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HOT TOPIC

Doping in Sports: How Big a Problem?

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THE MAIN EVENT

Floyd Landis -- the Tour de France cycling-event winner accused of doping -- spent last week publicly defending himself after tests confirmed elevated levels of testosterone in his system.

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The incident prompted the International Cycling Union to warn that it is considering stricter doping rules for the sport. It also heightened concerns that the use of performance-enhancing substances is spreading throughout the sports world.



Digital Press Photos/NewsCom
Floyd Landis at a press conference in Madrid.

Former Major League Baseball player Jose Canseco, who has admitted using steroids during his playing days, alleged in his 2005 book "Juiced" that there is a steroid epidemic in baseball. And last month, U.S. Olympic sprinter Justin Gatlin tested positive for elevated testosterone or other steroids.

Since Mr. Landis was accused of doping, his cycling team has fired him and Tour de France officials have distanced themselves from him -- although they likely can't officially revoke his title until the American Arbitration Association confirms the test results, which could take weeks or months. Mr. Landis could then appeal to the Court of Arbitration for Sports.

Mr. Landis denies wrongdoing; he says he drank whiskey the night before his last ride, a factor some studies say could lead to raised testosterone levels.

Here's a closer look at Mr. Landis's case and the wider issue of doping in sports:

What tests did Mr. Landis fail? He failed three separate tests on a single urine sample taken the day he stunned fans with a remarkable comeback on Stage 17 of the ride. The first test showed an 11-to-1 ratio of testosterone to epitestosterone in the body, more than double the 4-to-1 ratio allowed by the World Anti-Doping Agency. Most adults have a ratio between 1-to-1 and 2-to-1. A second T/E-ratio test on the same sample was also positive. A more sophisticated test also found synthetic testosterone in the sample.

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How accurate are drug tests in sports? The U.S. Anti-Doping Agency, which has been managing tests of U.S. athletes since 2000, says it has never had a case in which an individual accused of doping is later found not to have committed the violation.

MORE



- [The WSJ editorial board's view](#)¹
- [The Numbers Guy: More on the Landis Controversy](#)²
- [The Numbers Guy: Floyd Landis's Alcohol Defense](#)³
- [By the Numbers](#)

Still, testing in general isn't fool-proof. In May, seven-time Tour de France winner Lance Armstrong was cleared of a 1999 doping allegation after an independent investigation showed that a lab in Paris -- the same one that tested Mr. Landis's samples -- failed to follow "a single one" of the required handling techniques.

There also are limits to what labs can test for. There is currently no reliable urine test for human-growth hormone, for example. And athletes have been known to use so-called designer drugs that may avoid detection if their components aren't on testers' radar.

Could Mr. Landis be exonerated? Antidoping experts say it may be difficult for him to establish innocence since athletes typically have "strict liability" for whatever is in their bodies, no matter how it got there. Also, antidoping agencies consider any trace of synthetic testosterone as conclusive evidence of cheating. Mr. Landis has argued the tests can't conclusively show what substance is causing the jump in testosterone, according to Michael Henson, a spokesman for the cyclist.

Still, Mr. Landis failed testing on only one of eight samples given during and after the race. Testosterone is typically used over a long period of time to build muscle mass, rather than to gain an instant boost. Charles Yesalis, an antidoping expert and professor emeritus from Pennsylvania State University, says it would be strange for an athlete to take testosterone a single time. "It would be like taking a cholesterol-lowering drug while having a heart attack," he says.

--Lauren Etter

* * *

FACTS

Last year, World Anti-Doping Agency-accredited laboratories analyzed 183,337 samples from Olympic and non-Olympic athletes, with about 2.1% of those revealing the presence of prohibited substances or methods. In 2003, the labs analyzed 151,210 samples, with about 1.6% containing prohibited substances or methods.

One of the first drug-enforcement actions at the Olympics occurred at the 1972 Munich games when U.S. swimmer Rick DeMont was stripped of his gold medal for testing positive for ephedrine, an ingredient in his asthma medication. His win was reinstated in 2001.

Three Tour de France riders have lost their lives during competition. One, Tom Simpson, died in 1967 from heart failure while climbing Mount Ventoux. Amphetamines were found in his jersey and in his blood.

About 3.8% of cyclists tested in 2005 showed traces of prohibited substances or methods -- the highest of all Olympic sports tested, according to WADA. Baseball players came in second at 3.7%.

Major League Baseball began testing for steroids in 2003. That year, between 5% and 7% of 1,438 anonymous tests turned up positive for steroids.

Ancient Greek athletes consumed sheep testicles to receive a testosterone boost. The first recorded case of steroids in an athlete came in 1942, when testosterone pellets were found implanted in a racehorse named Holloway.

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POINTS OF VIEW

"There are extraneous circumstances that indicate there's some strange things going on with this test. You will see that they clearly broke the rules and their excuse was pathetic. The only explanation I can come up with is that there is some agenda here."

--Floyd Landis, 2006 Tour de France winner

"For us, he cannot be the Tour de France winner anymore. Technically, we cannot say he has lost his title, but he has soiled the yellow jersey."

--Christian Prudhomme, director, Tour de France

"With these recent cases, we may only be seeing the tip of the iceberg."

--Dick Pound, chairman, World Anti-Doping Agency

"It would be totally inappropriate or completely ridiculous for anybody to use [testosterone] at this stage of the game...It would have really no benefit whatsoever in a competition like this. It's the wrong drug of choice."

-- Steven Ungerleider, antidoping expert and author of "Faust's Gold: Inside the East German Doping Machine"

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BY THE NUMBERS

2006 World Anti-Doping Agency list of substances¹ banned in all competitions			2005 POSITIVE TESTS²	% OF ALL POSITIVE TESTS
SUBSTANCE GROUP/ EXAMPLE	WHAT THEY DO	HEALTH RISKS		
Anabolic agents Testosterone	Increase muscle mass, strength; speed recovery from a workout	Baldness, shrunken testicles, infertility, acne, aggressive behavior	1,864	43.4%
Beta-2 agonists Salbutamol	Open airways; when injected, build muscle mass	Headaches, insomnia, nausea, tremors, increased heart rate	609	14.2
Stimulants Amphetamines	Reduce fatigue, increase alertness and aggressiveness	Heart palpitations, weight loss, brain hemorrhage, heart attack	509	11.8
Glucocorticosteroids Budesonide	May increase stress endurance	When injected: mood changes, softening of connective tissue	325	7.6
Diuretics and other masking agents Furosemide	Can help dilute urine for drug tests; also used for weight loss	When used for weight loss: cramps, exhaustion, heart arrhythmias	246	5.7
Hormones and related substances Human-growth hormone	Stimulate muscle development, improve oxygen uptake	Increased blood pressure, swelling, headaches, heart disease, diabetes	162	3.8
Agents with anti- estrogenic activity Tamoxifen	Can cause enhanced levels of masculinizing hormones	Hot flashes, sweating, insomnia	21	0.5
Narcotics Morphine	Pain-relief and sedative properties	Nausea, constipation, impaired mental ability	17	0.4

¹Cannabinoids (marijuana) are also banned in all competitions but have no performance-enhancing properties
²The presence of a prohibited substance or method in a sample; some findings may correspond to multiple measurements on the same athlete
Sources: World Anti-Doping Agency; U.S. Anti-Doping Agency; Mayo Clinic; HowStuffWorks.com

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