

## **The development of doping use in high-level cycling: from team organised doping to advances in the fight against doping**

### **Abstract**

In 1998, the Festina scandal at the Tour de France provided the first proof of widespread doping in professional cycling. This doping scandal marked the end of team-organised doping in professional cycling and ushered in a new period marked by the increasing implementation of anti-doping measures. This article evaluates the impact of the anti-doping rules and tests instituted since the Festina scandal. We adopt a psychosocial approach to analyse the organisation of doping and the development of doping attitudes and practices in high-level cycling. Sixteen cyclists were interviewed, of which eight were young, current cyclists and eight were former cyclists who became professionals before the Festina scandal. Our results show that although the fight against doping in the last decade has reduced doping use in high-level cycling, anti-doping measures have also had unexpected effects. The fight against doping in cycling is not over.

### **Key words**

Cycling, doping use, high level, development, culture of doping, fight against doping

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### **Introduction**

The use of performance-enhancing drugs by athletes has increased since the early 1960s. Waddington (2000) argues that this increase was associated with two major processes: the ‘medicalisation of life’ and the increasing competitiveness of sports (i.e., a growing emphasis on the importance of winning). In 1998, the Festina scandal at the Tour de France provided the first proof of the widespread use of doping in professional cycling and the involvement of physicians in the organisation of doping (Waddington 2000). This doping scandal marked the decline of the period of team organised doping in professional cycling and ushered in the beginning of a new period, one that showed advances in the fight against doping in sport.

Although the International Cycling Union (UCI) and the International Federation of Association Football (FIFA) were among the first international associations to introduce doping tests in their respective world championships in 1966, the increase of doping use in professional cycling from 1968 to the 2000s proved that the fight against doping had been ineffective (Waddington 2000). The Festina scandal led to a major reappraisal of the role of public authorities in anti-doping scandals. Before 1998, debate was still taking place in several discrete forums (e.g., IOC, sports federations, individual governments), resulting in differing definitions, policies and sanctions. One result of this confusion was that doping sanctions were often disputed and sometimes overruled in civil courts. The Festina scandal highlighted the need for an independent, international agency that would set unified standards for anti-doping policies and coordinate the efforts of sports organisations and public authorities; the World Anti-Doping Agency (WADA) was established on November 10, 1999. Since the creation of the World Anti-Doping Code in 2004, there has been international agreement on the definition of doping.

We adopt a psychosocial approach to evaluate the impact of increased anti-doping rules and tests on psychological and sociological aspects of doping use (such as doping attitudes and practices and the organisation of doping) in high-level cycling since the Festina scandal. During the period of team organised doping, doping was a common practice among professional cyclists; drug use was a shared practice and contributed to the sub-culture of doping in cycling (Brissonneau 2007; Kimmage 2001; L -Germain & Leca 2005; Schneider 2006; Waddington 2000). The Festina scandal triggered changes in attitudes towards doping (Mignon 2003), but doping practices have evolved slowly. Christophe Bassons, a former

professional cyclist, attested, “At that time, the motto proclaimed endlessly was ‘It was in the past, we begin again with a solid foundation’. I believed in it, but my hopes disappeared very quickly. April returns with its infernal pace [in the cycling events]. Nothing had changed, especially not the mentality [towards doping]” (Bassons 2000, p. 180). The cyclists’ statements suggest that the first changes in cyclists’ understanding of doping practices are perceptible from the beginning of the 2000s. At the Tour de France 2002, cyclists claimed that attitudes had changed in cycling and that doping was less common (Schneider 2006). David Millar noticed a substantial reduction in doping use in cycling in 2008 compared to when he became a professional in 1997 (Fotheringham 2008). In light of this change, and given the relative dearth of research in this area, we chose to analyse various changes related to doping use in high-level cycling one decade after the Festina scandal. It seemed important to take into account both psychological and sociological factors to better understand doping behaviour and how it has developed in high-level cycling (Lentillon-Kaestner 2008; Lentillon-Kaestner & Carstairs 2010). Comparing former cyclists’ stories from the period of team organised doping to current cyclists’ stories from the anti-doping period seemed the most appropriate approach to capture the complex factors affecting doping behaviours and to provide rich data on the changes in doping use resulting from increased anti-doping measures. A previous article using the same interview data but focusing on health and doping use showed several changes regarding the influence of perceived health risks in elite-level cyclist’s decisions to use banned substances (Lentillon-Kaestner et al. 2011). Despite the developments briefly discussed in previous articles, the literature on doping use in high-level cycling currently lacks in-depth analyses on changes to the psychological and sociological aspects of doping use since the Festina scandal.

## **Methods**

This article is based on research financed by the World Anti-Doping Agency (WADA) and was approved by the Ethics Committee at the University of Lausanne, Switzerland (Lentillon-Kaestner et al. 2011).

### ***Participants***

Cyclists contributed to this research on a voluntary basis during the year 2007. All of the participants (sixteen) who were asked to participate agreed to take part in the study; eight were young, current cyclists, and eight were former professional cyclists. The eight former cyclists became professionals before the Festina scandal of 1998 and were no longer professional cyclists at the time of the interviews. Some of them remained involved in cycling

in some capacity, for example, as coaches, personal managers or team managers. The eight current cyclists were selected from among the best young cyclists of Switzerland. Six of them were men in the under 23 category (U23) who hoped to find a professional team in the near future. Two of them had already found a professional team (neo-professional); one of them had been professional for a little over a year, and the other had been a professional for three years. All of them were or had been on the national team in the junior or under 23 category.<sup>1</sup>

### ***Data collection***

Data was collected through semi-structured interviews. All interviews were audio-taped and transcribed verbatim. The interview protocol was adapted from the guide used by Trabal et al. (2006) in their investigation of doping use among professional cyclists (Lentillon-Kaestner et al. 2011).

### ***Data analysis***

The transcribed interviews were analysed using a thematic content analysis (as described by Mucchielli 1998). Following the transcription, the first step was to identify and select all data that related to psychological and sociological aspects of doping use and their development in high-level cycling. In this process, the investigator read each transcript several times and conducted an inductive analysis to determine the emergent themes related to doping use. Data were classified in corresponding categories and sub-categories arising from the multiple readings. Next, the categories were compared to each other, and the overarching themes across the interviews were summarised. The interviews were re-read to refine and verify the emergent themes. Five major themes emerged from the analyses: ‘a change in the organisation of doping from the team to the individual cyclist’, ‘a change in the cyclists’ attitudes towards doping and the decline of the doping sub-culture in cycling’, ‘the development of the black market and increased health risks’; ‘an increase of cyclists’ curiosity towards doping and greater knowledge about doping among cyclists’; and ‘the improvement of doping tests and rules and decreased privacy’.

## **Results**

### ***A change in the organisation of doping from the team to the individual cyclist***

The former cyclists described a doping program that was endorsed and organised by the professional teams: “I knew some teams where there was medical supervision to recover

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<sup>1</sup> The International Cycling Union (UCI) defines these categories. Racers who are 17 or 18 years old are part of the “junior” category. Once they reach 19 years of age, the cyclists are part of the “amateur” category. The amateurs obtain points based on their standings in races. If they **earn** enough points, they achieve the category of “elite” (the best). The elite racers who are 19 to 22 years old are classified in the category “U23” (**under 23**: less than 23 years).

between the legs of a race, especially after mountainous legs where we sweated a lot, and to allow the body to recover more quickly. We are unable to drink 5 litres of water” (David, former professional cyclist).<sup>2</sup> Before the Festina scandal, the pressure to dope in professional teams was often high: “I had some doping pressure on my team in Italy in the final year. First, the masseur wanted me to take doping substances, and when he saw that I was against doping, the team manager came to talk to me... In Italy, there was real pressure to win all the time... It was too much; I had signed in December and stopped in May of the following year” (Gregory, former professional cyclist).

Since the Festina scandal and the increase in anti-doping measures in cycling, the organisation of doping has developed slowly in the peloton: “The change was not spontaneous, but there was an evolution that was taking longer or shorter, depending on the country. Now, they [the team managers] take fewer risks” (Mathew, U23). Some current teams no longer support doped cyclists because it attracts negative media coverage, and they risk losing their sponsors: “Previously, a doped cyclist had a certain status on the team. Now they [the team staff] drag him through the mud; he is plague-stricken, and everybody is afraid of him... Today, the teams understand that a positive-tested cyclist who has good results achieved through doping can destroy the team” (Chris, former professional cyclist). Today’s cyclists often have to be organised to obtain banned substances alone or through networks: “I think that the situation in 1998, with organised doping programs in the Festina team, for example, is not possible anymore. I believe that each cyclist decides by himself and then, if he decides to dope, he will do it himself in private” (William, U23).

Even if the organisation of doping has today become more individualised, doping use is not an individual choice; it is influenced by the cycling environment and team staff. Managers of the current professional teams officially claim that they are against the use of banned substances, but certain comments led the cyclists who had recently become professionals to sometimes doubt their sincerity: “I cannot say that it was team staff [of a professional team] who told me that it was necessary to dope. Team staff members tell you that if you want to be a good cyclist, you have to make some choices. But they do not want to know... When he [a manager] suggested that I go to X [a coach], he told me: ‘You choose X or Y... X is one of the best coaches around, and if you are strong, he will give you some banned substances, but it is necessary to pay him, while Y is ethical’” (Mick, neo-professional).

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<sup>2</sup> All names of interviewed cyclists have been changed to protect their anonymity.

***A change in the cyclists' attitudes towards doping and the decline of the doping sub-culture in cycling***

According to Andrew, a current cyclist, the anti-doping measures have put “an end to the mindset that we need to use banned substances to win” (U23). Young cyclists often make a distinction between two generations of athletes: the current cyclists of the “new generation” and the cyclists of the “old school” (i.e., those of the “former generation” who had started their cycling career before the 1998 Festina scandal). Doping use was a part of cycling culture for the cyclists of the “former generation” but not for the cyclists of the “new generation”, who have a new attitude towards doping.

The cyclists of the “former generation” who chose not to take banned substances were usually excluded from the peloton and from the team, and they quickly gave up: “Some team managers let the trainers do it [doping supervision]; they did not want to take care of it. And there were others who pushed me from the team because, according to them, I could not be successful enough when I was younger because I took nothing” (Gregory, former professional cyclist). Sometimes, cyclists hid their anti-doping position to avoid being excluded from the peloton: “I did not want to be categorised as ‘Mr. Clean’” (Aaron, former professional cyclist).

Today, some cyclists choose not to use doping substances. This choice has fewer negative consequences on their career because some professional teams have chosen to increase the fight against doping and accept only cyclists with a “clean” reputation. This results in a decrease in doping use and a decline in the sub-culture of doping in the professional peloton. It is no longer a culture shared by all cyclists that cements the cohesion of the group.

Nevertheless, attitudes towards doping have evolved slowly, and the old mentality is still present: “In cycling, apparently, the more you take some substances, the faster you go” (Bob, U23). In professional cycling, cyclists of the “former generation” still seem to have significant power and influence over professional cycling. One of the cyclists who recently became professional explained this influence: “The guys with old mindsets, such as X in the Y 2007 [a stage race over many days], kept saying to me, ‘Mick, you have to wake up a little!’ Because they do not believe that I am here without taking anything. They did not believe it; they say, ‘You know, [with] a little EPO, it is possible to do it; [with] a little [more] power, you can do it’” (Mick, neo-professional). In short, cyclists of the “former generation” hinted to the young cyclist that he should use doping to become even better. Some current cyclists were optimistic concerning the evolution of attitudes towards doping in the

professional peloton over time. When cyclists of the “new generation” become team and federation managers, the situation will change, but as long as team managers are former cyclists of the “old school”, the situation will not evolve significantly.

***The development of the black market and increased health risks***

Before the Festina scandal, the presence of physicians in the cycling world was important, and the use of doping substances was controlled. Team or personal physicians organised medical supervision and made informed decisions regarding doping substances. The physicians’ control over doping had two opposing consequences. On the one hand, the team organised doping led to an increase in the number of doped cyclists. During this time, some cyclists had unknowingly taken banned substances. These cyclists relied upon the physicians, sometimes with a blind confidence: “A physician had given me anabolic steroids. He gave them to me and said, ‘You are unwell after you finish a race over many days’. He was an old doctor of a professional team. And then, I wrote down all the substances and showed it to Doctor X. And he confirmed that everybody had taken cortisone and anabolic steroids during Tour X. And the cyclists were persuaded to complete Tour X without anything because they were told ‘They are vitamins!’” (Gregory, former professional cyclist). On the other hand, the presence of the team physicians also had positive consequences in limiting doping misuse; the physicians prevented doping abuse among some cyclists. Some cyclists thought that they would be better with increasing numbers of exogenous substances, but they did not consider the banned substances’ side effects.

The current, individually focused organisation of doping has led to greater health risks because of reduced medical supervision. A black market has developed where the internet has become the primary vehicle for obtaining banned substances: “It is easy using the internet. I think that it is the new way to get banned substances because on the internet, they [banned substances] are easy to order. I have friends here, old men, who laugh when they surf the internet and they tell me that they find all that they want” (Carl, neo-professional).

Obtaining banned substances via the internet poses further risks, particularly concerning the quality of substances, which is not guaranteed: “My physician said that it is necessary to be careful with growth hormones. Those made through the synthesis of beef blood are safe, but some use cheaper substances, going to Estonia or Slovakia to use cadavers to make growth hormones” (Mick, neo-professional).

Many cyclists interviewed regretted recent developments in the organisation of doping. According to current cyclists, the institutionalization of doping posed less of a health risk to cyclists: “I think that practicing doping at the team level limits health risks more than

when doping is not organised by the team. Because each cyclist goes to see this physician there, this physician here, and then finally, each ends up with a mixture of substances. It can be a bit dangerous, in my view... Before solving the problem of doping, it is necessary to focus on health risks. And then, Roussel [Festina team's physician], who organised doping in Festina, said that it [regulating doping use in teams] would definitely limit health risks. And I think that he was sincere and that he is definitely right" (Mathew, U23).

***An increase in cyclists' curiosity towards doping and greater knowledge of doping among cyclists***

Media coverage of doping scandals has had negative consequences, such as increasing knowledge about banned substances among the cyclists of the "new generation": "From necessity, we love to talk about doping... I am personally not very interested, I think that I already know too much as an athlete. For a professional cyclist it is ok, but for a young athlete who is only 18 years old and already knows about erythropoietin, growth hormones, testosterone, and everything else, that's not normal" (Mick, neo-professional).

The majority of current cyclists interviewed in this study were curious and wanted to know more about doping substances. They found information about banned substances by reading articles on doping scandals in the press and books about doping: "Just by reading newspapers, you can sometimes get the right dosage" (Carl, neo-professional). "When the big doping scandals occurred, I bought almost all the books on the Festina scandal. They explained everything very well. A cyclist who wants to dope can read this book and find out how. It is a problem, it is too well explained" (Mathew, U23). Cyclists also found a wealth of information on the internet: "I have found unbelievable things on the internet... There are instructions on how to do an injection or how to do a blood transfusion" (Brad, U23). "This year, I went on the internet and found out everything I could do without testing positive" (Mick, neo-professional). The young cyclists trust the information that they obtain on the internet, although this information may not be reliable.

The dietary and medical knowledge of some current cyclists was also very high: "I even know guys who are my age and who are not even necessarily professional but, regardless, it is as if they studied medicine at the university ... I have friends in their third year of medicine who know less than these guys. In fact, they know how to do an injection and everything" (Bob, U23). "My girlfriend has an iron deficiency. I tell her now what she needs to do: She has to eat figs'. In figs, there is 5 mg of iron per 100 g and the iron is absorbed at approximately 6%. Thus, it is necessary to eat animal sources of iron, as it is much better absorbed. At the same time, it is necessary to take vitamin C because the vitamin

C helps to assimilate iron. She should not drink green tea anymore because it destroys the iron. She should not smoke or drink alcohol, as it destroys the vitamin C” (Andrew, U23).

This curiosity was less apparent among the former cyclists interviewed. There was no media coverage of doping use in cycling when they were beginning their cycling careers; the internet had not been developed, and books about doping were published only after the doping scandals. Doping methods and substances were known only in the medical arena, and information about doping was not easily accessible to the cyclists. Furthermore, because the physicians supervised the use of doping substances, the former cyclists did not need to search for the information themselves. They trusted the medical staff, and they thought that the substances did not have health risks because a physician prescribed them: “We have to trust in the medical staff for the recovery” (David, former professional cyclist).

### ***The improvement of doping tests and rules and decreased privacy***

The former cyclists interviewed were not tested often: “I did not have a lot of anti-doping tests during my career when I was professional only two” (Fred, former professional cyclist). These cyclists were not afraid of the doping tests because the tests were infrequent and inefficient. Former cyclists were also not afraid of doping tests because the majority of the tests were administered during the races, and they knew how to avoid a positive result. Cyclists used undetectable substances or masking agents to avoid detection. Otherwise, they played with the doping rules: “That's true...one time when the anti-doping controller arrived during the race, someone came and shouted to the peloton, ‘There are doping tests!’ And then every cyclist who doped left. Now, the problem is if you begin a race, even if you leave, you are forced to go to the doping tests” (Gregory, former professional cyclist). Before the various doping scandals, fighting against doping was not a priority in the cycling organisation: “There were rumours. X had won the Tour de France. He tested positive for banned substances, and Y, a member of his national cycling federation, had come and hidden the history” (Fred, former professional cyclist).

Since the Festina scandal and the creation of the World Anti-doping Agency (WADA) in 1999, the frequency and the efficiency of doping tests have increased. It is more difficult for the cyclists to use doping substances or methods without risking a positive result on a doping test: “I do not know if there are still a lot of techniques. Before we heard some--they put washing powder or I do not know what on the finger, or they hid a small tip near the penis to provide clean urine. Now, it is much more controlled. The anti-doping controllers want to see everything. They do not lose visual contact. Yes, that cut a little into the desire to urinate, because at home, when I saw the big head of the controller in the mirror, it was difficult!”

(Baptist, U23).

Since the Festina scandal, both in- and out-of-competition doping tests are more frequent. Today's cyclists are a little more afraid of doping tests, especially those outside of competitions. The cyclists do not know when the anti-doping controller will come, and they cannot use all of the strategies used in races to sidestep the doping test: "It is clear that the out-of-competition test is a good thing... When there are doping tests outside of competitions, they [the doping controllers] can come at any time and it really prevents doping use... It is like alcohol controls in Switzerland. Since there are more controls, people do not drive drunk anymore" (Carl, neo-professional). "X [a former professional cyclist], for example, was caught positive because of that [tests out of competitions]. Thus, we can say that it works" (Brad, U23). For the in-competition doping tests, as before, cyclists have some solutions to avoid testing positive: "It is enough to know how to count" (Carl, neo-professional). The current cyclists interviewed said that the tests in competitions are inefficient but necessary; if there were no tests, the use and abuse of doping substances would increase.

The increasing number of doping tests has negative consequences for the privacy of professional cyclists. The two neo-professional cyclists interviewed in this study thought that the professional cyclists are tested and asked to submit urine and blood too often. They are always suspected as criminals, even if they have never taken doping substances: "I think certainly that he [the anti-doping controller] suspected me of something, and then he began to spy on me. He stayed in front of my home for six, seven hours in his car. And he was going to question my neighbours, and when he came to test me, he rang at somebody else's doorbell...saying that he came to deliver flowers or to deliver packages. And like that, he could arrive directly at my door... To deliberately drive by at 7:02 am when I slept, things like that... And at the moment, it irritates me because I want to simply state that I am not a criminal; I want to say that he should come to test me and not to arrest me... Over two years, the anti-doping controller came to my home ten times. Once [when] I was in Spain to train, they even came twice" (Carl, neo-professional). In contrast, at the non-professional level, anti-doping tests are not frequent, and the young cyclists interviewed would like to be tested more often: "In Switzerland, there are rarely any doping tests in competition, except in the Swiss championship" (Baptist, U23).

## **Discussion**

Using a psychosocial approach, the purpose of this article was to evaluate how doping use in high-level cycling has evolved since the Festina scandal. Our results highlight the fact that

advances in the fight against doping in the last decade have produced positive changes towards these objectives, but anti-doping measures also have also had unexpected effects. We will underline these two opposing effects of anti-doping measures and discuss some limits to the efficiency of those measures.

### ***Intended effects of the fight against doping***

From the 1960s to the end of the 1990s, doctors had the power in the organisation of doping in professional cycling (Mignon 2003; Waddington 2000). The decline of the team organised doping in professional cycling is one consequence of the fight against doping. This decline has created more choices for cyclists concerning their own doping use. Before the Festina scandal, the organisation of doping use at the team level increased use; cyclists sometimes unknowingly used doping substances with blind confidence in team physicians. Today, the risk of unknowingly using doping substances is greatly reduced. Moreover, the period of the medicalisation of sport was not without health risks; cyclists trusted people without medical training. “The problem that is no doubt specific to cycling is the coexistence/competition between doctors and self-appointed specialists like Dr. Sainz and, more generally, ‘soigneurs’ who have come up through the ranks, as shown by the table of ‘qualifications’ of cycling ‘soigneurs’ implicated in doping scandals (from the former cyclist to the driver, and from the shopkeeper to the pharmacy assistant)” (Mignon 2003, p. 234).

A decline can be observed in the doping sub-culture in the professional peloton. During the period of team organised doping, doping was a common practice among professional cyclists (Brissonneau 2007; Lê-Germain & Leca 2005; Schneider 2006). The Festina doping scandal, with the intervention of the police, courts and media coverage, has allowed for a break in the peloton’s law of silence (Mignon 2003), and cyclists have begun to confess their doping use. However, the first cyclists who broke the code of silence at the end of the 1990s, such as Gilles Delion, Alain Djouad-Guiberd, Jérôme Chiotti, and Christophe Bassons, were quickly ejected from the professional peloton. For example, the cyclist Alain Djouad-Guiberd created an anti-doping association in 1997. He received several threats, and this was the beginning of his difficulties (Maitrot 2003). The cycling environment directly rejected the cyclists who did not respect the rule of the group. Currently, it is easier to fight against doping; cyclists increasingly claim that they are against doping and confess their doping use (David Millar in June 2004, Johan Museeuw in January 2007, Eric Zabel, Bjarne Riis and Ivan Basso in May 2007, Jörg Jaksche in June 2007, Landis in May 2010, etc.). These doping confessions show that doping use is no longer a way to achieve social cohesion at the professional level (Lentillon-Kaestner & Carstairs 2010). In addition to the cyclists,

professional teams are also fighting against doping. The decrease in doping use and the decline of the sub-culture of doping in professional cycling are consequences of the increase and improvement in doping tests and rules at the national and international levels, which permit less cheating. An increasing number of doping substances can be detected in the doping tests: amphetamines have been detected since the first doping tests, and anabolic steroids were traced for the first time in the world championship in 1978, when a professional cyclist, Jean-Luc Vandebroucke, tested positive. EPO has been detected since the Olympic Games of Sydney 2000, and tests for growth hormones and homologous blood transfusions have been implemented since the Olympic Games in Athens in 2004. Doping tests are also more frequent. For example, the number of doping tests organised by the cycling anti-doping foundation (UCI) has increased in recent years from 5,570 tests in 2006 to 15,699 in 2009. This increase is mostly due to the increase in out-of-competition tests: 156 were performed in 2006 and 9,080 were performed in 2009.<sup>3</sup> With the increase and advances in doping tests and rules, it is increasingly difficult (but not impossible) to find solutions to evade detection. Current cyclists are more afraid of doping tests, mostly of the efficient out-of-competition tests, which are the most difficult to sidestep.

The decline of this sub-culture of doping among professional cyclists accompanies a change in the attitudes of professional cyclists towards doping. The cyclists of the “former generation” believed that it was impossible to win without doping. As Erwan Mentheour (1999), a former professional cyclist, said, “All the cyclists knew this unstoppable spiral. Some resist longer than others, but all end up giving in. For love of the bike, and for the aim of victory” (p. 56). Attitudes towards doping have evolved among the cyclists of the “new generation” who began their professional careers after the Festina scandal; they know that they can win without doping. Because doping practices have become more individualised, an increasing number of current cyclists try to perform without doping substances. However, this change in attitude has limits, and the current young cyclists are curious, vulnerable and often tempted by doping (Lentillon-Kaestner 2008; Lentillon-Kaestner & Brissonneau 2009; Lentillon-Kaestner & Carstairs 2010). Cyclists of the “former generation”, who have at one time or another used banned substances, give cyclists of the “new generation” advice on training and dieting, tell them which performance-enhancing substances to use, and teach them syringe use and other doping methods. We can expect that when the cyclists of the “former generation” cease to be cyclists, team managers or trainers in the cycling world, the

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<sup>3</sup> [www.uci.ch](http://www.uci.ch)

situation will improve. However, it seems excessively optimistic to think that doping use could disappear completely in cycling or in sport in general. Doping practices have always existed in sport, and they exist in other domains: school, leisure, work, etc. (De Rose 2008; Holt et al. 2009; Laure 2000). In today's society, performance is constantly evaluated, and the pressure to excel and succeed leads individuals to use illegal means to cope (Ehrenberg 1991; Gasparini 2004).

### ***Unexpected effects of the fight against doping***

One of the primary side effects of the fight against doping in high-level cycling is the reduction of medically supervised doping use and the consequent increase in cyclists' health risks. Although the organisation of doping at the team level may increase doping use among cyclists on the team, the team doctor's supervision had the advantage of reducing abuses of doping substances and of guaranteeing the quality of the substances used. These advantages are no longer possible. Personal and team physicians are increasingly monitored and cannot easily supervise doping use among cyclists. Cyclists who want to dope have to find other solutions. An underground market, by way of the internet, has emerged for performance-enhancing substances (Lentillon-Kaestner & Carstairs 2010; MacAuley 1996). There are a variety of websites where cyclists can easily order performance-enhancing substances; however, their origin and purity are not guaranteed (Binsinger & Friser 2002; Carpenter 2007; Dumestre-Touler 2000; Pipe & Ayotte 2002). According to Carpenter (2007), "Now black market anabolic steroids and other drugs are either produced offshore and smuggled into the United States or are produced in clandestine laboratories in this country. These counterfeit drugs present greater health risks because they are manufactured without controls and thus may be impure, mislabelled, or simply bogus. Several studies have analysed street-sold performance drugs and note a high incidence of mislabelling, additional toxic substances, or the complete absence of any significant pharmacological agents" (p. 488). The development of the black market to obtain drugs is a direct consequence of the doping ban (Black 1996). More stringent legislation against doping in sport, with the primary goal of improving athletes' health, may ironically have the opposite effect. This belief was prevalent among the cyclists interviewed. They regretted the decline of the former institutionalised organisation of doping, which, they felt, was more medically supervised and therefore had fewer health risks. Willy Voet, the soigneur of the Festina team, underlined the fact that medical supervision within the cycling teams allowed them to limit temptation and doping abuses among cyclists (Voet 1999). Some authors have also pointed out the health risks resulting from increased legislation against doping (Black 1996; Breivik 1992; Kayser et al. 2007; Kayser & Smith

2008). According to Black (1996), “The majority of the deaths and health problems of occurring during the ban would not have occurred in the absence of the ban... Removal of the ban would result in an improvement in societal welfare by creating fairer sporting contests and reducing the health risks of athletes” (p. 367).

In addition, the important media coverage of doping scandals has had negative effects on cyclists’ curiosity and knowledge concerning doping. Before the various doping scandals, knowledge of doping was reserved to medical staff. The cyclists of the “former generation” trusted the medical staff, and their curiosity was not aroused. After the Festina scandal, media coverage of doping scandals and confessions of doping has increased; we speak more and more of doping in cycling. The current cyclists are curious to know more about doping agents, and they obtain information about doping easily, thanks to former cyclists, the internet, various books published after the various doping scandals, articles in the press and television broadcasts on doping.

Since the various doping scandals, the frequency of doping tests has increased. As a result of the evolution of cyclists’ attitudes towards fighting doping, they accept more doping tests than in the past. “The first dope-tests were carried out in 1966, and they triggered a riders’ strike” (Mignon 2003, p. 241). The cyclists interviewed indicated that doping tests are necessary because otherwise doping abuses and health risks would be higher, but they regretted the cost to their privacy. They are monitored as if they were criminals, and some professional cyclists have suffered from these permanent suspicions and inquisitions about their substance use. Some authors have questioned the ethics of drug testing in sport and whether this invasion of privacy is morally justified (Houlihan 2004; Malloy & Zakus 2002).

#### ***The limits of the anti-doping campaign’s efficiency***

A series of doping scandals in 2006, known as the Puerto scandal or the Landis case, showed that doping is still present at the highest levels of cycling. According to MacAuley (1996), “Drug taking can be controlled only if detection is likely and the penalties of detection are a sufficient deterrent. Unless there is widespread testing, both in and out of competition, the risk-to-benefit ratio favours the drug taker” (p. 215). The problem with the fight against doping is that it is always behind the latest doping developments. Even today, cyclists use various methods (for example, microdoses, masking agents, undetectable drugs as autologous blood transfusions, genetic doping, novel EPOs, or new doping agents) to evade detection in doping tests (MacAuley 1996). For example, following the successful introduction of a urine-based test for the presence of recombinant human erythropoietin (EPO) at the 2000 Sydney

Olympics, the athletes began to evade detection by using regular, small dosages of EPO to minimise the appearance of foreign EPO in their urine.

In addition, doped cyclists try to avoid sanctions through legal irregularities or a lack of respect for strict anti-doping rules or procedures. For example, in the 2004 Athens Olympic Games, a blood sample collected from the cycling road race gold medallist Tyler Hamilton showed the presence of foreign red blood cells at the time he won his medal. However the athlete could not be sanctioned or stripped of the medal because the mandatory 'B' sample had been inadvertently frozen by the Athens laboratory. Hamilton was subsequently re-tested several weeks later and ultimately sanctioned for the use of homologous blood transfusion. This example underlined the need for anti-doping authorities to increase the rigour and scope of targeted testing of athletes during out-of-competition periods.

A limitation of the anti-doping campaign specific to Switzerland is the delay in the fight against trafficking (Donati 2007; Report 2004). Until 2004, no seizures of doping substances were made in Switzerland, whereas the average number of seizures was 126 for the eighteen European states who were parties to the European convention; the average value of the seizures was 49,809.18 Euros (Report 2004). Moreover, these seizures showed that in 2004, Switzerland was the first country of destination for seized products, followed by Sweden and Norway. The situation is better now, but Switzerland continues to be a state that is often used for the trafficking of doping substances (Donati 2007): "During the past few months, the ministry [Arab Emirates authorities] has confiscated huge quantities of anti-impotency drugs, some of them coming in through the post from Switzerland and labelled as software" (Saberli & Landais 2005). The interviewed cyclists regularly went to adjacent states to buy drugs not allowed in Switzerland (Lentillon-Kaestner & Brissonneau 2009). Moreover, many professional cyclists live in Switzerland. The fight against trafficking in Switzerland should continue to be improved to reduce the importation and exportation of doping substances.

Another limitation of the fight against doping concerns the lack of tests for the lower levels of the sport. The current cyclists interviewed would like to be tested more often. These results follow those obtained in 1995 by the Sports Council on senior competitors from 26 winter and summer sports (MacAuley 1996): "Many thought that testing should be more widespread and [occur] more often. About 70% believed that testing served as a deterrent, but a quarter believed that lack of widespread testing made the process less of a deterrent for some" (p. 215). The cycling anti-doping foundation (UCI) is in charge of doping tests for the best professional cyclists. As we have seen, the tests are more frequent for these cyclists.

However, doping temptations and first doping uses are present before these cyclists integrate into the professional level (Lentillon-Kaestner 2008; Lentillon-Kaestner & Carstairs 2010). It seems necessary to increase anti-doping measures for amateur cyclists hoping to join a professional team (i.e., elite and Under 23 categories). Each country is responsible for establishing punitive and preventive anti-doping measures for athletes at the lower levels of the sport. Large differences exist between different countries' efforts in the fight against doping.<sup>4</sup> A harmonisation of national anti-doping programmes is necessary to guarantee equality between cyclists of various countries. It is important that each country improve its anti-doping campaign by increasing the number of out-of-competition tests in amateur high-level cycling, as Switzerland<sup>5</sup> and the cycling anti-doping foundation (UCI) have done in the last decade. It is very difficult to change the mentality of the cyclists of the "former generation". In the future, however, these cyclists will no longer be part of the cycling world, and it is important to consider the cyclists of the "new generation", the future trainers and team managers. It is important that they preserve the new mentality about doping and believe that they can win without doping substances. Moreover, in addition to the tests, it is important to increase and improve preventive actions for young cyclists (Lentillon-Kaestner et al. 2011) and to supervise young cyclists in their training and diet (Brissonneau et al. 2009). These measures could lead to a change in doping attitudes among elite cyclists and a greater reduction in doping practices in high-level cycling.

### **Perspectives**

In the last decade, we have seen an increase and improvement in doping tests and rules that have led to a decrease in the subculture of doping and in doping use in high-level cycling. There has also been an increase in individual cyclists' choice to use performance-enhancing substances and a change in cyclists' attitudes towards doping use. However, anti-doping measures also produce unexpected effects, including a decrease in medical supervision, an increase in health risks, the development of a black market to obtain doping substances and a decrease in cyclists' privacy. The fight against doping is still evolving. Is the fight against doping in cycling hopeless? Would doping under medical control (i.e., open doping) be more beneficial to reduce doping use and abuse? Using a game-theory argument, Holm (2007) questioned the feasibility of introducing doping under medical control in the world of professional sports. We do not consider open doping a good solution; it may reduce some

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<sup>4</sup> [http://www.coe.int/t/dg4/sport/Doping/Default\\_fr.asp](http://www.coe.int/t/dg4/sport/Doping/Default_fr.asp)

<sup>5</sup> [www.antidoping.ch](http://www.antidoping.ch)

doping abuses, but it may also decrease the age of cyclists' first doping practices and increase doping use among young elite cyclists, facilitating the accessibility and use of performance-enhancing substances. Continued improvements to preventive anti-doping regulations and a focus on extending the fight against doping to young cyclists in lower levels of the sport may be the best solution to reduce doping use in high-level cycling.

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