMs. And in October, a top CrossFit Games competitor, Ricky Garard, was stripped of his third-place title after testing positive for two SARMs: ostarine and testosterone.

While the underground use of SARMs has made them controversial, the drugs could one day serve a crucial purpose for many patients.

Scientists developed SARMs decades ago to counter the [age-related decline in muscle and strength](#) that tends to begin around middle age and that can contribute to falls and broken bones. Many chronic diseases, such as cancer, heart failure and kidney disease, are also punctuated by a loss of muscle and physical mobility.

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Anabolic and androgenic steroids such as testosterone can help people regain muscle and physical function. But they act on many tissues throughout the body and have been tied to a litany of potential side effects, including prostate problems and cardiovascular events.

SARMs were designed to selectively target skeletal muscle and spare other tissues, in an attempt to reduce some of these unwanted side effects. A number of trials are looking at their usefulness [in cancer patients](#), people [recovering from hip surgery](#), and [postmenopausal women with urinary incontinence](#) linked to weak pelvic muscles.

A [three-week trial at Boston University](#) demonstrated that LGD-4033, a SARM developed by Ligand Pharmaceuticals, was safe and tolerable in healthy men, producing “significant gains in muscle mass and strength” without raising levels of a protein linked to prostate cancer. But it had other effects as well, for instance causing a drop in HDL cholesterol, the protective kind, which raised questions about its effects on heart health.

“Long-term studies are needed to clarify the effects of long-term SARM administration on cardiovascular risk,” the authors concluded.

Thomas O’Connor, a doctor who founded [a men’s health clinic](#) and wrote a book called “[America on Steroids](#),” said that many of his patients are anabolic steroid users who turned to SARMS because they were told that they were safe and nontoxic. He said that since 2010 has seen “hundreds, maybe over 1,000 men on SARMS” from all walks of life: police officers, defense workers, amateur athletes, accountants and others.

It’s hard to determine the precise impact of SARMS because many people who use them combine them with other drugs, supplements and substances, Dr. O’Connor said. But one thing he often sees among people using SARMS is that their cholesterol profiles worsen and their liver enzymes rise, a sign of increased strain on their livers. Some also experience

diminished sex drive, hair loss, acne and irritability, though it's often difficult to know whether it's the SARMs causing these symptoms or some other unlisted ingredients in the products.

As a longtime power lifter, Dr. O'Connor said he relates to a lot of his patients and understands their desire to be bigger, stronger and fitter. But he counsels them to give up the drugs they are using because they are jeopardizing their health.

"I always tell them the same thing," he said. "These are illicit agents. They're not supported by expert guidelines and they're dangerous. So don't take them."

The Council for Responsible Nutrition, a supplement industry trade group, [launched a campaign on social media](#), #SARMSCanHarm, and is working with sports clubs, fitness groups and coaches around the country. The military and federal government also have an awareness campaign about risky products called [Operation Supplement Safety](#).

Patricia Deuster, a professor of military and emergency medicine at the Uniformed Services University of the Health Sciences, said SARMs are popular among some soldiers because they are easier to access than anabolic steroids, but she warns them there are hazards, citing one soldier who suffered liver damage and could not deploy with his unit

13

COMMENTS

because he was hospitalized after using a product containing SARMs and other ingredients.

“We try to tell them that there are other ways that they can achieve their goals without risking their health or their ability to maintain their deployment status,” Dr. Deuster said. “We are trying to educate them.”