

Health and doping in elite level cycling

Abstract

The protection of the health of athletes is one of three criteria taken into account when registering a substance in the World Anti Doping Agency (WADA) prohibited list. Nevertheless, in elite level cycling, banned substances use is widespread. The present research adopted a psychological approach to examine how or whether perceived health risks influence elite level cyclists' decisions to use banned substances. Sixteen semi-structured interviews were conducted with cyclists hoping to join a professional team (n=6), neo-professional cyclists (n=2), and former professional cyclists (n=8). Although an evolution was observed in the organization of doping and perceptions of doping over the last decade, the perceived health hazards did not influence, most of the time, decisions to use banned substances among the sample of cyclists. There was a systematization of exogenous substance use in the cycling environment and a trivialization of the side effects of the banned substances. Finally, younger cyclists were not concerned about the long-term health consequences of banned substances; they were more focused on the short-term performance-enhancing benefits. There is a need to implement more effective preventive programs to change athletes' attitudes towards doping and its health risks.

Key words: doping behaviors, health risks, performance-enhancing drugs, sport, cycling, amateur level, professional level

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Introduction

Since 2004 the World Anti Doping Agency (WADA) has produced an annually-updated code and related documents which outline official international anti-doping standards. Two of the following three criteria must be met for a substance or method to be included on the prohibited list: (1) the substance must have been shown to have, or have the potential to, enhance sport performance; (2) it represents an actual or potential health risk to the athlete; and (3) it violates the spirit of sport described in the introduction to the code (WADA, 2009). The protection of the health of athletes is therefore a key criterion taken into account for a substance to be registered on the world anti-doping prohibited list. Banned substances are drugs such as erythropoietin (EPO), growth hormones, and corticosteroids often used in clinical practice to treat diseases. Healthy athletes that use these substances in the sport domain capitalize on the pharmacological effects of the substances to enhance performance. The quantities and means of administration of the substances used in the sport domain often do not adhere to prescribed usage and can present a risk to health. Their side effects are considerable. For example, corticosteroids may cause eye disorders, disorders of the nervous system, psychiatric disorders, osteoporosis, and increases in blood pressure (for a review see De Mondenard, 2004).

In elite-level cycling, the use of banned substances is widespread. Over the past few years a series of doping scandals and cyclists' confessions¹ have shown that doping was common practice among professional cyclists at least until the Festina Scandal in 1998 (Lê-Germain & Leca, 2005; Lentillon-Kaestner & Brissonneau, 2009; Schneider, 2006). In *Rough Ride*, the former professional rider Paul Kimmage described doping as omnipresent in this sport (Kimmage, 2001). Doping was endemic among the cycling teams to the extent that it became institutionalized (Bassons, 2000; Kimmage, 2001; Voet, 1999) and was quasi-

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, Landis in May 2010.

tolerated by the professional cycling community (Schneider, 2006). Banned substances were not only used to improve physical performance but the secret practices of doping helped to “cement” team cohesion and identity (Lê-Germain & Leca, 2005). Indeed this secret was shared only by professional cyclists and these practices were not known by those outside the world of cycling. But since the revelations of the 1998 Tour, this information was brought into the public domain. As such, team cohesion and identity deteriorated and the cyclists have begun to confess to their doping practices and those of other cyclists.

At the 2002 Tour de France, cyclists claimed that attitudes had changed in cycling and that doping was less common (Schneider, 2006). This was the direct result of increased anti-doping regulation, such as the increased in- and out-of-competition testing procedures by the national and international authorities (e.g., World Anti-Doping Agency, International Cycling Union) and increased police interventions during international races. Christophe Bassons (2000), a professional cyclist on the Festina team, claimed that doping became more discreet after the 1998 Festina scandal. David Millar, who became professional in 1997, noticed a substantial reduction of doping use in cycling in 2008 compared to when he became professional (Fotheringham, 2008). Doping has become a more individualized rather than team practice and, as such, no longer seems to be a way of achieving social cohesion at the professional level (Lentillon-Kaestner & Carstairs, 2010).

The aim of this study is to evaluate how perceived health risks influence the choice to use banned substances among the cyclists. Adopting a psychosocial approach, doping behavior is considered a reasoned action, influenced by the athletes’ entire social milieu (Brissonneau & Bui-Xuan-Picchedda, 2005; Lentillon-Kaestner, 2008; Lentillon-Kaestner & Carstairs, 2010). Social influences appear to be particularly salient with respect to doping behavior (Lentillon-Kaestner, 2008; Lentillon-Kaestner & Brissonneau, 2009; Lentillon-Kaestner & Carstairs, 2010; Waddington, 2000). 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). Specifically, cyclists of the “former generation”, who were or became professionals before the 1998 Festina scandal, appeared to be very influential on the doping behaviors of young cyclists (Lentillon-Kaestner, 2008; Lentillon-Kaestner & Carstairs, 2010). Consequently, it is important to focus on the wider context rather than solely on the drug user; a more complete explanation should be gained from examining the psychological and sociological factors that affect the behavior.

Although the health risks of doping are important considerations in the regulation and legislation against doping in sport, perceptions of athletes regarding these risks have seldom been studied directly in previous studies. A survey asked 198 world class athletes if they would take a ‘magic’, undetectable drug if it would guarantee victory in any competition but would kill them five years after they took it. Fifty-two percent of the athletes responded that they would take the drug (Goldman & Klatz, 1992). This study suggests that health risks have little impact on doping decision-making among a high proportion of elite-level athletes. However, a number of questions remain; do elite level cyclists consider the negative consequences of substance use to their health? How are these health risks generally represented by elite level athletes in cycling ‘culture’? It seems necessary to understand the influences on decision-making to use banned substances in sport in order to better understand the reasons of their usage and improve prevention measures. Given the relative dearth of research work in this area, a qualitative approach seemed to be the most appropriate approach to capture the complexity of the factors affecting doping behaviors and to provide rich data to help understand the influence of health risks on doping use.

Method

Participants

Data collection took place between April and October in 2007. A list of present and former best cyclists of the French part of Switzerland was drawn from cycling websites. These cyclists were contacted by phone (phone numbers were found on their personal websites or on the Swiss online telephone directory) and an

overview of the research was presented, focusing not exclusively on doping use but on the understanding of various aspects of a cyclist's career including: training, substance use, health management, family support, difficulties, and so on. Cyclists contributed to this research on a voluntary basis. All of the 16 cyclists asked to participate agreed to take part in the study. Eight of participants were young current elite-level cyclists and eight were former professional cyclists. The eight former elite cyclists become professional before the 1998 Festina Scandal and were no longer professionals when they were interviewed. Some of them had remained in the cycling environment as coaches or personal or team managers. The eight current cyclists were selected from the best young elite-level cyclists in Switzerland. They were all of Swiss nationality with French as their native language and were in transition from amateur to professional level. Six of them were in the men Under 23 (U23) category and 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 one year and the other for three years. All of them were, or had been, on the national team (junior or U23²). The reason for the small, relatively exclusive sample of sixteen cyclists was due to our selection criteria of targeting cyclists of the highest level in the French part of Switzerland. In addition, analysis of the final few interviews contributed little to the diversity of themes and it was deemed that saturation had been achieved.

Data Collection

This research was approved by the Research Ethics Committee of the University of Lausanne, Switzerland. Data was collected through semi-structured interviews conducted by the lead author. The interviewer was a female researcher with considerable experience in qualitative psychosocial research. Interviews lasted on average for more than two hours and took place in a location chosen by

² The International Cycling Union (UCI) provides a number of definitions of cyclists. 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 attain sufficient points, they achieve the category "elite". The elite racers who aged 19 to 22 years are classified in the category 'U23' (Under 23: less than 23 years).

the participants. All interviews were audio-taped and transcribed verbatim. 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 in which they had participated (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).

In order to secure the cyclists' trust and increase the credibility of the interview data, the following steps were taken. First, the goal of the research was clearly explained to the participants prior to the interviews. Second, the cyclists were informed their responses would be completely anonymous. They were informed that the names of towns, teams, races, cyclists, and other people would be deleted from the transcript. This is essential for this type of research given the likely sensitivity of the information given by the participants. Third, the cyclists signed a form with their names, and those of the researchers, which indicated their rights: they were not obliged to participate to the study or to answer questions they found too invasive and they could stop the interview or their participation in the study whenever they wanted without sanction or prejudice. Finally, the transcript was sent to the cyclists by e-mail so that they could add, delete, or make changes to the transcript. The data analysis began only after the cyclists had had the chance to revise the transcript. At this point, the document with information concerning the interviewees (names, e-mail, and phone number) was deleted to guarantee anonymity.

Data analysis

Interviews and data analysis were conducted by the same investigator (the first author). The transcribed interviews were analyzed 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 health and doping use. In order to do this, the investigator read each transcript several times and conducted an inductive thematic content analysis to determine the emergent themes linked

with health and doping use. Data was classified in corresponding categories and sub-categories arising from the multiple readings. Next, the categories were compared and related to each other and summarized in overarching themes across all of the interviews. The interviews were re-read once more to refine and verify the emergent themes. Three major themes emerged from the analyses: ‘increased surveillance and risks of detection’; ‘the health risks, not a concern in the choice to use banned substances’; and ‘social influences and the trivialization of health risks’. To verify the credibility of the data, the interviews were carefully compared. Switzerland is a small country, so all of 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

Increased Surveillance and Risks of Detection

Cyclists’ mentality and views towards doping behavior appear to have evolved. The different doping scandals (Festina, Puerto) resulted in increased regulation and preventive actions by anti-doping organizations that have, according to an actual cyclist, Andrew³, put “an end to the mindset that we need to use banned substances to win” (U23). The young cyclists often made the distinction between two generations of cyclists: the actual cyclists of “the new generation” and the cyclists of “the old school” or “the former generation” who had commenced their cycling career before the 1998 Festina scandal. Doping use has declined among cyclists from the professional peloton. Today, some cyclists choose not to use banned substances. Previously, the cyclists that chose not take banned substances were excluded, most of the time, from the peloton and from the team, and quickly gave up: “Some team managers let the trainers to do it [doping supervision], they did not want to take care of it. And, there were others who unsettled me from the team because, according to them, I could not be successful because I took nothing when I was younger” (Gregory, former professional cyclist).

³ All names of interviewed cyclists have been changed to protect anonymity.

According to the interviewees, the organization of doping among cyclists has evolved. The former cyclists interviewed described a ‘doping’ program that was endorsed and organized by the team physicians. The cyclists relied upon the physicians, a blind confidence sometimes: “A team physician has given me anabolic steroids in the past, saying: ‘You are more likely to contract an illness when you finish a race lasting so many days’. He was an old doctor from a professional team. And then, I took a note of all the substances he gave me and went to show it to another physician, Doctor X. He confirmed to me that everybody [in the team] had taken cortisone and anabolic steroids during Y [a stage race over many days]. And these cyclists thought that they had completed the Y without using any [banned substances] because the team doctors told them: ‘They are vitamins!’” (Gregory, former professional cyclist).

Doping organization appeared to have become more individualized. Since the various doping scandals, the teams are subject to close scrutiny and have more difficulties in organizing doping within their structure. Today, cyclists often have to manage alone, or by networks, to obtain banned substances: “I think that the kind of organized doping program that existed in the Festina team 1998 is not possible anymore. Now, there are too many risks. I believe that each cyclist decides and then, if he wants to dope, he will do it by himself as his own personal business” (William, U23). From the interviewees, it seems that the Festina scandal was the trigger of the evolution of doping behaviors in the peloton, but the mentality and the practices of doping seem to have evolved slowly: “The change was not spontaneous, but there was an evolution of change that happened very quickly in some countries and less so in others. Now, they [the team managers] take fewer risks [in organizing doping programmes]” (Mathew, U23).

The individual organization of ‘doping’ programs poses even greater health risks due to of reduced medical supervision. A clandestine market has developed where the vehicle for obtaining banned substances is the internet: “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 on internet and they say to me

that they find all that they want ... And then they said to me: ‘We can order as we want!’” (Carl, neo-professional).

However, obtaining banned substances via the internet poses further risks particularly concerning the quality of substances, as another cyclist underlined: “My physician said that it was necessary to be careful with growth hormones. Those made by the synthesis of beef blood are perfect. But some make cheaper substances - they go to Estonia, or Slovakia, and use cadavers to make growth hormones” (Mick, neo-professional).

Despite the potential health risks associated with internet purchases, the most prominent concern with ordering from the internet was not the health but the fear of the anti-doping control: “Personally, I shall never take the risk [to order on the internet] because we are watched all the time” (Carl, neo-professional).

Many cyclists interviewed regretted the current evolution of ‘doping’ organization. According to actual cyclists, the teams’ organization of ‘doping’ posed less of a health risk to cyclists: “I think that teams’ organization of doping further restricts health damage than when doping is not organized by the team. Because each cyclist goes to see this physician there, this physician here, and then finally, each ends up with a small mixture of substances. It can be a bit dangerous in my view... Before working on doping, it is necessary to work on the health side. And then, Roussel [Festina team’s physician], who organized doping in Festina, said that it [regulating of doping use in teams] would definitely restrict health damage. And I think that he was sincere and that he is definitely right” (Mathew, U23).

Health Risks Not a Concern in the Choice to Use Banned Substances

Although use of banned substances is nowadays less widespread, the substances used are similar to those used in institutionalized ‘doping’ programmes among cycling teams in the 1990’s. Cyclists consistently made reference to EPO, growth hormones, and corticosteroids. The perception of health risks associated with the use of banned substances seems to have changed little since the various ‘doping’ scandals. It also seems that young cyclists were not concerned about their health. They were mainly curious to try substances in order to gain

experience of the beneficial effects of banned substances on their performance, tiredness, and sense of pain: “And I have always said: ‘Until I become professional and I really earn my living thanks to cycling, I will not use any banned substances’ . . . Once we are professional, we do not know, we cannot say . . . We should not say: ‘No, I will never take [banned substances]’, because we do not know what can happen in life” (Mathew, U23); “I came back from X [a stage 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, how 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, neo-professional).

Health risks were not a priority in their choice to use banned substances. It was as if their youth protected them and made them less susceptible to the deleterious health effects of taking banned substances: “For me, in terms of health, I am more likely to live each day as it comes . . . And I think it is necessary to gain maximum benefit now, we do not know what will happen tomorrow . . . Therefore I think that at 35 years-old, at the end of my cycling career, I think that health becomes more of an issue” (William, U23).

The former professional cyclists interviewed who declared to not have used banned substances during their career justified their choice mainly on ethical grounds and to protect their media image. Only one former cyclist justified this choice by the fear that abusing such substances may compromise his health. This cyclist spoke of a meeting he had with a cyclist who had health problems because of use of banned substances: “I believe that what has mostly affected me was my first trainer when we competed in regional races, in particular in X [location of race]. There was a cyclist, who was a regional cyclist, but who had significant negative side effects due to doping use; he was almost in a mental home. And then, I remember very well, I was 16 years old and then my trainer said to me: ‘You see this cyclist, he has used banned substances’. And for me, I was always afraid of using such substances excessively because I do not know how I would react” (Gregory, former professional cyclist).

The former professional cyclists who used banned substances in their cycling career rarely expressed fears for their health: “No [I have never been afraid for my health]. No, it is not true, no. When EPO caused some deaths during the night, it was acknowledged that it is necessary to be careful. But afterwards we heard that there were some whose [hematocrit level] were at 65 during the night and we were at 48. Thus, it was good, we were not in danger. We took our dose of aspirin and then there weren’t any health risks” (Fred, former professional cyclist).

Concerns of the cyclists tended to be focused about the cost and the ease of obtaining banned substances than the health risks. The corticosteroids were the most used substances and tended to be those used earliest in a cycling career. The cyclists feigned troubles (e.g., knee injuries) or fictitious diseases (e.g., asthma) to obtain a Therapeutic Use Exemption certificate for corticosteroids: “But the doping use in our country and at our level, I think, is limited to corticosteroids. At first I thought that there were not many cyclists who used corticosteroids, but in fact I think that there are lot who use it” (Mathew, U23).

The corticosteroids had several advantages compared to other banned substances or methods such as EPO, growth hormones, or blood transfusions. This substance was easy to obtain and use, and was not expensive: “If we want to dope legally, we can. To know a good physician is enough, he prescribes a Therapeutic Use Exemption quite easily and we’ve done it” (Mathew, U23); “No, corticosteroids cost nothing” (Fred, former professional cyclist).

The health risks of corticosteroids, perceived or not, did not temper his usage: “In my opinion, for example, for corticosteroids, I do not think that they are very dangerous to health” (Baptist, U23); “No [I have never been afraid of intramuscular injections of corticosteroids] because I was aware and then I did not take anything without knowing what it was. The side effects, I knew” (Chris, former professional cyclist).

The other banned substances such as EPO, growth hormones, and blood transfusions seem to be mainly used at the professional level. These substances and methods tended not to be used at levels below professional because of their

price, the higher difficulty to obtain and use them (compared to corticosteroids), and their high risk to health (for blood transfusions): “Some treatments such as EPO or blood transfusions are difficult to use and are complicated... Erythropoietin is too expensive” (Mathew, U23); “Yes, it was expensive [growth hormone]. And then, I did not have a refrigerator anymore and therefore it [the growth hormone] was ruined. It cost me 1000 CHF and I had to throw it out... into a manhole, I remember it well... It was ruined, it had been exposed to the warmth” (Fred, former professional cyclist).

The cyclists who used banned substances during their career were proud to show that they were healthy: “I am healthy, good in my head, good in my body. In fact, I have done some medical tests since I stopped cycling. I had a great check-up this year: blood checks, blood pressure check, a general check-up to detect if I have diabetes or something like that” (David, former professional cyclist).

Some of the cyclists who used banned substances during their career chose not to use certain substances, such as growth hormones or amphetamines, because they considered them a health risk or they consumed doses considered ‘reasonable’: “Corticosteroids, yes. Otherwise, a bit of caffeine ... I did not use the heavy drugs, as growth hormones and all these drugs, because they frightened me... [The amphetamines], they were really... we could see who used it; it was a little suicidal ... The corticosteroids were the only drug where there was a small opening” (Chris, former professional cyclist); “I met at X [a cycling race], cyclists who used a large quantity [of amphetamines]. I would have died immediately if I had taken them at that dose, because if 5mg had no effect, we would take 10, later 20, later 40 and then, for an exceptional race, we would take 50, until we reached 100mg ... I took 3mg, sometimes yes” (Gwen, former professional cyclist).

Most of the time, the cyclists trivialized the side effects of banned substances. A former professional cyclist said: “After we saw television reports, where some 60 year-old people in the United States took growth hormones as a cure for old age and did not get any older. They were able to run in the mountains. When we saw results like that, we thought: 'Wait, here, they suggest that it [growth hormone] is dangerous for the health, we risk cancer, or other

diseases. And yet some people over there, they took it as a cure for aging or to remain young'. Thus, it is sometimes quite freaky" (David, former professional cyclist). This view was shared by a lot of actual young cyclists: "Up to now, there have never been accidents caused by doping use. Apart from Simpson, but that was many years ago and I think that it was never proven... The only risks are more long-term risks. But I do not know, last time, I saw a program in which some people aged 60 and older in the United States took hormones to did not get any older! Therefore perhaps cyclists will live until they are 120 years-old!" (Carl, neo-professional).

Some professional cyclists had an opposing view of the use of banned substances and the side effects than the official view of sports organizations that legislate against banned substance use. Many cyclists said that it was worse for their health if they took nothing than to use these substances. They considered high-level sport as very dangerous for their health and to preserve good health it was necessary to be 'treated'. According to them, cyclists were people who needed to be treated regularly with drugs and medications to prevent a deterioration of their health due to their punishing race and training schedules: "It is something which worries me a little. And sometimes I think that it is maybe better for my health to use some substances than not to take anything... Because after X [a stage race over many days], I went to check my hemoglobin rate. Normally, I have 47, 46 all the time. I had 34, 35, I was dead tired" (Mick, neo-professional); "I was persuaded that to do X [a stage race over many days], by not taking anything you are likely hurt your body more than if you have a medical follow-up to allow your body to get back. Besides, some studies showed that high-level sport is harmful" (David, former professional cyclist).

Social Influences and the Trivialization of Health Risks

Experienced cyclists, or "former" cyclists as the young cyclists called them, had a strong influence on current cyclists' doping behaviors. The experienced cyclists often introduced young cyclists to doping. Cyclists of the "former generation" gave advice concerning training, performance-enhancing substances or methods and also taught doping techniques: "X [a former cyclist]

has taught Y [a young cyclist] how to use a syringe. He gave him two or 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 taught him everything” (Bob, U23). The culture of doping was transmitted from former generation to new generation of cyclists. Cyclists of the “former generation” still seemed to have significant power and influence in professional cycling. One of the cyclists who recently turned professional explained this influence: “The guys with old mindsets, such as X in the Y [a stage race over many days] of 2007, kept saying to me: ‘Mick, you have to wake up a little!’ Because they did 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 perform [with] a little [more] power, you can do it’” (Mick, neo-professional). In short, the more experienced cyclists hinted to the young cyclist that he should use banned substances to perform even better.

The actual cyclists interviewed did not have overt pressure from their personal doctor to use banned substances. They chose their personal doctors according to their attitudes toward use of banned substances and the doctor’s reputation: a doctor, with a ‘clean reputation’, who was against ‘doping’ if the cyclist was sure that he did not want to use banned substances in his career; or a doctor with a ‘doping reputation’ who was not against doping in sport if the cyclist had a positive attitude toward the use of banned substances. The majority of actual cyclists interviewed (6 out of 8) had chosen to have a doctor with a ‘doping reputation’, even if the medical supervision was not regular for the majority of them. The doctors with a ‘doping reputation’ were considered more competent than those with a ‘clean reputation’: “The doctor X had problems, because he was the only doctor in the years 98-99 who had confessed to have helped athletes to take banned substances... I do not want to lie, I went to the doctor X and I continue to go to him ... He is an excellent doctor” (Carl, neo-professional).

The pressure of team staff and doctors on cyclists’ use of banned substances has become less important and direct after the various ‘doping’

scandals. As we have already seen, before the scandals, cyclists' medical supervision was organized by teams, and if the cyclists wanted to keep their place in the team, they had to comply with the institutionalized practices of the team. At present, the managers of the professional teams claim, officially, that they are against the use of banned substances but certain comments led the cyclists who had recently turned professional to sometimes 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 [a manager] 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, neo-professional).

Finally, current cyclists had more choice in their use of banned substances than former cyclists: "9 times out of 10 it is the cyclist who decides: 'Yes, I would like really the substance X, because apparently it is good!' And if the doctor does not agree to provide it, the cyclist visits another doctor and he will give to him... It is a personal choice" (Brad, U23). The current cyclists chose to use banned substances in order to perform better or to win a race without thinking about the health implications: "The cyclist decides because he wants some results, because he also feels pressure. But the cyclist, I want to say, that takes a banned substance, has an average level of performance, which is not too bad. It is his choice to take a banned substance to perform better, because he could always choose not to do so; it would maybe be less dangerous for his health and he would not have any other pressure" (Brad, U23).

The cyclists were socialized in an environment in which they were isolated from information regarding the health risks and damaging effects of banned substances. The choice to use banned substances was usually made without taking into account the side effects of the substances: "The decision is taken without health concerns, and that is sad, I now realize. The environment we were in, nobody said: 'It is dangerous!' Nobody said: 'Taking EPO is dangerous!' No,

everybody says: ‘It is forbidden!’” (Aaron, former professional cyclist). Cyclists began to use EPO or other banned substances because others had used it and had had success in using it; their side effects were not taken into account. Then there was a trivialization of the risks of the substances used, a sort of psychological dependence and the cyclists thought that they could not do a race without taking any performance-enhancing substances: “I want to say, the big problem is the trivialization of this, because we did not realize what more we could do... But what becomes dangerous is not to be able to start a race without taking an injection of something, even of multivitamins, and say to oneself: ‘If I take nothing, I would not start’” (Fred, former professional cyclist).

Looking back on their career, several former professional cyclists, even those who used banned substances, suggested that banned substance use could be curbed by using fear-inducing messages because the cycling environment did not, currently, recognize the real dangers of doping: “But not only any preventive actions, most effective I think is to really frighten them ... Yes, we are not in reality, psychologically, we are not in the real world” (Fred, former professional cyclist); “[It would be necessary] to show the relation between doping use and increased health risks... This will break down perceptions of feelings of omnipotence, saying: ‘I am an athlete, I am on top of everything, I have no risks’ ... To prevent this, authorities should say: ‘Here, X is dead, the American runner, she ran 400m and she died from doping’. And ‘here is the football player who died at 19 years-old of a sudden cardiac death’ ... I think then that people would react especially to the fear” (Gregory, former professional cyclist).

Discussion

In a qualitative psychosocial approach, the purpose of this study was to evaluate how perceived health risks influenced the choice to use banned substances among Swiss cyclists. Although an evolution was observed in doping organization and mentality among cyclists and their teams, health concerns did not limit, most of the time, the use of banned substances in cycling. As in Schneider’s (2006) study, the young elite cyclists in the present study rejected the health arguments against doping and perceived professional sport “by its very

nature to be unhealthy” (p. 219). These results are not surprising when we refer to the Goldman ‘imaginary scenario’ (Goldman & Klatz, 1992).

The wider social environment was an important factor in the use of banned substances (Lentillon-Kaestner & Carstairs, 2010; Waddington, 2000). Cyclists lived and competed in an environment where the health risks of banned substances were minimized or concealed. The cyclists of ‘the former generation’ were proud to say and show that they were in fine form even though they took banned substances during their cycling career. Former cyclists had a significant influence on the younger ‘new generation’ of cyclists interviewed (Lentillon-Kaestner, 2008; Lentillon-Kaestner & Brissonneau, 2009; Lentillon-Kaestner & Carstairs, 2010). They were responsible for introducing and socializing young cyclists into doping behaviors.

Moreover, there was dominant perception in the professional peloton that it was more dangerous to cycle without taking any banned substances than using them under medical supervision. According to the professional cyclists interviewed in this study, it seems necessary to use exogenous substances, banned or not, to remain in good health. This perception has been raised in previous research on professional cyclists (Brissonneau & Bui-Xuan-Picchedda, 2005; Schneider, 2006). While sports authorities provide a clear health-protective rationale behind controlling and banning some substances, cyclists, instead, believe that doping use can protect from the harmful effects of the high physical demands of their elite-level sports involvement on their health. Other authors have cited this point of view (Jones, 2010; Kayser & Smith, 2008; König, 1995). For example, a prevalent view in cycling subculture is that doping helps sustain athletes for the gruelling physical demands associated with professional cycling. As Jones (2010) put it: ‘To function at a professional level, i.e., to keep their jobs, to stay the course, to keep in the peloton- requires the use of substances to maintain their bodies at the required functional level” (p. 89). Daniel Blanc (a sport doctor in Switzerland who followed a lot of professional cyclists) gave further insight into this mentality: “if you want a ‘show’ you have to protect the athletes, and sometimes the best protection is a little EPO to stabilize the

haemoglobin level so they don't get tired and hit by frequent infections" (cited in Hoberman, 2005, p. 123). The use of banned substances tends to induce further use and, as long as some cyclists take these substances, doping will be perceived, at the elite level, as essential to be able to keep apace with race leaders and to protect cyclists' health.

The use of performance-enhancing, but potentially harmful, substances has been prevalent in sport for a long time and also exists in other domains such as in schools, in the workplace, and for recreation (Hoberman, 2003; Laure, 2000). The use of such substances in all domains have to be considered a public health issue concerning a large part of the general population (Arditti et al., 2000; Laure, 2000; Laure & Lecerf, 1999). In a society in which performance is constantly evaluated, the attainment of excellence places considerable pressure on some individuals to use illegal means to cope and succeed. For example, Arditti et al. (2000) showed that the pursuit excellence could lead a business manager to use substances likely to boost his performance in his daily work practice. As in sport, some performance-enhancing substances are used, even abused, in the occupational domain.

According to the current data, the decision to use banned substances in sport was made more according to cost and ease to obtain than according to health risks. This is exemplified by corticosteroids which are inexpensive substances, easy to obtain and use, and are often the first banned substances used in a cyclist's career. However, regarding side effects of this substance, they are among the most dangerous to health. As De Mondenard (2004) underlined: "Few drugs are free of side effects and such substances are responsible for various serious accidents" (p. 312). Duclos et al. (2007) pointed out that corticosteroid injections could produce adrenal insufficiency. It is for this reason that corticosteroids should not be administered without imperative medical reasons. These health risks, perceived or not, did not affect their use in cycling relative to other substances such as growth hormones or amphetamines which held the most fear for cyclists in terms of their potential health risks and side effects. This may be it because these substances have, by comparison, more visible side effects. Growth hormones have different

consequences such as bone enlargement and prominence, which can be irreversible, the thickening of the skin, and abnormal and excessive hair growth. Amphetamines have been implicated in the death of many athletes and have side effects such as dilated pupils (De Mondenard, 2004). It is, therefore, possible to see and feel the physical transformations linked to the use of these substances and they are more likely to evoke fear in the cyclists relative to other substances that have less visible but sometimes more serious side effects.

Erythropoietin (EPO) seemed to be reserved for cyclists at the professional level. The high cost and the constraints of usage (injections several times a week) limited its use in younger cyclists and those at the lower level more than its health risks. Of course, use of EPO also has serious health risks especially when it is obtained on the black market and used without medical supervision (De Mondenard, 2004).

Although the type of substances used seems not to have changed, the various doping scandals and the resulting regulation and preventive measures have changed the practice and organization of doping in elite cycling. The 1998 Festina scandal constituted a first step, but the practice and the mentality toward substance use has taken considerable time to change. Christophe Bassons, a former professional cyclist, attested: “At this moment, the slogan proclaimed infinitely was: ‘It was the past, we begin again with a good base’. I believed in it, but my hopes disappeared very quickly. April returns with its infernal pace [in cycling events]. Nothing had changed and especially not the mentality [toward doping]” (Bassons, 2000, p. 180).

It was after a series of scandals at the turn of the millennium that doping use started to become progressively more individualized and less institutionalized. Now, it appears from the present data and previous research that doping is now less visible and more personal where each cyclist fends by himself to obtain and administer banned substances. Ironically, this new doping organization, resulting from more stringent doping regulations and legislation, may result in even greater health risks for athletes because cyclists are medically less supervised. Doping scandals have led to change the doping legislation which has reduced the

institutionalized use of banned substances to reduce doping behaviors. The temptation to use banned substances, however, appears to remain omnipresent among young cyclists (Lentillon-Kaestner, 2008; Lentillon-Kaestner & Carstairs, 2010). The actual cyclists have more power in the choice to use banned substances and with less help from their physicians and they are more likely to ‘treat themselves’ when it comes to administering banned substances. An underground market, by way of the internet, has arisen to obtain performance-enhancing substances. There are, actually, a variety of websites where cyclists can order performance-enhancing substances very easily. However, their origin and purity are not assured (Carpenter, 2007; Pipe & Ayotte, 2002).

The more stringent legislation against doping in sport that has the protection of the health of athletes as one of its key statutes may, ironically, lead to opposite effects. Indeed, this belief was evident among the cyclists interviewed. They regretted the demise of the former institutionalized organization of banned substance use which, they felt, was more medically supervised and therefore presented less risk to their health. Some authors have raised concerns regarding the dangers to health as a result of the increased legislation against the use of these substances. These authors have suggested legalizing performance-enhancing drugs and underlined the advantages of doping under medical control, i.e. ‘open’ doping (Black, 1996; Holm, 2007; Kayser & Smith, 2008). According to Black (1996), “the majority of the deaths and impairment of the health of athletes that have occurred during the ban would not have occurred in the absence of the ban... Removal of the ban would result in an improvement in the welfare of athletes by creating fairer sporting contests and reducing health risks facing athletes” (p. 367).

In summary, results from the present set of interviews with former and actual cyclists suggested that the perceived benefits of the use of banned substances outweighed the perceived health risks. In addition, there was also a trivialization of the health risks and side effects of the use of banned substances in the cycling. Finally, the young cyclists interviewed tended to live in the present and were not concerned about the long-term health consequences of substances

used. Instead, they seemed more focused on the short term positive consequences of the substances use such as improving their performances, helping them achieve excellence, combating fatigue, and winning races. It is necessary to remain cautious concerning the transferability of these findings to international cycling or elite athletes in general. The particular organization of sport within Switzerland and the supervision of the cyclists may have a powerful influence on doping temptations and behaviors among elite and sub-elite cyclists (Brissonneau et al., 2009). However, these data provide an important overview of the changes that have occurred over the last decade in doping practice, the trivialization of health aspects of doping, and the continued practice of doping. As Laure et al. (2001) underlined, “when we take the direct and indirect benefits of sport victories into account, it is obvious that the risk-benefit ratio is in the favor of doping in the mind of numerous athletes. And it is particularly true among young athletes who, in terms of health, do not look very far into the future and simply feel invulnerable, or even immortal” (p. 616). How could these relatively cavalier attitudes regarding the health risks of banned substance use be changed?

Most of the preventive messages concerning the use of banned substances in sport are ineffective. To understand the reasons for the ineffectiveness of anti-doping interventions, it is important to consider doping behaviors alongside other health risk behaviors and turn to psycho-social theories that seek to explain health behavior change (Hagger et al., 2009; Hagger, 2010). Besides doping behaviors, literature indicates that adolescents and young adults are profoundly affected by a number of health risks related to their behavior, particularly males (e.g., smoking, drinking, use of other drugs, antisocial behavior, unprotected sexual intercourse) (Hidalgo et al., 2000; Stewart et al., 1999). Psychological research has also shown the importance of fear on attitude and/or behavior change (Girandola, 2003). Using these psychological approaches, the inefficiency of actual preventive messages concerning doping use could be explained by three major reasons: the content of the message, the addressees and the divulgator.

The content of the messages, in most cases, consists of descriptions of the side effects of banned substances (Laure & Lecerf, 1999). Informing athletes of

such side effects and health risks does not necessarily reduce their use or result in attitude change (Kindlundh et al., 1998). According to psychological theory, message content is important if one wants to evoke an attitude change (Rogers, 1983; Tanner et al., 1991). A number of variables can improve the effectiveness of the preventive messages and influence persuasion (Girandola, 2003). For example, the vividness of the messages is very important. The message must be surprising, intense and cause a heightened emotional reaction. The more emotive the message, the more likely it is to be effective (Leventhal et al., 1980). The use of testimony of cyclists who have used banned substances including colour pictures and a shocking video footage of the morbidity and mortality caused by the use of banned substances could cause greater emotional reactions than the detailed description of the different side effects of the banned substances (Tanner et al., 1991). These messages must induce high levels of fear because, if not sufficiently high, the fear appeals can have the counterproductive effect of evoking greater interest in the substance (Tanner et al., 1991). These health messages that arouse fear are important, especially for cyclists since the cycling environment tends to isolate them from information about these risks. Indeed, one cyclist in the current study who chose not to use dope during his cycling career, vividly recalled a frightening experience of meeting a cyclist who had doped and had experienced severe mental health problems ever since. However, threatening messages are necessary but perhaps insufficient alone to bring about behavior change (Girandola, 2003; Leventhal et al., 1980; Witte & Allen, 2000). According to the extended parallel process model (Witte & Allen, 2000), fear inducing messages have to be accompanied by preventive messages offering easy solutions and recommendations to counteract the source of the fear and to give trust to the individual in his or her own capacity to follow these recommendations (Witte & Allen, 2000). In this way, sound advice on legal substances and techniques to improve training (e.g., dietetic advice, training programs and tools, altitude training) could be given.

The second factor contributing to the inefficiency of preventive actions concerning doping is the audience or recipient of the messages. In our study only

the two professional cyclists interviewed declared to have previously received advice on preventive action concerning doping. The six cyclists who were waiting to be integrated into a professional team declared to have received none.

According to protection motivation theory, prior knowledge and experience tend to moderate the effect of threat communications on maladaptive behaviors like banned substance use (Tanner et al., 1991). Therefore, preventive, fear-inducing messages should focus on the young cyclists, especially because of their vulnerability and temptation concerning doping use and the need to tailor the information toward the most vulnerable audience (Lentillon-Kaestner, 2008; Lentillon-Kaestner & Carstairs, 2010).

Finally, the source of the message and its credibility is very important in the effectiveness of fear inducing messages (Girandola, 2003). If this source is very credible, the message is more likely to be heard. The former cyclists who confessed to their previous doping practices could become involved in preventive actions concerning doping use. Current data suggest that these cyclists are very influential sources for the young cyclists and health-related messages concerning doping behavior would be more accepted and convincing coming from these sources.

Perspectives

Improving the fear-inducing messages in doping prevention could lead athletes to question their attitudes towards the use of banned substances. Findings of previous studies are also consistent with the need for more effective fear-inducing messages: “Being a student of a biomedical school reduced the likelihood of doping, which suggested that increased familiarization with the health risks of doping may have contributed to the reduction of the likelihood of the risk behavior” (Papadopoulos et al., 2006, p. 312). Nevertheless, preventive action centered on inducing fear alone would be insufficient to change athletes’ attitudes towards doping and health risks. Effective supervision of the athletes alongside the preventive educational messages is also very important. Brissonneau et al. (2009) demonstrated that the more young cyclists were supervised with respect to their training and diet, the less the temptation there was

to take banned substances. These various measures could lead to a change in attitudes and awareness of the health risks caused by use of banned substances by elite cyclists.

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