

EPO doping in elite cycling: No evidence of benefit, but high risk of harm

5 December 2012

The drug erythropoietin, often called EPO, is banned from sports because it is believed to enhance an athlete's performance and give people who use it an unfair advantage over unenhanced competitors. However a new systemic review of existing research, published in the *British Journal of Clinical Pharmacology*, reveals that there is no scientific evidence that it does enhance performance, but there is evidence that using it in sport could place a user's health and life at risk.

Professional cycling is a popular sport, but over the last decades the sport's image has been tainted by high-profile doping cases. EPO, a blood-cell stimulating hormone, has recently made headlines, with the United States of America's anti-doping agency (USADA) claiming that it was used by record seven-time [Tour de France](#) winner Lance Armstrong.

"Athletes and their [medical staff](#) may believe EPO enhances performance, but there is no evidence that anyone performed good experiments to check if EPO would actually improve performance in elite cyclists," says lead researcher Professor Adam Cohen, who works at the Centre for Human Drug Research in Leiden, The Netherlands.

On the other hand, the possible harm is well documented. EPO thickens a person's blood, which can lead to an increased risk of clots. These clots obstruct blood flow to areas of tissue, and so oxygen doesn't get to the cells and they die, damaging the organ. If the organ is your heart or your brain this can be particularly dangerous, potentially resulting in [heart attack](#) or stroke.

Normally EPO is used in medicine to treat people with [anaemia](#), where its effect on each patient is carefully monitored. Professor Cohen points out that researchers work hard to prevent patients taking drugs that don't work or have dangerous side-effects. "So why should the standards be different for the same drugs used in athletes?" he

asks.

"Although doping is forbidden, the pressure to win in sport is so great that some athletes seem to be willing to try any way of getting ahead of their competitors. When elite athletes and their coaches discover that there is no evidence of benefit and clear risk of harm, I hope many may reconsider trying to cheat. Education may work where attempts at enforcement have failed," says Cohen.

"I believe there is a clear need for high-quality research to investigate the effects of supposedly enhancing drugs in sport. If, as is expected, many substances in current use are found to be ineffective it will help keep our athletes safe and improve confidence in sporting results," says Cohen.

More information: Heuberger J, Cohen Tervaert J, Schepers F, Vliegenthart B, Rotmans J, Daniels J, Burggraaf J, Cohen A. Erythropoietin doping in cycling: Lack of evidence for efficacy and a negative risk-benefit. *British Journal of Clinical Pharmacology*. 2012; DOI: [10.1111/bcp.12034](#)

Provided by Wiley

APA citation: EPO doping in elite cycling: No evidence of benefit, but high risk of harm (2012, December 5) retrieved 28 April 2021 from <https://medicalxpress.com/news/2012-12-epo-doping-elite-evidence-benefit.html>

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