# Epigenetics and doping: Steroids may have long-lasting performance enhancing effects

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[Olympic athletes] try and exceed human biological limits by using external enhancements in the form of "doping." A very well-known example of doping in sport is the use of androgenic steroids. What people outside of strength-training circles don't necessarily know, however, is that substances like steroids can still have an effect after athletes stop using them.
Even without steroids, someone who has trained extensively and then stopped, reacquires muscle mass and strength more rapidly than someone who hadn't trained at all. This was thought to be due to rapid changes in the nervous system affecting the coordination and activation of the muscles, which might in turn related to what scientists call epigenetics."

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Unlike most other cell types, muscle fibers have multiple nuclei. During strength training, muscle mass increases, and the number of nuclei in each cell also goes up. This team wanted to know if this "cellular memory mechanism" could be influenced by steroids.

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The relevance for doping in sport is that even a brief period of anabolic steroid use may cause long-lasting performance enhancements that continue many years after use is discontinued. It is almost as if the "use it or lose it" adage has been changed to "depending upon what you used you might not really ever lose it."

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