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The challenge to keep a level playing field

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● With the recently concluded Tour de France having once again been marred by doping (four cyclists – two from Spain – failed drug tests), there is growing concern among Olympic officials that the upcoming Summer Games in Beijing will be tainted by an unprecedented number of doping cases (see sidebar). Jordi Segura, leading anti-doping researcher and member of the International Olympic Committee Medical Commission, explains the evolution of performance-enhancing substances and the new challenges faced by the anti-doping community to keep sport clean.

Moisés Dueñas tested positive for EPO on July 16; he's one of two Spaniards caught for doping in the Tour de France 2008/ EFE (Inset) Jordi Segura/ IMIM

– How has doping changed over recent years?

The change, basically, is that now the most advanced performance-enhancing pharmaceuticals on the market are quite different from a few years ago. Before, doping meant the use of chemicals products. Now there are products composed of small molecules, biotech products, proteins and hormones, and this complicates the issue because these products can be similar to things we already have in our bodies. So even for a positive result for a doping test, with one of these products it can be very difficult to verify the positive result – not only to detect the product but also to demonstrate that the quantity of the product does not come from the body itself but from an external source. And this makes out task even more difficult, because what we never want to do is to accuse an innocent athlete of something they have not done.

– Why is there so much concern about the Olympic Games in Beijing?

Just look at the Tour de France. Everybody knows that the cyclists are going to be tested rigorously and that they are not allowed to take any doping products, but they do it anyway. What is worrying is that the fight against doping has its limits and even though athletes who want to use these products know they run the risk of being detected, they continue using them anyway. So in the Olympic Games, which is a sporting event of utmost importance, it is possible that there is a small yet significant percentage of athletes who choose to dope. And we are not only talking on-about the newest doping products, but also the use of more traditional ones. Steroids from the 1970's are still the most highly abused product for performance enhancement today.

The Spanish field hockey team's Olympic future was put into doubt when two players tested positive in April; in July the ruling was overturned. It was found the team was sabotaged during a tournament in Azerbaijan./ EFE

– Are individual sports more prone to doping?

Yes. For team sports the benefits of one individual using illegal substances to improve his or her performance may not make a difference in the outcome, but in a sport that depends on the individual performance, especially an individual athlete's stamina level, the use of illegal drugs can mean the difference between a medal or not.

– What's the problem with cycling? Each year the same story repeats itself.

Like I said, it is an individual sport that tests your stamina, and doping can give you a big edge in these cases. Cycling is one of sports with the widest possibilities of doping and statistics demonstrate this. I think the cases of doping receive a lot of media attention and cause a big impact, but there are also many cyclists who don't dope.

– What is the role of genetic engineering in doping?

Doping through genetic engineering is talked about a lot. At the present moment it is not being used, but in a very short period of time, say four or five years, it is possible that we could see cases of the use of genetics to illegally enhance performances. For example, instead of injecting EPO (Erythropoietin, a protein hormone that increases oxygen-carrying capacity), you could implant a gene that produces EPO. This would of course greatly complicate the detection of a case of doping since instead of injecting EPO into the body, the body would simply produce it. The global anti-doping community is aware of this and has started research projects to determine how to detect this practice before it becomes a reality.

– Are there studies on the use of genetics in doping taking place in Barcelona?

Yes, there is a study with animals in *Parc de Recerca Biomèdica*. We have a project using animals that uses external imaging to see if there has been the insertion of an EPO gene in a tissue where normally it shouldn't be. Many tests have to be done first before it can tried on humans, but in five to 10 years this could be applied to athletes suspected of doping.

– Will be hard to distinguish between athletes who use genetics to achieve an unfair advantage and those who use it simply to live healthier lives?

Evidently the moment will come when this has to become a very important ethical question in sports: where is the limit between what is reasonable to pursue and what constitutes abuse. I think that in five to 10 years this discussion will be brought to the forefront.

Officials say Beijing Games will yield more doping cases

● The president of the International Olympic Committee, Jacques Rogge, has admitted that he expects up to 40 athletes to be caught for having taken illegal substances to improve their performance at this summer's Olympic Games in Beijing.

As reported by the Associated Press, Rogge said this estimate was based on the fact that at the 2000 Sydney games there were 12 positive results out of 2,500 doping tests, while in Beijing there will be 4,500 urine tests. Based on the higher number of tests in Beijing, Rogge said "you can expect 30 to 40 positive cases" of doping at the upcoming games.