

# Biker's warning! Erythropoietin hits blood vessels to raise blood pressure in the brain

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Erythropoietin or EPO might be considered a "performance enhancing" substance for athletes, but new research published online in *The FASEB Journal* shows that these enhancements come at a high cost--increased risk of vascular problems in the brain. According to the study, short- or long-term use of EPO raises blood pressure by constricting arteries, which reduces the flow of blood to the brain. This finding also contradicts earlier evidence suggesting that EPO may be a viable early treatment for stroke victims.

"The new findings of this study urge to scrutinize present indications for EPO, and so help to better delineate positive versus adversary health effects of EPO for each patient," said Peter Rasmussen, Ph.D., a researcher involved in the work from the Zurich Center for Integrative Human Physiology at the University of Zurich in Switzerland. "Future research should aim at developing an EPO-based agent for treatment that does not have a negative effect on the blood vessels of the brain."

To make this discovery, Rasmussen and colleagues evaluated the effects of acute high doses of EPO for three days and chronic low doses of EPO for 13 weeks in two groups of healthy males. Responsiveness of brain vessels during rest and during bike-riding exercise, with and without hypoxia, was examined. Blood vessels were also analyzed using ultrasound measurements and by measuring how much oxygen reached the brain. They found that prolonged EPO administration increased hematocrit, while acute administration did not. They also found that both groups had increases in blood vessel constriction and higher blood pressure.

"EPO is used by doctors to increase [red blood cells](#) in sick people who can't make enough of them: it's called honest medicine. When EPO is used by healthy bikers and runners to boost their performance, it's called cheating. Now we know

that folks who use EPO covertly are cheating not only the time-clock, but themselves," said Gerald Weissmann, M.D., Editor-in-Chief of *The FASEB Journal*. "Not only is EPO likely unsafe in healthy athletes, but there are many other ways to build up stamina without drugs."

**More information:** Peter Rasmussen, Yu-Sok Kim, Rikke Krogh-Madsen, Carsten Lundby, Niels V. Olsen, Niels H. Secher, and Johannes J. van Lieshout. Both acute and prolonged administration of EPO reduce cerebral and systemic vascular conductance in humans. *FASEB J.* December 9, 2011; [doi:10.1096/fj.11-193508](https://doi.org/10.1096/fj.11-193508)

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