

# As Armstrong case unfolds, experts describe doping's harms

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Lance Armstrong  
(contributed photo)

Heart disease, liver disease and behavior problems are among possible health consequences.

(HealthDay)—In the wake of new allegations around Lance Armstrong's involvement in blood doping, experts are reminding the public of the devastating impact these substances can have on an athlete's health.

The recent report by the United States Anti-Doping Agency accusing seven-time Tour de France winner Armstrong (he was recently stripped of those titles) of doping participation shows how deeply the practice is ingrained in cycling, but it's a big problem in others sports as well.

So-called performance-enhancing drugs—such as [erythropoietin](#), anabolic steroids and human growth hormone—may affect almost every

system in the body, and have been linked to severe medical and psychiatric side effects.

Add in diuretics to mask all the drugs, and athletes who use performance-enhancing drugs are risking their long-term health, experts say.

One of the most common drugs is erythropoietin, or EPO. "Blood doping using EPO is based on the principle of boosting the production of [red blood cells](#) by enhancing the proliferation and differentiation of certain red blood cell precursor lines," said Dr. Robert Glatter, an attending physician in [emergency medicine](#) at Lenox Hill Hospital in New York City, and former sideline physician for the New York Jets football team.

The type of EPO at issue is a synthetic protein used for the treatment of various forms of anemia related to [kidney failure](#) and cancer. It is structurally different than the natural form of EPO present in the body, Glatter said.

"Because EPO increases the body's oxygen-carrying capacity and endurance by increasing red blood [cell mass](#), it has been utilized illegally as a performance booster in [endurance sports](#)," Glatter said.

"Long-term use of EPO can lead to an increased risk of heart attack, stroke and pulmonary emboli—blood clots in the lungs," he added. "This increase in potential for developing such complications is directly linked with the duration of use of EPO."

Less serious effects of long-term use include weight loss, insomnia, muscle pain, depression, dizziness and headaches, Glatter said.

Other widely used compounds include various forms of anabolic steroids and human growth hormone, both taken to build muscle mass and

strength.

But the downside is substantial. Anabolic steroids can result in aches, baldness, liver and heart disease, mood swings, aggressiveness and increased risk of suicide.

Sexual side effects include shrinking testicles, breast growth in men and reduced sex drive, according to the World Anti-Doping Agency.

[Human growth hormone](#) (HGH), another performance-enhancing drug, not only makes bones stronger and muscles bigger, but it also can lead to acromegaly, in which facial and other bones enlarge abnormally, resulting in symptoms like a protruding forehead and jaw.

HGH also can cause an enlarged heart, high blood pressure, heart failure and arthritis, as well as damage the liver, thyroid and vision.

The long-term effects of these drugs aren't really known, said Dr. Alan Rogol, an endocrinologist at the University of Virginia, in Charlottesville.

But of all these performance-enhancing drugs, steroids are the most concerning, he said. "The long-term effects are likely to be significant," he said.

Specifically, steroids' long-term effects are increased risk for heart disease and behavior problems, and a psychological dependence on them.

"Sorting out the long-term consequences [of steroids] is difficult," Rogol said. "Predicting the long-term effects of growth hormone is even worse."

When these drugs are mixed together, and combined with other behaviors, it is easy to find an association between them and health problems, but hard to pinpoint a specific problem to a single [drug](#), Rogol said.

Glatter said these drugs offer no health benefit to the athletes who abuse them.

"People are taking on the risks of these drugs without actually needing them," Glatter said. "For these people, there is no medical reason to take these drugs—there is only the risk of devastating side effects."

**More information:** To learn more about the dangers of sports doping, visit the [World Anti-Doping Agency](#).

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