Doping use among young elite cyclists: a qualitative psychosociological approach

Abstract

Using a psychosociological approach, the purpose of this study was to identify and understand the use of doping substances by young elite cyclists. Semi-structured interviews were conducted with young cyclists who were hoping to find a professional team and cyclists who had recently become professional. All of the young cyclists interviewed took nutritional supplements and believed that they improved their performance, which has been shown by other scholars to be a risk factor for doping. These cyclists believed that doping at the professional level in cycling was acceptable but did not approve of it at the amateur level. They were attracted by doping; they were open to using doping substances themselves if it was the key to continuing their cycling career, but only after they became professional. Team staff, doctors, parents and friends helped to create a "clean" environment which prevented the young cyclists from doping before becoming professional. The more experienced cyclists, who doped or used to dope, transmitted the culture of doping to the young cyclists, teaching them doping methods and which substances to use. This study could help to improve prevention and help to detect doping as it is clear that doping behaviours begin at the amateur level.

Key words

Intention to dope, social influence, attitude, performance-enhancing substances, professional, amateur, theory of reasoned action, culture of doping

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Introduction

Over the past few years, a series of doping scandals and cyclists' confessions[1] have shown that doping was a common practice among professional cyclists at least until the Festina Scandal in the Tour de France in 1998 (Brissonneau, 2007; Lê-German & Leca, 2005; Schneider, 2006). In Rough Ride, the former professional rider Paul Kimmage (2001) described doping as omnipresent. Doping was organized by the team (Bassons, 2000; Kimmage, 2001; Voet, 1999) and was quasi-tolerated by the community (Schneider, 2006). Doping not only improved physical performance, but the secret practices of doping helped to "cement" team cohesion and identity (Lê-German & Leca, 2005).

At the 2002 Tour de France, cyclists claimed that attitudes have changed in cycling, and that doping is not as common (Schneider, 2006). Christophe Bassons (2000), a professional cyclist on the Festina team, claimed that doping became more discreet after the Festina scandal. David Millar (2008[2]), who became professional in 1997, has noticed a real reduction of doping use in cycling compared to when he first became professional. Today, more and more professional cyclists, like Millar, fight against doping. Doping has become an individualized, rather than a team practice, and as such, no longer seems to be a way of achieving social cohesion at the professional level.

What happens before cyclists become professional? Previous qualitative studies on cycling have focused on professional or former professional cyclists (Brissonneau, 2007; Lê-German & Leca, 2005; Schneider, 2006; Waddington, 2000). But there have been no studies done on young cyclists who hope to get a professional contract or have recently become professional. We believe that the transition from the amateur to the professional level is an important moment in the evolution of doping practices. Focusing on young elite cyclists allows us to understand the link between doping use and sports careers.

Doping is not only present at the professional level. Drug taking is common in society more broadly (Faugeron & Kokoreff, 2002; Laure, 2000; Mignon, 2002) and several studies have demonstrated that young amateur athletes take licit and illicit drugs including tobacco, alcohol and marijuana, as well as performance-enhancing substances (Laure, 2000; Laure &

[1] Festina scandal in 1998, Puerto scandal in 2006, Landis case in 2006 and the confessions of 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, etc.

[2] Interview of David Millar in Guardian, The Observer, Sunday June 29, 2008: http://www.guardian.co.uk/sport/2008/jun/29/tourdefrance.cycling1

Binsinger, 2007; Papadopoulos et al., 2006; Pillard et al., 2002). According to Laure (2000), there is doping in recreational sport (4.8 %), but mostly in competitions (10.8 %), and it is tied to the competition level: 17.5 % of athletes who competed in national or international competitions declared that they used doping substances compared to 10.3 % of athletes who competed in local competitions. But previous studies on doping practices among young non-professional athletes have two major limitations. First, in the majority of the cases, the questionnaires have not been detailed enough to fully understand the factors motivating the use of performance-enhancing substances. Second, none has been done in cycling and there are different cultures of doping in each sport. This study on cycling aims to identify and understand the reasons for doping use among young elite cyclists.

This study does not consider doping practices to purely be an individual choice, but instead examines the athletes' entire social milieu. According to Waddington (2000), "it is clear that the network of people involved in fostering the use of drugs in sport, and in concealing their use, is considerably more complex and extensive, and that, in particular, it often involves many people in addition to athletes and doctors" (p.153). Psychologists Favre and Laure (2002) have also cautioned against focusing attention only on the drug user, instead of examining psychosociological functioning. Using a psychosociological approach, we have postulated that doping practices are affected both by attitude and by the influence of the social environment. One of the theories that seeks to predict and understand an individual's behaviour is the theory of reasoned action (Fishbein & Ajzen, 1975). According to this theory, the intention to engage in a behaviour is determined by 1) individual attitudes (i.e. how desirable the behaviour seems to me) and 2) subjective norms (i.e. what others, including peers, my family or my coaches think I should do). The more people see a behaviour positively and believe that important people think that they should adopt a behaviour, the more motivated they are to adopt it. Various quantitative studies have shown that this model accurately explains behaviour. For example, a study by Valois et al. (2002) on 3573 athletes showed that behavioural intention was the main predictor of doping use. This study also demonstrated that attitude and subjective norms were associated with the intent to dope. The social environment (doctors, coaches, team-mates, friends etc.) of athletes can have a significant influence on their intention to use banned substances in sports. A qualitative approach seemed to be the best way to capture the complexity of doping behaviours. The theory of reasoned action has guided the analysis of the interviews, underlining the main elements which can help to understand doping behaviours in cycling (i.e. behavioural intention, attitude and subjective norms). Moreover, to improve our understanding of the

genesis of doping use, we focused not only on doping itself but also on the use of legal performance-enhancing substances. Riders do not use doping straight away. Instead, there is an increasingly higher acceptance of performance-enhancing substances and techniques and a progressive sliding from the use of legal products or methods to illegal ones (Martinez & Bilard, 2003). The use of performance-enhancing substances seems to increase the probability of doping. Papadopoulos et al. (2006) showed that students who used nutritional supplements were four times more likely to report that they used banned substances compared to students who did not use supplements.

Methods

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

Participants

Cyclists contributed to this research on a voluntary basis. All of the cyclists asked to participate agreed to take part in the study. The participants were selected from the best young cyclists of Switzerland: they had to be Swiss, to speak French and to be in the transition from the amateur to the professional level. Eight young elite cyclists participated in this study. Six of them (Benjamin, Baptist, Maël, Benoît, William and André[3]) were in the men Under 23 (U23) category and hoped to find a professional team in the near future. Two of them (Mick and Charles) had already found a professional team: Mick had been professional for a little over one year and Charles for three years. All of them were or had been on the national team (junior or Under 23[4]). The mean age of the participants was 22.75 years; the youngest was 21 years of age and the oldest was 27 years old. Initially, only non-professional cyclists who hoped to be on a professional team were interviewed since previous studies had already focused on the professional level. But after the first contacts with the non-professional cyclists, the opportunity to interview two young cyclists who had recently become professional arose. The data helped us to better understand the evolution of cyclists' attitudes towards doping use and how social influences changed from the amateur to the professional level and so these interviews were also used in this paper.

Data collection

[3] To respect the anonymity of the cyclists, actual names were replaced by fictional names in this paper.
[4] These categories are defined by the International Cycling Union (UCI). 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 get enough points, they achieve the category "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).

Data was collected through semi-structured interviews conducted by one of the authors. The interviewer was female (Vanessa Lentillon-Kaestner), a psychosociological researcher with considerable experience in qualitative research. Interviews lasted on average for more than two hours and took place in a location chosen by the participants. All interviews were audio taped and transcribed verbatim. The interview guide was adapted from the guide used by Trabal et al. (2006) in their investigation of doping use among professional cyclists. Cyclists were asked to describe the evolution of their cycling career. The interview included questions about each step of their career (new team, category, trainer, competition level), their training (type, quantity), the competitions (type, quantity), their business contacts (coach, manager, doctor), their family and social life, their health (physical and psychological) and their use of legal and illegal performance-enhancing substances (type, quantity, moment of use, people involved). To win the cyclists' trust and increase the data's reliability, the following steps were taken. First, before the interviews, the goal of this research was clearly explained. Second, the cyclists were promised complete anonymity: the names of towns, teams, races, cyclists and other people were deleted from the transcript. Third, the cyclists signed a form with their names and the names of the researchers and indicated their rights (e.g., they were not obliged to participate to this study or to answer questions they found too invasive, they could stop the interview or their participation in this study whenever they wanted to). Finally, the transcript was sent to the cyclists by e-mail; they could add, delete or make changes to the transcript. The data analysis began only after the cyclists had the chance to revise the transcript.

Data analysis

The transcribed interviews were analyzed using a thematic content analysis. To understand doping use, the analysis was focused on the three elements identified in the theory of reasoned action: the behavioural intention of doping, the attitude of young cyclists towards doping and the subjective norms around doping. A fourth theme was also included: the use of performance-enhancing substances. The interviews and their analysis were conducted by the same person (Vanessa Lentillon-Kaestner). Following the transcription, the investigator read each transcript several times in order to identify the data associated with each of these four themes. Within each major theme, an inductive analysis was used to determine emergent sub-categories. Each interviewed cyclist was given a sequence number (S1, S2, S3, etc.) and data was classified in corresponding sub-categories. Next, the categories were compared and related to each other and summarized in overarching themes across all of the interviews, emphasizing similarities and differences among the eight interviews. The interviews were re-

read once more to refine and verify the overarching themes. For the use of performance-enhancing substances, the analysis was focused on the following three themes: the culture of taking legal performance-enhancing substances, the law of silence and the misuse of therapeutic use exemptions. For the behavioural intention to dope, the temptation to dope among young cyclists was analyzed. To evaluate the attitude of young cyclists towards doping, the following themes were examined: the acceptance of dopers and doping use in professional cycling, the perceived health consequence of doping and the curiosity towards doping substances. To evaluate the perception of subjective norms, these themes were examined: the influence of the more experienced cyclists who doped or used to dope, the importance of the relationships outside of cycling and the influence of the team staff and sport doctors. To verify the reliability of the interviews, the interviews were carefully compared. Switzerland is a small country; the cyclists knew each other and spoke about each other freely. The data was internally consistent; and where there was any doubt, the data was not used in the analysis.

Results

The use of performance-enhancing substances

All of the young cyclists interviewed for this study took some products to improve their performance: “Everyone does small things to improve performance, but these things [substances and techniques] are not forbidden” (Baptist, U23). Most of the time, they took legal substances which were not on the anti-doping list but as one participant underlined: “We can do a lot with legal substances” (Benjamin, U23). These products include vitamins, food complements (protein, carbohydrates), amino acids, iron, magnesium, calcium and caffeine. It should be noted that caffeine was previously on the anti-doping list and half of the interviewed cyclists occasionally took caffeine during races. Some of the cyclists were psychologically dependent on legal substances. If they took a substance for a race and won, then they always took it, believing that without it they would not able to win again: “The first time I took caffeine, I won the race... The next week, I took it again and won again. It is perhaps a coincidence, but after that, I took it every race” (Benjamin, U23). Injection use was not common at the non-professional level: only one of the cyclists interviewed for this study (Baptist) and the two professional cyclists (Charles and Mick) took products by injection. One of them (Mick) injected without the assistance of a doctor.

Altitude training was used by all of the young cyclists interviewed here in order to increase their physical condition. One cyclist even specified: “The alternatives: altitude training or taking EPO” (Mick, professional). Some cyclists also tried other techniques to

improve their performances: two of the non-professional cyclists (Maël et Benjamin) had tried a therapy that involved the emission of a constant magnetic field, intermittent red light and infrared light. Some professional cyclists also used it, since the provider of the therapy is an official partner of a professional team. On the website, this therapy was described as efficient against painful, inflammatory and scar phenomena. These two cyclists had also rented a bike with a mask, which simulated altitude training for three or four weeks. All of the cyclists expected that their use of legal methods or substances would have beneficial effects, but they never evaluated their actual physiological benefits.

It is very difficult to know the extent of doping on a non-professional level because of the law of silence. All of the cyclists had suspicions, but could seldom offer any proof: "Dopers do not tell anybody" (Baptist, U23). There was a lot of hearsay and suspicion but people were seldom certain: "I do not want to speak without proof" (Charles, professional). All of the cyclists agreed that doping at the amateur level is not as common as at the professional level, but that it still exists. The misuse of therapeutic use exemptions to take corticoids seemed to be very frequent. Cyclists would ask their doctor for a therapeutic use exemption to treat a fictional problem, such as a knee injury or asthma: "I think that doping at our level [the non-professional level] is limited to corticoids. At the beginning, I did not think a lot of cyclists took corticoids, but now I think a lot of cyclists take them" (Maël, U23). The young cyclists interviewed here saw the therapeutic use exemption as legal doping; it permitted them to take banned substances without testing positive: "If we want to take banned substances legally, we can. You just need to know a doctor who provides the therapeutic use exemption rather easily" (Maël, U23). Some cyclists mentioned that other non-professional cyclists used amphetamines and growth hormones but they could not prove it, or these substances were used at very low-levels: "Even though it is completely detectable, I know some cyclists who have taken amphetamines during some races" (Maël, U23). The cyclists interviewed here do not seem to use erythropoietin (EPO) and blood transfusions because they are expensive and are hard to obtain and use: "There are some treatments such as EPO or blood transfusions, but they are too difficult, too complicated to use and too expensive" (Mick, professional).

The temptation to dope among the young cyclists

All of the young cyclists interviewed for this study were tempted to dope, except one (William, U23). They were curious to see the effects of certain substances: "Attracted, curious to try but never to the point of actually doing it. There is always a curiosity to see whether it really works" (Benoît, U23). These young cyclists were not against taking banned substances

in their career. They were ready to dope but only if they became professional. They believed that if they took banned substances before becoming professional, they would never be good enough to compete at the professional level: “Up until now, I have never taken anything but… I can not say: ‘No, I would never dope’, because we never know what will happen in life. However, I have always said that until I become professional, I would never take anything” (Maël, U23).

The temptation to dope was strongest when the cyclists felt that they could not obtain their goals without doping. The cyclists were tempted to dope after experiencing a significant setback: “People think that when we start in cycling, we dope immediately. But for me, a pre-condition for doping is failure” (André, U23). Cyclists were most likely to consider doping after losing a race or failing to achieve a goal: “Once, I thought about doping because I was starting to have good results, but I felt that I lacked 5 % or 10 % compared to others and this was preventing me from winning races or being in the top ten” (Maël, U23). The temptation to dope was highest when cyclists knew that they had to win some important races to sign or renew a professional contract: “The desire to stay on a professional team can play a role in doping. In general, the starting contract is for two years, the first year to learn and the second one to achieve results. The temptation to dope is a little higher in the second year” (Baptist, U23). One of the cyclists who had recently become professional (Mick) stated explicitly that he would dope at the end of his second year of his contract, if he did not achieve satisfactory results without doping. He stated that he was very close to doping during the second year of his contract: “I came back from X [a race over many days] this year and my doctor saved me because I had been on the Internet and I knew all that I could do, without testing positive. I went to my doctor and asked him what he thought about it. He took the paper, tore it and said to me: ‘Not this, not now anyway... You should not do that’. It was EPO and growth hormone” (Mick, professional).

The strength of the temptation to dope seems to be linked with the place granted to cycling in their life. Some young cyclists were passionate about cycling, but it was not their entire life. They were in school or they had work that was important to them. They wanted to be professional cyclists, but if they did not succeed, they could do something else. Others stopped their studies or their work to become professional. They organized their life around their cycling career, they lived only for cycling and they were more tempted to dope: “I have a busy life in addition to cycling, therefore I think that if I could not continue in cycling, I would take another occupation instead of doping... For X [another young cyclist] for example, cycling is his life, it is his first goal. He is always on the front pages of the newspapers; he is

the cycling hope for the nation. Ever since he was 17 years old, he wanted to be professional" (André, U23).

A positive attitude towards doping use at the professional level

The young cyclists interviewed here had a positive attitude towards doping at the professional level but not at lower levels. In their view, cyclists need to show that they can perform well without doping at the amateur level in order to reach the professional level. Only after they become professional is doping accepted: "I think it is worse to dope at the non-professional level than it is at the professional level, because you should not be able to get to the professional level unless you have potential" (Mick, professional). The young cyclists believed that the decision to dope was an individual decision, but saw it as a complex issue, and respected and understood the reasons why cyclists doped: "The cyclist always has a choice. But the system is more complicated than to simply say that the doper is guilty. The doper is not a victim, but he is not simply guilty" (Maël, U23).

The young cyclists considered doping as part of competitive sport. They understood that the quest for excellence incited many to used banned substances: "A cyclist decides to dope because he wants results" (Maël, U23); "Personal ambition to be the first, to be the best" (Benjamin, U23). Doping was perceived not just as a sport issue but as a social phenomenon. People take banned substances to perform in many domains (school, work, artistic performance): "Doping is present in many places, in all sports and it is more a problem of ambition, to be able to say that they are the best" (Maël, U23). They did not understand why the doping use is banned in sport but not in other domains.

Moreover, the young cyclists interviewed here were not afraid to use banned substances. They saw few health risks of doping: "If we look at the last few years, there have not been any accidents caused by doping. Apart from Simpson but that was many years ago and I think that it was never proven... And I saw a TV program showing that people over 60 years of age in the United States take growth hormones to prevent aging. Perhaps cyclists will live to be 120 years old!" (Charles, professional). Substances are registered on the anti-doping list to preserve equality of opportunity and to protect the athletes' health. But the two professional cyclists (Charles and Mick) believed that it was riskier for their health to take nothing than to take banned substances: "It is something that preoccupies me a lot. Sometimes, I think that it is perhaps better for my health to take some banned substances than not to take anything... Because after the race X [a race over many days], my hematocrite rate was 34, 35. I normally have 47, 46. I was burned-out, I was dead" (Mick, professional).

The majority of young cyclists interviewed for the study were very interested in doping. They were curious and wanted to know more about doping substances. They found information about banned substances by reading the articles on doping scandals in the press and books on doping: “Because I am very interested in doping, I have read a lot of books on this subject” (André, U23); “Just by reading newspapers, you can sometimes get the right dosage” (Charles, professional); “When there were the big doping scandals, I bought almost all the books on the Festina scandal. They explained everything very well. A cyclist, who would like to dope, can read this book and find out how to dope. It is a bit of a problem, it is too well explained” (Maël, U23). They found a lot of information on the Internet too: “I have found unbelievable things on the Internet…..There are instructions on how to do an injection or how to do a blood transfusion” (Benoît, U23); “This year, I went on the Internet and found out everything I could do without testing positive” (Mick, professional). The young cyclists trusted the information they obtained on the Internet, although this information may not be reliable. They also asked more experienced cyclists who doped or who used to use dope for more information about which substances to use. We will develop this point in the following part.

The influence of subjective norms on doping use

The social environment seems to be an important factor in the use of banned substances. Social pressures with regards to doping change from the amateur to the professional level. At the non-professional level, social pressures prevent cyclists from taking banned substances. By contrast, cyclists who had recently become professional found that there was subtle pressure from team-mates or even team managers to start doping.

At the non-professional level, the influence of people from outside of cycling such as family, friends, girlfriend, fan club and personal sponsors is very important. Most of the young cyclists stated that they did not use banned substances because they did not want to disappoint all the people who supported them: “The hardest thing for me would be the disappointment of people who have always supported me, my family, my friends” (William, U23). It seems important to have social networks outside of cycling, as one of them underlined: “If you are in your small cocoon, you wake up one day and you have crossed the limits” (Mick, professional). In some cases though, too much family support can actually encourage doping by placing enormous pressure on the cylist to peform: “A lot of people suspected him [a former professional cyclist] of doping, even when he was a junior. His father supported him wholeheartedly. I think that it is different when you have so much family pressure, there is so much at stake and you think about cycling differently” (Benoît, U23).

To limit the likelihood of doping use, it seems to be important for cyclists to have a stable family life: “A failure in your personal life can lead to doping, too. I know that X [an amateur cyclist who used to dope] does not have an easy life. I think that he has a single parent, things like that” (André, U23).

The people involved in amateur cycling (e.g. coaches, managers, doctors) do not seem to put pressure on cyclists to dope. Some cyclists said that they have not yet used banned substances, because they were in “clean” environment, the people around them (masseurs, doctors, team managers) were “clean” or they looked up to a cyclist who won without taking banned substances. But they underlined that if they were in another environment, it would probably be different: “If you were on a team in which the doctor proposed using banned substances or where other racers doped, would you dope? I think yes” (Baptist, U23); “It is clear that if I had been on a team with a racer who doped, I do not know for sure, but perhaps I would have been influenced” (Benjamin, U23). Managers of the non-professional teams were against doping and the young cyclists believed in their sincerity. Managers of the professional teams also claimed that they were against doping but certain comments led the cyclists who had recently become professional to doubt their sincerity: “We can not say that it is the team staff [a professional team] who told me that it is necessary to dope. The team staff tells 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 suggested that I go to X [a coach], he said to 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 has good ethics’” (Mick, professional).

More experienced cyclists, or “former” cyclists as the young cyclists called them, often introduced the young cyclists to doping. These cyclists were former or current professional or amateur cyclists. In the majority of cases, they had taken banned substances during their careers. The young cyclists always distinguished between two different generations in cycling, before and after the Festina scandal: “the former and new generation” (Mick, professional). Cyclists of the “former generation” started on a professional team where doping was often organized and they had no real choice whether or not to use banned substances. The young cyclists claimed to have a different mentality: the Festina scandal had put “an end to the mindset that we need to use banned substances to win” (André, U23). But the young cyclists were not sure that they would keep this view their entire career. They were conscious of their vulnerability and they knew that more experienced cyclists could persuade them to take banned substances when they joined a professional team.

The cyclists hoping to become professional sought the advice of "former" cyclists. They often called them by phone, sometimes trained with them and they valued their advice. Their advice most notably concerned training and performance-enhancing substances or methods: "If I need advice, I can phone him [a professional cyclist who used to dope]" (Baptist, U23); "When we have questions, we can ask him [an amateur cyclist who used to dope]. He offered us caffeine tablets once" (Benjamin, U23). Cyclists of the "former generation" did not just give advice; they also taught doping techniques: "X [a former cyclist] has taught to Y [a young cyclist] how to use a syringe. He gave him two, three injections, afterwards he showed him how to inject himself. Obviously, X has taught Y everything. And for W [another young cyclist] it is the same, X has taught him everything" (Benjamin, U23).

At the professional level, the cyclists who had recently become professional were exposed more frequently to the influence of "former" cyclists during races and training. Cyclists of the "former generation" still seemed to have power in professional cycling. One of the cyclists who recently became professional explained this influence: "The guys with old mindset, such as X in the Y [a race over many days] of 2007, he kept saying to me: 'W, you have to wake up a little'. Because they do not believe that I am here without taking anything. They do 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, professional). In short, the more experienced cyclists hinted to the young cyclist that he should use doping to become even better.

Only one young cyclist (William, U23) had no relations with cyclists who doped or used to dope. He was not interested in banned substances or doping techniques. He had a part-time job and had contact with other cyclists only during races. He was satisfied with his performances in cycling and preferred to spend his free time with friends who did not race.

The role of doctors in doping does not seem to be very important for young cyclists. Half of the young cyclists interviewed were not followed by a personal sport doctor. They did not feel the need for regular medical support at this time: they looked after themselves and they did not feel tired. The others went to a physician every two or three months to do a blood test. These blood tests were used primarily to prevent and to treat deficiencies. None of the cyclists had a doctor who proposed that he should use banned substances. On the contrary, one (Mick) said that without his doctor he would have doped more than once. Everybody including team managers, trainers, doctors and even more experienced cyclists advised young cyclists to wait until they got to the professional level before using banned substances: "He [a former professional cyclist who used to dope] said to me: 'Do not do it, not now anyway'" (Mick, professional). The young cyclists interviewed here have followed this advice.

Discussion

The purpose of this qualitative study was to identify and understand doping use among young elite cyclists. To understand doping use, we have used the theory of reasoned action (Fishbein & Ajzen, 1975). According to this theory, intentions predict behaviour and are a function of both individual attitudes and subjective norms. The analysis of legal performance-enhancing substances among the young cyclists helped us to better understand how doping use starts.

All of the young cyclists we interviewed took nutritional supplements and believed that it would not be possible to perform without the use of supplements. They used a wide variety of products, mostly vitamin C, multivitamins, mineral products and caffeine. The use of nutritional supplements exists in other sports but it is not as high as it is in cycling (Somerville & Lewis, 2005; Striegel et al., 2007). For example, in the study of Striegel et al. (2007), only 55.4 % of the 536 elite athletes said that they had used nutritional supplements, mostly vitamins and minerals. The use of nutritional supplements is problematic since they increase the risk of doping use (Papadopoulos et al., 2006). Moreover, the use of nutritional supplements has some risks. The use of supplements may lead to an inadvertent positive doping test as some supplements contain prohibited substances without declaring them on their label (De Hon & Coumans, 2007; Kamber et al., 2001; Pipe & Ayotte, 2002). Kamber et al. (2001) analyzed 75 different nutritional supplements bought through the Internet. Two of the products contained ephedrine and caffeine without listing it on the label, and seven of the pro-hormone products contained hormone substances other than those indicated on the label. Moreover, “many supplements contain substances (e.g. ephedrine) that have been associated with significant morbidity and mortality” (Pipe & Ayotte, 2002, p. 245). Young cyclists need to be educated on the health risk of nutritional supplements and on the risk of testing positive on a doping test after taking supplements. This risk is low but nevertheless exists for athletes who compete in events where they are likely to be tested for doping use (Baylis et al., 2001).

In addition to using nutritional supplements, the participants in this study also used methods which can improve performance such as altitude training, the use of an artificially high altitude environment or a specific therapy to reduce painful inflammations. The young cyclists believed that without these substances or methods, they could not perform as well in cycling. They expected that these methods or substances would have beneficial effects, but often no test had been done to evaluate their actual physiological benefits. Maganaris et al. (2000) have shown that expectancy effects can markedly improve athletic performance. It may be that the positive results noted by the young cyclists interviewed here were due to these

expectancy effects. In addition, some authors have debated the effectiveness of altitude training for improving cycling performance (Hahn & Gore, 2001; Wilber et al., 2007). Wilber et al. (2007) recommended a daily hypoxic exposure of approximately 22 h at a natural altitude of 2000-2200 m for at least four weeks. But the cyclists interviewed here rarely did this amount of altitude training. Instead, they stayed in the mountains for two or three weeks at most and sometimes they slept in the valley, which calls into question the benefits of this training.

This study has shown that doping use exists in non-professional cycling; it exists in other sports too (Laure, 2000; Laure & Binsinger, 2007; Papadopoulos et al., 2006; Pillard et al., 2002). But, according to the cyclists interviewed here, it seems to be less widespread than at the professional level. However, it is very difficult to know the actual extent of doping because of the law of silence. In non-professional cycling, the timely use of false prescriptions for corticoids to treat asthma or knee injuries seems to be used most frequently. The young cyclists intervewed for this study were tempted by doping. They were not against using banned substances but believed that they should only be used at the professional level. Although doping in cycling has evolved since the Festina scandal, the young cyclists still believed that there was a subculture of doping in professional cycling (Brissonneau, 2007; Lê-German & Leca, 2005; Schneider, 2006), but not at lower levels.

As in Schneider (2006)'s study, the young elite cyclists in this study rejected the health argument against doping: professional sport was perceived, "by its very nature, to be unhealthy" (p.219). They regarded the health arguments against doping as misplaced and even absurd. The participants of this study did not see safeguarding their health as a reason not to dope, although the abuse of doping substances and methods has caused numerous undesirable side-effects. Duclos et al. (2007), for example, has pointed out that corticosteroid injections could produce adrenal insufficiency. Some of the most serious potential side-effects of doping include cardiovascular disorders (Deligiannis et al., 2006). Many drugs, especially stimulants (e.g. cocaine, amphetamine) or anabolic steroids, can cause cardiac arrhythmias which are frequently related to sporting activity and could even lead to the death of an athlete (Furlanello et al., 2007; Laure, 2000). Although it seems worthwhile to warn cyclists about the potentially harmful effects of doping substances, these prevention efforts can have unintended effects. As one cyclist put it: "A doctor once spoke to us about how they caught a cyclist doping through a positive test, in order to convince us not to dope. In fact, he showed us how not to test positive in doping tests" (Charles, professional).

The young cyclists interviewed for this study were, in the majority, very interested in

doping substances and were very knowledgeable about banned substances. Cyclists may be more interested in doping than other athletes because there is so much media attention to doping in this sport. Cyclists looked to improve their knowledge by reading articles in the press on doping scandals, buying books on doping, searching on the Internet or by talking with doped cyclists. Striegel et al. (2007) found that elite athletes found out about information about doping from sports physicians (41.0 %) and coaches (35.4 %). The different results in our study and the Striegel et al. (2007) study may be explained by the difference in the level of competition and training. Most of the cyclists interviewed here were non-professional: half of them did not have a personal sport doctor and none of them had a personal coach. They only had a team coach, and often they preferred to prepare their training themselves helped only by more experienced cyclists.

While many people think that doping is wrong (Parry, 2006), the young cyclists being interviewed here did not see doping as destroying sport. In fact, they saw doping as part of sport. The reason for taking banned substances was to win, to be better and stronger than the others. Athletes want to do their very best, and some are willing to use illegal substances or methods to achieve their goal. The same competitiveness and will-power that drives athletes to ever higher-levels of achievement, also leads some to dope. König (1995) argued that "doping is a constituent part of modern sport and of sport science" (p. 247). The young cyclists interviewed for this study did not think that doping was unique to sport: many people take banned substances to perform better in school, at work or in the arts. The core values of our society, such as individualism, productiveness or the drive for excellence incite drug use (Ehrenberg, 1991; Van Caloen, 2004). Volkwein (1995) has argued today that athletes are motivated by external factors such huge salary contracts and fame instead of by the values of fair play, and that professional sports has become big business. Doping is the expected result and in his view, "generic sports ethics" are unlikely to "solve the problems in top-level sport" (p.311).

The subjective norms at the non-professional level convinced the young cyclists interviewed for this study to wait until they became professionals before they used banned substances. At the non-professional level, everybody was against doping (team managers, families, fan clubs, sponsors and doctors). Cyclists believed that if they used banned substances too early, they would never be able to perform at the professional level. Some previous studies on professional cycling have found that doctors, masseurs, coaches and managers had a big influence on doping use (Brissonneau, 2007; Schneider, 2006; Waddington, 2005). The pressure of team staff seems to be much lower at the non-

professional than at the professional level. At the non-professional level, managers often warned against doping, and the young cyclists interviewed here believed in their sincerity. The warnings of professional team managers seemed to be less persuasive to the young cyclists who had recently become professional. Moreover, the non-professional cyclists interviewed here had never used a personal trainer and only half of the cyclists went regularly to a doctor. The most influential people promoting the use of banned substances among the young cyclists interviewed here were the more experienced cyclists who doped or used to dope. The contacts with dopers increased the temptation to dope and gave them the idea that they would have to dope on the professional level. The more experienced cyclists transmitted the culture of doping to the young cyclists: they gave information about which substances to use and taught the young cyclists doping methods. The more contact the young cyclists had with cyclists who used to dope or doped, the more tempted they were to dope. Papadopoulos et al. (2006) reported that athletes who had a friend who used doping were at high risk for doping themselves. Another factor encouraging doping was the culture of the team environment. Lê-German and Leca (2005) analyzed the impact of group influence on a new member on a professional cycling team. To join the community, the new person had to partake in all group activities, including doping. The young cyclists interviewed for this study knew that at the professional level, the cyclists who were using banned substances, could influence them to use them as well.

The wider social environment of cyclists seems to be an important factor in the use of banned substances. To reduce doping use, it is important for cyclists to maintain relationships outside cycling (family, friends) and to have something else besides cycling (studies, work). Only one of the eight young cyclists interviewed (William, U23) was not attracted by doping. This young cyclist had many friends outside cycling, he had a job, no contact with dopers, family support and he was satisfied with his life and with his performances in cycling. Failure in cycling or in life seems to also be an important factor in doping use. This accords with Laure (2002), who also argued that doping was a way to prevent failure.

Perspectives

This study could be useful for guiding appropriate actions against doping. Prevention needs to be improved, by focusing more on the health risks of nutritional supplements and doping use. Moreover, because the decision to use banned substances is mediated by social factors, prevention campaigns should target the sporting environment of the cyclists (especially the cyclists of the “former generation” and team staff) and not just the young cyclists themselves. But prevention is not enough to fight against this complex problem.

Doping begins at the non-professional level through the misuse of the therapeutic use exemptions; these need to be better supervised. The International Cycling Union (UCI) does stricter and more accurate doping tests more frequently and has introduced a biological passport to fight against doping. But all of these measures focus on elite cyclists at the international level[5]. It is necessary to increase all of these actions at lower levels, which is where the doping behaviours begin. We expect that these new actions against doping will improve the situation in the future, especially after the cyclists of the "former" generation, who seem to be influencing young cyclists to begin doping, have left the cycling world.

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