

Blood passports to catch sport cheats

Just as fingerprints provided a major breakthrough for detectives solving crimes, a database of athletes' biological passports will help the anti-doping establishment to detect the users of performance enhancing drugs, reports FANIE HEYNS

There is hope of a new dawn for the anti-doping establishment, who have been desperately seeking to rid sport of the depressing plague of steroids and drugs to enhance performances illegally.

After millions of dollars and countless man-hours of scientific research, a new technique to unmask cheats by peering into their blood appears to be on the verge of producing its first doping cases.

This milestone for the so-called biological passport could be reached in the coming weeks or months, most likely in cycling.

Combined with regular drug tests and more effective policing, the programme is giving the cats another claw with which to catch the mice.

Athlete passport

The World Anti-doping Agency (WADA) is very close to implementing an Athlete Blood Passport system, which would provide testers with a lifelong biological fingerprint of competitors. Any anomalies could then be identified.

The biological passport is an indirect way of identifying athletes who use drugs, because it relates to blood doping that enhances the oxygen capacity of your blood, like the use of EPO to boost your red cell capacity to carry oxygen, explains George van Dugteren, chairman of the anti-doping committee of the SA

Sports Confederation and Olympic Committee (SASCOC).

The idea was pioneered by the world governing bodies of cycling and skiing, where blood doping and the use of EPO has been a particular problem.

Wada says it has been collecting blood samples for some time now as part of their preparations for the introduction of the Athlete Passport. The information on each athlete's passport will be centrally stored by WADA, along with all other testing data, on what is known as the Adams database.

Wada says it will also be of huge help in their target testing of suspected drug abusers. When Michael Phelps was caught on camera smoking pot, some commenta-

tors said that many top athletes in many sporting codes used marijuana as a pain-killer, muscle relaxant and anti-depressant. The biological passport will therefore be a strong deterrent against this recreational and medicinal use of drugs when used with other out-of-competition drug testing programmes.

"What I have detected is that the threat that this new system represents — as well as the desire by the majority of athletes to see sport cleaned up so that they would not have to keep up with those who revert to cheating — already created a situation in which far less doping is happening. The new biological passport system is proving itself a good deterrent," says Van Dugteren.

And for those who don't cheat, being in the programme will lend more credibility to their athletic feats.

8 Markers

Unlike with regular testing, the blood screeners will not be conducting once-off tests for the specific drugs or doping methods that cheats are known to use. Instead, they will search for the tell-tale traces that doping leaves in athletes' blood. It is therefore much more effective than previous drug tests, explain Prof. Tim Noakes, an outspoken critic of doping in

sport. "The blood tests allow the detection of changes in blood parameters that are produced by drugs. For example, the use of EPO increases the number of red blood cells. So if one knows the number of blood cells an athlete has at all times, one can detect when EPO has been used. Similarly, the use of steroids inhibits the production of natural hormones like testosterone, therefore if the blood testosterone levels change, this can indicate the use of steroids or testosterone. Testosterone use also inhibits the secretion of messenger molecules that are secreted by the brain. So if those concentrations are low, then this would also indicate the use of steroids or testosterone.

"Injected, EPO disappears from the blood stream within hours or days of use, and is therefore difficult to detect," explains Noakes. "Also, athletes now use micro-doses that are essentially undetectable, but can still produce the desired increase in red blood cells. The blood method detects the effects and it is not necessary to establish the exact chemical (drug) that was used."

In layman's terms, it is roughly the difference between police catching criminals red-handed and forensic scientists proving crimes by piecing together evidence left at the scene.

The blood screening is done by examining eight different blood markers, which are put into formulas and models that determine the statistical probabilities that an athlete is doping — the scientists aim for a 99.9% probability. An independent panel then reviews all abnormal blood profiles.

The benefit of this method is that you don't need to know the characteristics of each and every drug that is being used — the scientists can see that the composition of the athlete's blood has been altered through the use of some kind of substance when they detected certain markers.

The tests also take factors like, for example, the influence of altitude on blood markers, into account.

If the samples are collected often enough

and at the right times, this long-term blood monitoring of athletes offers the best current hope of catching those who transfuse their own blood — a doping method that is undetectable with conventional tests and which gives cheats a big boost by increasing the supply of oxygen to their muscles.

Cycling ahead

"Nobody has yet been prosecuted on the basis of the passport alone, but that will happen soon," says Van Dugteren.

Because its blood-screening programme is the furthest advanced, cycling is likely to reap the reward of claiming the first scalp and shoulder the burden of having to run the first case — or cases — past a gauntlet of defence lawyers, who will probably try to pick apart the new method, and its indirect proof of athletes' guilt.

"I am confident that the legal loopholes will be cleared in 2009, but the anti-doping community needs to have their ducks in a row," says Van Dugteren. "It is a case of second guessing what the legal fraternity representing athletes might fling at you, and to foresee the elements that might be used to negate the system."

The head of cycling's governing body, Pat McQuaid, said he is confident that his organization, the UCI, will hold its first disciplinary proceedings soon — hopefully before the Tour de France in July.

The expected sanction for a first offence is a 2-year ban from competition, although McQuaid says anti-doping rules also allow for fines.

David Howman, WADA director general, says he was frustrated that the system, in development since 2006, had taken so long to come to fruition and is still not ready.

But, before they can go forward with a case, they need to be 100% sure. It is imperative for the future success of the programme that the first case must be won.

It must be so clear-cut that it would prevail even if it is appealed to the Court of Arbitration for Sport, McQuaid explained.

He hinted that the UCI is taking more samples from riders to ensure that cases against them hold up — they could, for example, be doing more profiles on the cases that the experts have thought are suspicious, just to ensure that they are right.

Cases ready

McQuaid won't discuss specifics, or say how many cases will be brought. But blood analysts working with the UCI say they have identified several cases of apparent doping that they think are clear-cut enough to warrant sanctions.

Most of the nine experts who gathered in a Belgian hotel in November last year to pore over riders' blood readings, had singled out about a half-dozen suspect cases, from about 30-40 presented to them. In a tele-conference, the experts whittled down the batch to three cases that they agreed clearly showed doping.

McQuaid refused to confirm this. Some of the UCI's experts are perplexed why the cycling body hasn't yet acted on the suspicious cases they have identified.

But the caution reflects the high stakes involved. Professional cycling teams, riders and race organisers have had to foot some of the \$6.7-m bill for creating the blood passport programme, and they will be none too happy if the first cases prove to be duds. If they fail, the whole blood-screening concept would be hurt, although probably not fatally.

That would be bad for sports like athletics, which is starting its own passport programme this year.

According to WADA president, John Fahey, this could potentially be one of the most significant advances in the global fight against doping in sport. **YS**



Cheating athletes' latest "enemy" might just be their own blood



Clockwise (from top): Bulgaria's Alan Tsagaev was banned for two years; British sprinter, Dwain Chambers, tested positive for the banned steroid THG. He received a two-year athletics ban, a lifetime Olympic ban and had all of his racing accomplishments since 2002 annulled, wiping away his European record; China's leading backstroke swimmer, Ouyang Kunpeng, received a lifetime ban after testing positive for steroids.

Resources:

- *Pot-Smoking Phelps Isn't Alone Among Athletes*, by Dana Larsen. www.forbes.com/2009/02/04/michael-phelps-marijuana-opinions-contributors_0204_dana_larsen.html
- World Anti-Doping Agency: Tel: +1 514 904 9232 info@wada-ama.org African Regional Office: Cape Town Tel: +27 21 483 9790 www.wada-ama.org