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**Evelyn Korn and Volker Robeck**

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Coordination: Bernd Hayo • Philipps-University Marburg  
Faculty of Business Administration and Economics • Universitätsstraße 24, D-35032 Marburg  
Tel: +49-6421-2823091, Fax: +49-6421-2823088, e-mail: [hayo@wiwi.uni-marburg.de](mailto:hayo@wiwi.uni-marburg.de)

# The role of sports physicians in doping: a note on incentives

Evelyn Korn      Volker Robeck\*

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## Abstract

How to ban the fraudulent use of performance-enhancing drugs is an issue in all professional – and increasingly in amateur – sports. The main effort in enforcing a “clean sport” has concentrated on proving an abuse of performance-enhancing drugs and on imposing sanctions on teams and athletes.

An investigation started by Freiburg university hospital against two of its employees who had been working as physicians for a professional cycling team has drawn attention to another group of actors: physicians. It reveals a multi-layered contractual relations between sports teams, physicians, hospitals, and sports associations that provided string incentives for the two doctors to support the use performance-enhancing drugs. This paper argues that these misled incentives are not singular but a structural part of modern sports caused by cross effects between the labor market for sports medicine specialists (especially if they are researchers) and for professional athletes.

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\*Both authors: Faculty of Business Administration and Economics, Philipps-Universität Marburg. Corresponding author: Volker Robeck, volker.robeck@wiwi.uni-marburg.de.

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# 1 Introduction

Recently the abuse of performance-enhancing drugs (PED) in professional sports and the question which members of a sports team are involved in this fraudulent activity has received a lot of attention. One trigger was an investigation against two employees of Freiburg university hospital that was based on an accusation laid in 2007 in the German magazine “Der Spiegel” (No. 18/2007).

Back then Jef D’Hont, a former medical attendant of “Team Telekom”<sup>1</sup> who had been prosecuted because of supporting PED abuse himself, charged two team sports medicine specialists with backing up the use of banned PED.

As both physicians were also employees of Freiburg university hospital – and thus subjected to best-practice codes in medicine and science that would have been hurt by an involvement in PED abuse – their employer launched a commission<sup>2</sup> to investigate the doping charges. Both physicians admitted that they had actively supported the abuse of PED during their employment for “Team Telekom” and agreed to support the commission’s work. A full report has been published in March 2009 (Commission Report, 2009). It presents a number of insights that allow for a new perspective on the system surrounding professional cyclists with respect to substance abuse. This is particularly interesting from a game-theoretic perspective as it allows to analyze details of the incentive structures in professional sports that mitigate the abuse of PED.

The most recent case of PED abuse in the focus of mass media has been Lance Armstrong and the USPS and Discovery Channel Team’s sophisticated

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<sup>1</sup>The actual name of this professional cycling team at that time was “Team T-Mobile”. However, the team had gone through a number of renamings, starting with “Team Stuttgart” in the late 80’s, then “Team Telekom” until 2004 and afterwards “Team T-Mobile”. We use the name “Team Telekom” for our analysis as this is the name used in the report our analysis is based upon.

<sup>2</sup>The full name of the commission is “Expertenkommission zur Aufklärung von Dopingvorwürfen gegenüber Ärzten der Abteilung Sportmedizin des Universitätsklinikums Freiburg”. For simplicity we will use the term “commission” only.

doping system. In its reasons for the “lifetime ineligibility and disqualification of competitive results achieved since August 1, 1998” (USADA, 2012, p. 1) imposed on Lance Armstrong, the United States Anti-Doping Agency (USADA) gives a detailed record of the role of physicians and medical attendants. The prosecution of a number of doctors by the USADA hints into the same direction as the Team-Telekom commission report: physicians are a group of agents that has received too little attention as drivers of PED abuse. However, although Armstrong’s case is more recent and has probably raised more public attention, this paper will mainly use the information from the Team-Telekom case as the commission report provides more insights into the incentive network behind professional sports.

Base on the anecdotal evidence provided by these two cases, this paper analyzes the role of physicians within PED systems. To that end, we describe the PED game in professional cycling, identify main players and their objectives and try to extract fundamentals of their relations. We will see that physicians play a crucial role in promoting the use of PED. Their incentives to do so stem from a complex set of contracts they have to fulfill.

As the commission’s report reveals, some of them are not only employees of their sports teams but also scientists employed by universities and employees or officials of sports associations. Each of these employers faces different objective functions which in turn lead to a variety of performance measures influencing the physicians’s remuneration. None of these contractual relations has been addressed before, let alone the cross effects between these contracts. Our paper aims at describing the fundamental structure of these – at least partially conflicting – incentives.

We give a short wrap-up of those details of the commission’s report that induced our analysis: Systematic PED use within Team Telekom started in 1995 and sports physicians supervised and helped the athletes in doping. In performing this task, the physicians were directly paid by the team but, in addition, there were highly remunerated contracts on medical health services between Freiburg’s university hospital and Team Telekom. Of course, these

contracts did not name PED consulting as a task. However, the personnel attending to the task resulting from these contracts were exactly those two physicians (and a team of medical attendants) that had contracts with Team Telekom on their own. The advantage for the university hospital from these contracts were that they accounted for external funding – a performance measure for research activity in German academic institutions with increasing importance. Yet, the complexity of interacting interests does not stop here. In addition to working with Team Telekom, the university hospital also did research on behalf of an anti-doping task force – again the two physicians were highly involved in that project. Finally, one of the two doctors worked for the German Olympic cycling team. Thus, the network of contracts revealed in the commission’s report not only shows the intricacy of different incentives at work but also channels of information in developing and preventing (or hindering the prevention of) PED use. We will address both aspects of the network in our analysis.

Our paper ties in with the literature that describes the institutional aspects of professional sports and the prevalence of PED abuse from a sociological perspective (see, for instance, Hobermann (1992), Waddington (2000 and 2012), Waddington and Smith (2009), Bette (2008), and Bette and Schimank (2001 and 2006)). Economic literature dealing with PED is scarce. Strulik (2012) uses ideas of sociology and psychology and translates them in economic terms. In addition, it has for a long time focused on a prisoners’s dilemma between athletes (see, for instance, Breivik (1987), Eber and Thépot (1999)). Recently, the discussion turned to a more institution centered approach by taking spectators’ interests as well as the economic interests of professional teams, their sponsors, and the media into account (see, for instance, Jeanrenaud (2006), Jeanrenaud and Késennen (2006), and Rebeggiani and Tondani (2008)). Yet, the description of individual incentives are not very detailed. In addition, none of the studies analyses the structures within professional teams or focuses on the role of physicians.

In what follows we provide a characterization of the incentive structure

within professional teams.

## 2 Classic explanations of doping

The use and abuse of performance-enhancing drugs (PED) has been analyzed within the economic, medical, and the sociological literature to some extent. While authors from different fields focus on different aspects according to their traditional perspective, there is a core element to all analyses: While all sciences acknowledge a systematic aspect to PED (ab)use, it is in most cases assumed to be a decision of the athlete alone. Accordingly, the seminal model employed in the analysis of drug use in sports competitions is the Prisoners' Dilemma that explains the interaction between two athletes (see, for instance, Brevik (1987), Eber and Thépot (1999), Haugen (2004), and Eber (2008)). The idea of these papers is that the use of PED raises the probability to win against the competitor but also entails a risk of being caught and suffering from long-term health problems. The fundamental assumption in the prisoners'-dilemma approach is that athletes tend to underestimate the risk of being caught to ignore possible long-term consequences. In consequence, using forbidden drugs turns into a dominant alternative.

However, to address the systematic aspect of PED abuse, the social and economic environment of the athletes need to be taken into account. In particular, in professional sports, the athlete is an employee of a sports team and, thus, has to meet his employer's expectations. The employer herself is interacting with other agents such as other teams, sponsors, spectators, media, and regulating bodies like governments or sports associations. Each interaction can be modelled within a game-theoretic framework. Addressing the use of PED within these interactions leads to a principal-agent setup as the athlete and/or the team have an information advantage over the other actors on the true amount of drugs used. In addition, incentives resulting from one of these relations might be in conflict with those from other relations. To address these different levels of interaction Bette and Schimank

(2001) have provided a multi-layer-principal-agent approach to make the conflicting interests explicit. The structure they provide is depicted in Figure 1. It shows the amount to which PED use is a systematic issue as it points to the fact that it is not only the athlete who is involved in the decision to use PEDs but actually a number of agents each facing a different decision problem. Therefore, direct interaction between the athletes is still an issue but it needs to be embedded into a frame of interactions with and between employers, sports associations, and the audience (possibly via media or other mediating agencies).

Bette and Schimank have provided a detailed description of objectives of all actors in this multi-layer game. They have, however, focused on sport associations and their relation to other actors. Other authors in this field have emphasized the role and interests of other players - examples here are Reed (2003), Desbordes (2006), Jeanrenaud (2006), and Jeanrenaud and Késenne (2006), Bette and Schimank (2006) for an analysis of the role of mass media and Rebeggiani and Tondani (2008) for an analysis of sponsorship in professional sports. Independent of the depth of their description of individual objects, all these analyses share a certain perspective on the PED game: While media, governments, associations, sponsors, etc ascertain in public that they prefer “clean” sports, they have a hidden agenda that favors drug use under certain circumstances as long as it stays hidden. Athletes and Sports teams in these models usually have a rather simple structure: They are interested in their personal income (either short- or long term) and they might enjoy the act of winning in itself.

In none of these explanations do physicians play a significant role. However, as Hoberman (1992, 2002) has pointed out, their involvement into PED use can be dated back to at least the 1890s. While the first documented incidences are the result of decisions by an individual physician-patient team, the role of doctors has become a systematic one with the rise of professional sports the latest.<sup>3</sup> This view on the role of physicians in sports has been

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<sup>3</sup>The political dimension of international sports competitions – even if they were am-

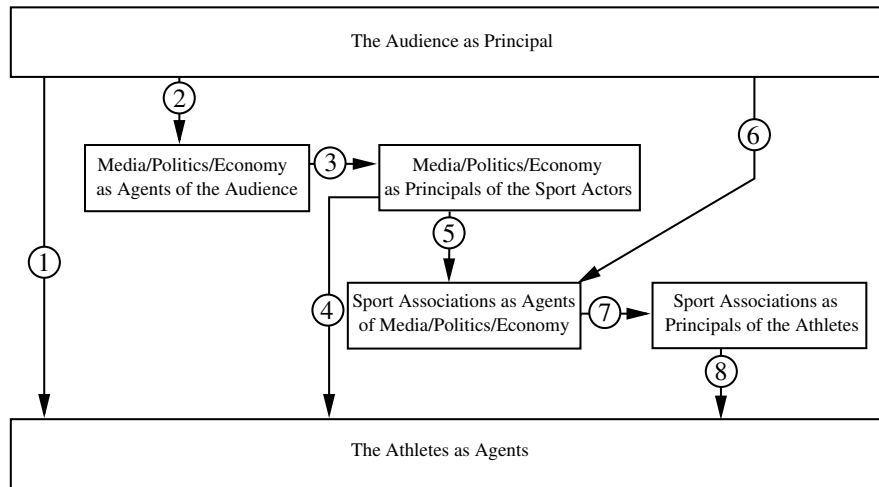


Figure 1: The PED-game

*The audience as principal faces the athletes as its agents. Partly, it expresses its expectations of performance in a direct way – e.g. through applause or booing in the stadium (relation 1) – or executes its influence on the athletes in an indirect way. The support of media/politics/economy for elite sport is mainly dependent on the amount of attention of the public and hence the exploitability of elite sports. These actors within the sports system’s environment are thus agents of the audience (relation 2). Thereby, at the same time, they become intermediating principals of the sport actors (relation 3). They partly take up this position towards the athletes – e.g. through direct contacts of sponsors with athletes (relation 4). Or else, sponsors from media/politics/economy influence in the function of principals sport associations (relation 5) e.g. by allocating or taking away scarce resources. At the same time, associations are influenced directly by the public, which manifests itself in the level and changes of attention and public prestige (relation 6). Both kinds of environmental influence turn associations into agents – as a consequence they have to act as intermediating principals towards the athletes (relation 7). In fulfilling this two-fold function, sport associations pass on internal expectations of performance as well as those expectations to succeed that are addressed to them by media/politics/economy and in the end by the public (relation 8).*



controversial through the last decades. One still open general question is if sports medicine is actually a field of medicine – given that athletes do not need a treatment of a health problem but demand support in improving their performance. However, since PED use has spread out in professional and amateur sports, some argue that the role of physicians in this game is to prevent injuries and other severe health problems (which is called the lesser-harm approach). The ethical challenges following from this view are obvious and Dunn et al. (2007) describe these challenges. A number of publications claim that it is only a wrongly led margin of physicians who support PED use. McNamee and Phillips (2009) state that it is not the norm that healthcare professionals engage in doping and the German association for sport medicine and prevention (DGSP)<sup>4</sup> published in 2007 an anti-doping statement in which they refer that the majority of sport physicians work responsibly. Hoberman (2002) and Waddington (2000, 2012) are among those who have focused their analysis on doctor’s systematic involvement. However, both authors pay attention to rather idiosyncratic factors within the systematic approach. Hoberman (2002) analyzes the (ex-post) rationalizations of physicians who prescribed PED to explain how utility functions of doctors who were involved differ from those who were not. Waddington (2012) focuses on the fact that the systematic pressure leads doctors to decisions that are irreconcilable with ethical rules following from the Hippocratic oath. We agree to the view expressed in this analysis that it is an important objective for the regulation of sports medicine to provide rules that make doctors comply to the Hippocratic oath.

To that end it is necessary to understand the incentives that influence doctor’ decision making. The approaches taken by Hoberman and Waddington implicitly assume that physicians’ interests are to a high degree vested with either the athlete or the team – where in modern professional sports it will typically be the team. We extend this view by assuming that physicians

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ateur centered – has also contributed to this development see Hoberman (2002), and Waddington (2000).

<sup>4</sup>Deutsche Gesellschaft für Sportmedizin und Prävention.

are players on their own in the complex system of interactions provided by Bette and Schimank.

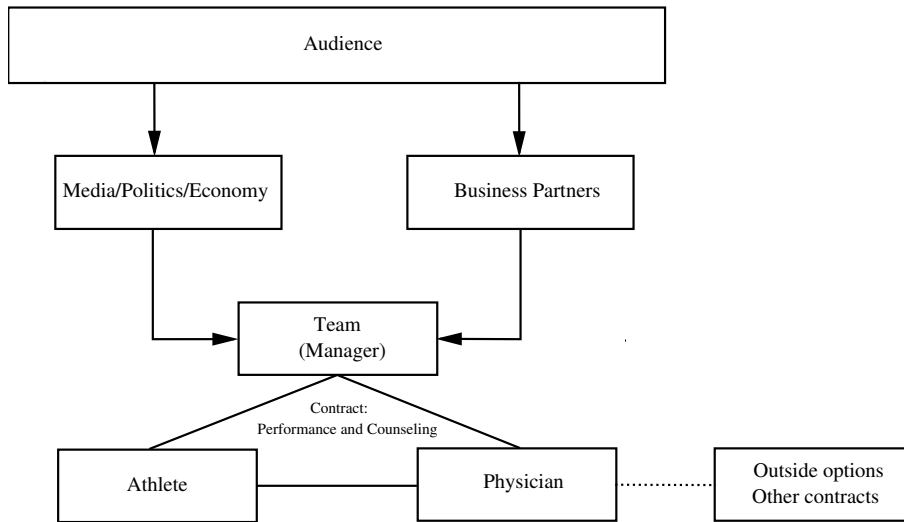


Figure 2: The enlarged PED-game

### 3 Physicians as players in the PED game

To include physicians into the network of relations we also need to explicitly state that the athlete is a member of a team. Thus, we enlarge Bette and Schimank's scheme from Figure 1 by the team hiring the athlete (represented by the team manager) and the physician who is assumed to be an employee of the team and is in charge of medical counselling to the athlete. Why the physician should be part of the team and not a private consultant of the athlete, will be discussed within the model analysis. The remaining players and relations are unchanged to Bette and Schimank's model. This enlarged structure is depicted in Figure (2).

We are interested in understanding the incentives and behavioral options that result from this constellation with respect to PED use. Therefore we represent the interaction between the three players within the team – manager, doctor, athlete – in more detail. We start by formulating the institutional frame that curbs their decision alternatives.

Reducing the complex interaction of media, politics, sponsors, and audience to two basic impact factors, we assume that the team’s revenue as well as the athlete’s income from team-external sources increase in athlete performance, where performance is measured as the athlete’s success in competition.<sup>5</sup> In addition, the outside players are interested in seeing clean sports and, therefore, impose severe sanctions if the athlete is caught using PED; here, we assume that the means to identify PED use and the expected sanctions are known to all team members before they make their decisions. This design of sanctions works in the same way independent of the “real” interests of the outsiders, that is, if they actually want to avoid PED use or if they do not care about PED use but want to comply to a social norm that despises of drugs. This difference influences the relative size of the sanctions and the design of the detection mechanism. As we assume that both are known at the beginning of the game between manager, doctor, and athlete, these are parts of a bigger game that aims at answering a different question than the one approached here.

Thus, performance-based pay and PED-related sanctions fully define the revenue of the team manager and parts of the athlete’s remuneration. In that we model the team manager as a principal in a double principal-agent relationship between the manager and the athlete, on the one hand, and the manager and the physician, on the other hand. Here, we assume that the team manager pays salaries to the athlete and the physician. We are mainly

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<sup>5</sup>That this simplification is not too farfetched can be seen from a statement made by the German chef de mission at the 2012 Olympic summer games, Michael Vesper. He stated in reaction to discussions on the German rank in the medal count that future public support for athletes – which is, essentially, most athletes’ income – should be based on competition-oriented performance measures (see, for instance, Spiegel Online 2012).

interested in the physician's role in this triad of relations. To fully understand this role, we need to explain, why the team manager is interested in including the physician, how information on PED use is distributed between the three actors under consideration, and how the remuneration-mechanisms for physician and athlete are designed. All three aspects of the game depend on individual objective functions and on the set of decision alternatives the actors face.

The team manager reacts to the expectations expressed by the outsiders in the design of performance measure and sanction. Her aim is to design a team structure and remuneration mechanisms that maximize her long-term payoff. Therefore, it is necessary for her to implement a system that maximizes the athlete's success *subject to the condition that* she has proven to the public that she prevents PED use by any means. This latter condition can hardly be met if the athlete is in charge of the PED choice himself. For, if he gets caught using PED, the general assumption will be that the team manager must have known about this use as she is in direct relation to the athlete. The manager can cut this direct connection by employing a physician who is explicitly in charge of monitoring the athlete's health – which includes steering clear from PEDs. This inclusion of a costly intermediary has two benefits to the manager. She can commit on not knowing if the athlete has used PEDs which reduces her personal share in any sanction that might be imposed – as the physician will be a scapegoat in case of a detection; in addition, she gains a means to communicate to the public her strong interest in preventing PED use while being able to fit the remunerations of both, the physician and the athlete, such that using PED is a reasonable option for them. The mechanism the team manager can implement for the athlete as well as the physician has two parts: A monetary part and a real-world part. Typically, a contract will consist of a performance-based pay scheme, a set of sanctions in case of non-compliant behavior (if PED use has been detected) for each athlete and each physician and a set of monitoring rules. As it is important for the manager, not to be part of everyday activities (to keep

up her veil of ignorance), all she can do here, is to ask for reports and test results.<sup>6</sup>

The athlete is also interested in income which includes performance-based pay as well as expected sanctions. In addition, the athlete accounts for a health cost associated with PED use. However, in line with the literature, we assume that athletes underestimate the true health costs and consider them as a negligible entity in the athlete's utility function. The athlete reacts to his remuneration from outside sources and from the team by choosing a training intensity and (in consultation with the team physician and a private doctor he might employ besides his team doctor) a level of PED-use that maximizes his utility. The focus of our interest is not on the athlete's reaction to the manager's mechanism. It suffices to say that outside remuneration and the system the manager will implement – that will also consist of performance-based pay and a sanction in case of a PED-use detection – provide incentives that point into the same directions and determine training intensity as well as drug use.<sup>7</sup>

Now, to turn to the physician's role within the team, we describe his utility structure and his set of alternatives. As Hoberman (2002) and Waddington (2012) have pointed out, it will be a special group of physicians who accepts working for a sports team at all as it is very likely that difficult medical decisions (either concerning PED use or other conflicts of interest between the team and the athlete) will have to be made. However, beyond the acceptance decision we would like to keep the model as broad as possible and abstain from any special assumptions on the physician's utility function and assume that he is like the manager and the athlete interested in his long-term income. Yet, in his case, the long-term income has a bigger reputation

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<sup>6</sup>These need to be provided by physicians and athletes together and, therefore, leave space for joint faking. This possibility enlarges the set of strategies for athlete and physician largely but does not add to the analysis we are interested here. Therefore, we do not discuss this option any further.

<sup>7</sup>A companion paper by Robeck (2013) analysis the athlete's incentives within a theoretical principal-agent model between the manager and the athlete.

aspect and a stronger connection to outside options than for the other two players.

While athletes are typically very young in their professional years, have not formed strong ties outside sports, and will have a second career outside (active) sports after being a professional athlete,<sup>8</sup> sports physicians are only able to be a productive source of medical knowledge for a team if they have invested in their education and experience for a long time. This holds particularly true for those sports where PED use is an important issue. For, independent of the question if the physician is employed to actually prevent PED use (which we do not want to exclude upfront) or if his task is to support PED use but to be a backup for the manager, he needs a sound knowledge of up-to-date PED techniques. For, he will either have to implement PED use in a way that is technologically ahead of the control mechanisms installed to detect drug use or he needs to be able to detect PED use in an athlete that might have decided on drug use on his own or by help of a privately employed doctor. In any case, it is reasonable to assume that the team physician is a top-notch expert in sports medicine. This is in line with Waddington's (2000, p. 147) observation that physicians involved in early research on – and use in sports of – blood doping “were highly reputable sports physicians working within the mainstream of sports medicine, and their research was published, not in underground publications which circulated illicitly but in the mainstream journals in sports medicine”.

This feature has a number of consequences. For one, it means that the physician has a source of income and reputation that is rooted in a life external to the team and that is at stake in case of a detected PED-abuse case. Yet, in addition, we have to account for the way how reputation is built in this world outside sports.

These ties to other parties are different for physicians who are academics than for those who are practitioners. Practitioners can be (and often are) freelancers that work for other patients in addition to their engagement for

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<sup>8</sup>e.g. Bette and Schimank (1994, 2006)

a sports team. If they supervise athletes and teams successfully, they will gain reputation in this bigger market. The success is a signal for other athletes, teams, other physicians, or people from a wider audience that these physicians do a good job. “Success” does not necessarily mean PED use as it also covers therapeutical treatment in general. However, as Hoberman (2002, p. 204) has pointed out *“the difference between therapeutic treatment and performance enhancement can be very difficult to define for physicians as well as athletes”*. For practitioners there are for sure two ways to gain a reputation outside their team. As the case of Eufemiano Fuentes – who was as then physician of the professional bicycling team “Liberty Seguros” involved in a major blood doping scandal – shows, one way to gain expertise and reputation, is to invest into specialized knowledge in PED technologies. Thus, the activity outside the team intensifies the incentive to work with PED; the structure, however, is the same: Success in the sense that patients are more successful in competition increases the remuneration while getting caught is expensive as it damages all income sources.

As the commission’s report has shown, both physicians involved in the Team-Telekom PED abuse were researchers embedded into an academic environment. Thus, to attract research funds and presumably access to data from an external source was not only prestigious for the two doctors themselves and their immediate workgroups. It also helped their university to build a reputation as a strong academic institution. Long-term work with a group of professional cyclists allows to create a big data basis that helps to understand how PED use as well as general nutrition and training impact on athlete performance and how PED use can be detected. In consequence, the external connection created a valuable resource beyond funds as it provided data for scientific publications. Certainly, no university official, who encourages academics to attract external funding and to gain access to unique data, knowingly aims at unethical behavior. Yet, the incentive structures in academia and the performance measures applied to academic institutions as a whole do not support scientists who are on the brink to morally hazardous

behavior to stay on the right track.

Another possible consequence of a reputation as an expert for PED detection is that, as has happened in the case of the Freiburg doctors, anti doping agencies want to hire their expertise. These further engagements worsen the incentive situation for the physician badly. For, in addition, to attaching new performance measures that direct into the same direction as the above mentioned ones, these contracts change the informational structure of the game drastically. For, now the physicians do not choose their actions within their team according to a given set of rules – that is, according to a known set of standards of compliant behavior and a known set of consequences in case of non-compliance. Instead, they can influence the rules for their own game themselves. Being the experts on PED technology, they are the ones to tell the anti-doping actors which treatments to ban and which detection methods to use. In consequence, they are always one step ahead of the monitors. To withstand such a temptation needs a strong mind.

Returning to the team manager's mechanism design problem, we find that she has to account for a number of uncontrollable variables. She can encourage abstaining from PED use by imposing harsh sanctions in case of a detection on both the athlete and the physician and implement a work environment that promotes drug free sport and leaves only little space for secret PED activities on the athlete's side. However, such a behavior would not see encouragement from the public as a number of authors have already shown. In addition, she faces the problem that a sport physician has a decision space that is not only influenced by her mechanism but also by his options outside professional sports.

Again, she could curb these options by not hiring physicians that are involved in academic research or are working for anti-doping agencies. But such a behavior would be clearly against her interests. As the case of Team Telekom and Freiburg university hospital has shown, there is a clear mutual benefit. By contracting not only two doctors but a well-reputed research institution that was seen in the public as a neutral agent and by making ties



– even if indirect ones – to anti-doping agencies, the Team could credibly communicate its interest in preventing PED use. That the incentives following from these structures did not work against PED use was hard to see from the outside.

## 4 Conclusion

This paper has focused on the role of physicians in PED use. It has pointed out that doctors are relevant decision makers and that their influence is of a systematic nature and should not be treated as a fringe phenomenon. However, Bette (2008) has argued that athletes and teams, while of course responsible for their actions, are not the only sinners in an otherwise “clean” system. We follow his stance by pointing out that physicians are as well decision makers in a system that leaves them much too much deliberation and, thus, leads to unwanted PED use.

The network of sports team, academic institution, national sports association, and anti-doping agencies revealed in the commission report on PED use in Team Telekom has pointed to a major shortcoming in professional sports: The monitoring system itself produces incentives that enhance PED use instead of curbing it. For one, it seems incredibly foolish of a monitoring agency to hire experts that are tied to an entity that is to be monitored. This failure can easily be corrected by employing rules on the regulators part not to hire personnel with possible conflicts of interest. In addition, there is a problem that is known from market regulation. To be able to distinguish compliant from non-compliant behavior and to derive methods to do so, regulators need experts. These experts have a deeper knowledge on the subject to be regulated than the regulators and might have interests that are not in line with those of the regulators (which might, in addition, not be as pure-hearted as they claim to). So, who regulates the regulators?

In sum, the paper has shown that monitoring activities and the design of PED regulation should not only focus on teams and athletes but also on

the physicians involved. It has also pointed to a structural difference between physicians and other players involved in the game. How this difference impacts on the system in detail has to be addressed in future research.

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