

# Scientists race to stay ahead of the drug-taking and genetic manipulation that threatens sport

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The race to ensure that scientists stop drug-taking athletes from damaging sport by using performance enhancing drugs or undergoing genetic manipulation is a constant challenge, according to a major four-decade review by three of the World's leading experts on doping in sport.

Writing in the August issue of the European-based *Journal of Internal Medicine*, they say that significant advances have been made in the fight against drugs in sport over the last 40 years. However, the authorities face a constant battle to keep up with both the athletes who use drugs and their rogue scientific advisors.

"A cardinal feature of doping is that some athletes will experiment with any new substance that might improve their performance" says Professor Don Catlin, Founder and former Director of the World Anti-Doping Agency (WADA) accredited laboratory at the University of California, USA, and CEO of the Anti-Doping Research Institute.

"They do not wait for regulatory approvals. If they can obtain a supply they will try it. This means that scientists need to anticipate and develop tests even before the drug has been misused by athletes.

"Considerable concerns have also been expressed about gene doping, a prohibited spin off of gene manipulation, a medical advance that has

been developed to alter a person's DNA to fight diseases like muscular dystrophy and cystic fibrosis."

The paper is co-written with two other leading experts – Professor Arne Ljungqvist, Vice President of WADA and Professor Emeritus at the Karolinska Institute, Sweden, and Professor Ken Fitch from the University of Western Australia, who was a sports medicine consultant for the 2000 Olympic Games in Sydney.

Published to coincide with the Beijing Olympics, from 8 to 24 August, the review provides a highly authoritative view of sports doping over the last 40 years and looks at the challenges scientists may face in the future.

Even tougher doping control measures will be in force at this summer's Games, according to Professor Ljungqvist, who is also Chairman of the International Olympic Committee's Medical Commission. He points out that an estimated 4,500 samples will be collected from the 10,500 athletes taking part, considerably higher than the 2004 games in Athens.

Doping in sport first hit the headlines when a Danish cyclist died during the Rome Olympic Games in 1960. Cyclists had been taking strong stimulants since the late 19th century but up until then the sports authorities had failed to take action.

A Medical Commission was created by the International Olympic Committee to tackle the problem and various other sporting bodies followed suit. This culminated in the formation of WADA in 1999, where Professor Ljungqvist, as Chairman of its Health, Medical and Research Committee, played a pivotal role in developing the science needed to combat doping in sport.

"Remarkable advances have been made over the last 40 years which have allowed sports authorities to identify and sanction athletes who

have misused a wide range of drugs, most of which were developed to treat diseases" says Professor Ljungqvist. "More recently drugs have been produced and used to specifically enhance athletic performance and avoid detection.

"At the same time strict regulations have been developed to ensure that athletes with a proven clinical need can still receive the prescription drugs they need without fear of sanctions."

"This major review by Professors Catlin, Ljungqvist and Fitch provides a concise description of the history of drug testing for the Olympic Games, with fascinating details on the evolution of laboratory equipment and analytical strategies" says Dr Thomas H Murray, President and CEO of The Hastings Center, a bioethics research institute based in New York.

"It identifies failings of the overall anti-doping system – most of them out of the laboratories control – and describes a number of challenges to be confronted.

"And it also shows us that there are five elements that are necessary for a successful anti-doping programme. These are: a strong commitment to – and sufficient funding for – research, a smart sampling strategy, adequate analytical capacity, a trustworthy adjudication process and a solid foundation of clear principles and transparent process."

In his commentary on the paper, Dr Murray points out that research carried out at The Hastings Center suggests that the very competitiveness of sport has given doping great coercive power and that athletes would prefer a drug-free, level playing field.

And he agrees with the authors that scientists face a constant race to stay ahead of sports doping and pre-empt future trends.

"New scientific developments such as genetic manipulation demand an anti-doping system that is scientifically sophisticated, robust and capable of swift response" he maintains.

"An important part of that strategy is raising awareness of the problem and keeping the debate alive, which is why this paper in the Journal of Internal Medicine - written by three leading experts in the field - is so important."

Source: Wiley

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