

## Short Communication

# Use of Injections in Amateur and Professional Cycling

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## Abstract

The purpose of this study was to evaluate how and why injections were used in professional and amateur cycling. 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). Professional cycling was perceived harmful. The injections and self-injections were perceived as a necessity at the professional level, being more efficient for recovery than oral ingestion. Self-injections were less widespread in amateur than in professional cycling and were more hidden in professional cycling since the various doping scandals. The more experienced cyclists played an important role in the younger cyclists' initiation to self-injections. The acceptance of injections and self injections in the professional peloton follows the harm reduction strategies. Harm reduction strategy may be a more efficient approach to doping than actual WADA zero-tolerance approach.

## Keywords

- Injections
- Recovery
- Doping
- Cycling
- Harm reduction strategies

## ABBREVIATIONS

WADA: World Anti-Doping Agency; U23: category Under 23 (less than 23 years); EPO: Erythropoietin

## INTRODUCTION

Since the establishment of the World Anti-Doping Agency (WADA) in 1999 and the World Anti-Doping Code on January 1, 2004, there is an international harmonization of the prohibited substances and methods in sport. The World Anti-Doping Code and the Prohibited List are updated annually. The use of injections is regulated by WADA since 2005: "The following is prohibited: Tampering, or attempting to tamper, in order to alter the integrity and validity of samples collected in Doping Controls. These include but are not limited to intravenous infusions\*, catheterization, and urine substitution (\*Except as a legitimate acute medical treatment, intravenous infusions are prohibited)" ([1], p. 5). The prohibition of infusions was amended in 2006: the section concerning chemical and physical manipulation was divided into two separate subcategories to avoid confusion between tampering methods used during sample collection and intravenous infusions [2]. In 2007 (year of data collection for this study), there was no amendment of the prohibition of intravenous infusions.

Even if an educational message is provided at the beginning of the WADA Prohibited List since 2005: "The use of any drug should be limited to medically justified indications" ([1], p. 2), the various doping scandals and doping studies have shown that doping behaviors were widespread in professional cycling.

During the period of organized team doping (before Festina scandal), drug use was a shared practice and contributed to the subculture of doping in professional cycling [3-10]. The Festina scandal triggered changes in attitudes towards doping, but doping practices evolved slowly [10-12]. Also, studies showed that doping was accepted as a shared practice in the peloton but not at the lower levels of practice [9,13]. Lentillon-Kaestner and Carstairs (2010) underlined the importance of the transition from the amateur to the professional level in the evolution of doping behaviors [9]. Injections and even self-injections were often used for doping or recovery purposes but to date no study has analyzed in depth the use of injections in cycling. Using a qualitative method, the purpose of this study was to evaluate how and why injections were used in professional and amateur cycling. Adopting a psychosocial approach, the use of injections and self-injections are considered a reasoned action, influenced by the athletes' entire social milieu [9,14,15]. 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 [9,15]. Consequently, it is important to focus on the wider context rather than solely on the cyclist; a more complete explanation should be gained from examining the psychological and sociological factors that affect the use of injections in cycling.

## MATERIALS AND METHODS

This article was based on research financed by the WADA and was approved by the Ethics Committee at the University of Lausanne, Switzerland.

## Participants

Data collection took place between April and October in 2007. Cyclists contributed to this research on a voluntary basis. The participants were selected from the present and former best cyclists of Switzerland. 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 in transition from amateur to professional level. Six of them were in the men Under 23 (U23<sup>1</sup>) 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.

## Data collection

Data was collected through semi-structured interviews conducted by 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 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 [16]. 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).

## Data analysis

Interviews and data analysis were conducted by the same investigator. The transcribed interviews were analyzed using a thematic content analysis (as described by Mucchielli, 1998 [17]). Following the transcription, the first step was to identify and select all data that related to the use of injections. 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 the use of injections. 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: 'the efficiency of injections', 'the cyclists' initiation to self-injections', and 'the development of the use of injections in professional cycling'.

<sup>1</sup> 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).

## RESULTS

### Health hazards of professional sport

Generally, professional cycling was considered harmful by cyclists: "But I am sure that doing the Tour de France without taking any drugs, you're going to hurt more your body than if you have a medical follow-up to allow your body to recover. That's a guarantee. Moreover, there are studies that have been done that any way, top-level sport is not good for health." (Former professional cyclist)

In the professional cycling, injections were perceived as necessary to support the training and race demands and to protect cyclists' health: "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)

### The efficiency of injections

Cyclists justified injections by their efficiency compared to ingested nutrients: "Once, I had an iron deficiency and I took iron pills, but my stomach hurt, and I was not really doing well. Afterwards, by using an iron injection, within three days I was fit again." (Neo-professional cyclist) Beyond their efficiency, the iron injections were perceived healthier than the oral ingestion: "And the problem is that the iron pills leave you many toxics in the liver. And the liver does not manage to eliminate them. Thus, the toxics stay systematically in your liver, which is really bad." (Former professional cyclist)

Injections were systematized in professional cycling, but not at the lower practice levels. Only one of the U23 cyclists interviewed declared to use injections; the two neo-professional cyclists and the former professional cyclists (except one) used injections regularly: "I used injections two or three times last year, I was sometimes very tired; it does not disturb me. I know that they are regularly used at the professional level. At our practice level, some other cyclists also used injections. I use injections for magnesium or iron, things like that." (U23 cyclist)

Cyclists had to do mostly self-injections because of their frequent use for recovery. Even if it is difficult in Switzerland to buy glucose injections, the more flexible legislation of the bordering countries was known by the interviewed cyclists: "If we want, he [the physician] gives injections, but the majority of cyclists self-inject. In Switzerland, it is difficult to buy them, but you go to Italy or France and you ask for glucose injections, they give you all you need." (U23 cyclist)

The health side effects of injections did not prevent its use. The young cyclists aiming to join a professional team said that they could imagine using injections in the future, if they would perceive a real need: "If I have to do self-injections, I will do them." (U23 cyclist)

Injections were first used for post ride recoveries to inject permitted substances, such as iron, vitamins, glucose, magnesium, calcium, etc. Cyclists self-injected also sometimes other substances, permitted or banned: "I knew a Swiss Italian

cyclist last year. Apparently, he used a painkiller injection. I do not know if it is allowed or not." (U23 cyclist) Physicians injected also sometimes banned substances: "All the riders I know, they all have tried cortisone. [...] They play with the rules. It depends what you mean by doping but everyone I know do it. They say that they hurt their knee; they will get two cortisone injections in the buttocks and have a therapeutic use exemption even though they did not hurt their knee." (U23 cyclist)

### The cyclists' initiations to self-injections

The first self-injections were not easy and feared by cyclists. But more than the health side effects, injections were associated with doping behaviors and thus put cyclists somewhat off: "At the beginning, it was a little strange for me because I have the perception that self-injection equals doping." (neo-professional cyclist); "Afterwards you could put everything in injections and you self-inject, it is already a drug-addict's behavior finally." (U23 cyclist)

Cyclists were initiated to self-injections by more experienced cyclists: "I had a friend who was in my team last year and X [U23 cyclist already initiated to injections] taught him and injected him two or three injections. Afterwards, he taught him how to self-inject." (U23 cyclist); "[I was initiated by] guys like me, but they had used the injections a little before me... And afterwards, we initiated others." (Former professional cyclist)

The reluctances of the first self-injections disappeared quickly. Over the years, the movement became automated, common and raised no more problems: "- And did you do EPO self-injections? - Not at first, but afterwards yes. If we would have gone every two days to the physician, the insurance companies would have started asking questions. It is just like someone who has diabetes; it is not more complicated (to do self-injection)." (Former professional cyclist)

### The development of the use of injections in professional cycling

Before the various doping scandals, a former cyclist explained that he observed directly self-injections, even in the peloton: "I have seen doping use, in the rooms, because we share rooms in general. Therefore it can be in hotel rooms, but I have seen an intravenous injection in the peloton... He put a surgical tourniquet and he makes an injection in his arm during the race. And I have seen intramuscular injections in the peloton too." (Former professional cyclist)

Since the various doping scandals, the self-injections are more hidden. The actual cyclists hide their self-injections, even in front of their best friends: "I mean, a great friend [a neo-professional cyclist], while we were in a hotel room together, while I slept, self-injected. And I have never known that he self-injected; I knew it only one year later." (U23 cyclist)

## DISCUSSION

The purpose of this paper was to evaluate how and why injections were used in professional and amateur cycling. Healthy persons do not usually use self-injections; they are used either by sick persons (e.g. diabetic people) or by drug addicts. Even if infusions are regulated by WADA since 2005, self-injections

were widespread in professional cycling and sometimes used by amateur cyclists.

The acceptance of injections and self-injections for recovery or doping at the professional level followed harm reduction strategies [18,19]. Professional cycling was perceived harmful and the injections permit to protect cyclists' health. The injections and self-injections were perceived by cyclists as a necessity in professional cycling; oral nutrients were described as inefficient to cope with the training and race demands at the professional level [20-22].

Injections, intramuscular and even more so intravenous, present some health risks [23]. The risks of infection are important; hygienic measures and very strict precautions must be taken. For example, for the intravenous injections, the speed of drip and the transparency of the solution must be controlled [23]. But the interviewed cyclists were not afraid by health hazards in self-injections. More than health risks, it was the image of self-injections (i.e., image of 'drug-addicts') and its association with doping behaviors that limited its use at lower practice levels and created reluctances during its first uses; but these reluctances disappeared quickly. As previously shown [22,24], although the health risks are important considerations in the regulation and legislation against doping in sport, health risks have little impact on doping decision-making among a high proportion of elite-level athletes.

This study also showed that self-injections were more and more hidden in professional cycling since the various doping scandals and that the more experienced cyclists played an important role in the younger cyclists' initiation to self-injections. These results go in the same directions than previous studies on doping behaviors in cycling [4-13] and underline once more the importance of social influences on doping behaviors [4,9,15,25].

Injections were regulated by WADA since 2005 but its prohibition was amended two times (2006 and 2008). In 2008, the executive committee approved amending the prohibition of intravenous infusions so that "intravenous infusions are prohibited except in the management of surgical procedures, medical emergencies or clinical investigations" ([26], p. 6). The data of this study was collected in 2007. The 2008 amendment may have impacted the use of injections in the peloton. A new research focusing on the development of injections in amateur and professional levels would be interesting.

## CONCLUSION

The acceptance of injections and self-injections in professional cycling based on harm reduction strategies was in contradiction to WADA's doping approach based on a moral code "the spirit of sport" involving the prohibition of performance enhancing drugs [27]. Kayser and Broers (2012) [27] compared the current WADA anti-doping fight to the zero-tolerance "war on drugs" approach [28]. According to these researchers, "regulation and harm reduction may come with less cost to society and the individual, as compared to a zero-tolerance approach, and therefore merits to be considered" ([27], p. 40). Harm reduction would be a more efficient doping approach since it matches the cyclists' attitudes and behaviors towards doping and injections use.

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