ATTACHMENT **A.2**

TO THE AFFIDAVIT OF JÖRG JAKSCHE

Final Report

of the Expert Commission investigating the accusations of doping against doctors in the Sports Medicine Department of the Freiburg University Clinic

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List of abbrieviations

AIMS Doctors' notes to monitor patient and athlete flows
AMG Arzneimittelgesetz [Medicinal Products Law]
ATE Abbreviated Therapeutic Use Exemptions
BDR Bund Deutscher Radfahrer [German Cycling Federation]
BKA Bundeskriminalamt [Federal Criminal Police]
BMI Bundesministerium des Innern [Federal Ministry of the Interior]
DGSP Deutsche Gesellschaft für Sportmedizin und Prävention e.V.
DSB Deutscher Sportbund [Sports Federation]
EPO Erythropoetin, Epoetin
FDA Food and Drug Administration
GOÄ Gebührenordnung für Ärzte [Ordinance on Doctors' Fees]
Hb Haemoglobin
HGB Handelsgesetzbuch [Code of Commercial Law]
IAT Leipzig Institute of Applied Training Studies
IfSS Institute for Sport and Sports Science of Karlsruhe University
NADA National Anti-Doping Agency
MCHC medium corpuscular haemoglobin concentration
NSSG Neue Straßen Sport GmbH
NOC National Olympic Committee
OLC Olaf-Ludwig-Cycling GmbH
QM Quality Management
TFG Transfusionsgesetz [Transfusion Law]
UCI Union Cycliste Internationale
UKG Gestetz über die Universitätsklinika Freiburg, Heidelberg, Tübingen und Ulm (Universitätsklinika-Gesetz – UKG) [Law on Freiburg, Heidelberg, Tübingen and Ulm University Clinics, (University Clinics Law – UKG)]
WADA World Anti-Doping Agency

Summary

1. Scope of the investigation

On 15 May 2007, in agreement with the Albert-Ludwig University in Freiburg, Freiburg University Clinic set up an expert commission to investigate accusations of doping made in the press on 30 April 2007 against doctors of the Department of Rehabilitative and Preventive Sports Medicine. The accusations made were soon confirmed. On 23 May 2007, the doctors Professor Schmid and Dr Heinrich submitted written declarations that during the nineties they had been involved in doping cyclists by administering Epoetin (Erythropoetin or EPO). As a result, the University Clinic immediately dismissed both doctors. On 29 May 2007 the sports medicine doctor Dr Georg Huber admitted prescribing testosterone to individual U23 road race cyclists between 1980 and 1990. The University Clinic also suspended him from his duties.

Following its establishment on 31 May 2007, the Commission started its investigation. A total of 77 people were heard at 25 sittings: 37 of them were current and former employees of the Department of Rehabilitative and Preventive Sports Medicine, 7 were current and former employees of other University Clinic establishments, 1 was from the Central Public Relations Office of the Albert-Ludwig University in Freiburg, 12 were cyclists, 13 were witnesses from the racing squads and sponsors of Team Telekom and Team T-Mobile, there were 6 experts and expert witnesses, and 1 further witness.

On 17 March 2008 the Commission filed an Interim report giving the initial results of its investigation. After assessing large amounts of additional information, by working with the Federal Criminal Office (BKA) and the Freiburg Public Prosecutor and with valuable advice from journalists, the Commission is now in a position to present its final report.

2. Doctors accused of doping

Doping with medicinal drugs

Systematic EPO doping of Team Telekom under the medical guidance of Professor Andreas Schmid and Dr Lothar Heinrich began during a training camp in Mallorca in January 1995. The doctors took the preparations to competitions or sent them by express mail, transport companies or IC courier to the addresses given by the riders. The cyclists generally paid Dr Heinrich in cash for these supplies. In some of the consignments mailed by Dr Heinrich the shipping costs were even paid using the external funding for "Doping-free Sport". In addition to EPO, glucocorticoids (cortisone preparations) and growth hormone (somatropine), were other preferred drugs used by Team Telekom as early as 1994. The doctors' contribution to glucocorticoid doping was by issuing the necessary certificates of exemption.

Contrary to their statements, Professor Schmid and Dr Heinrich were also involved in doping after 1999. Witness statements have proved that in 2003 and 2004 the two doctors also supplied EPO, cortisone preparations and growth hormone to Team Telekom cyclists. At Professor Schmid's request, no names of doctors or other

cyclists were mentioned as regards doping agents. A longitudinal analysis of 58,800 blood samples investigated by the Freiburg University Clinic central laboratory at the assignment of the Department of Rehabilitative and Preventive Sports Medicine over the period 1995 to 2007 provided further evidence of doping manipulation. The data show a distinctly high incidence of laboratory values for haemoglobin, haematocrit and reticulocytes among Telekom/T-Mobil cyclists, which in connection with other sources indicate to the commission that doping with EPO preparations or blood doping took place up until 2006 inclusive.

Dr Heinrich's written statement provided by his lawyer of 11 January 2008, claiming that he "was integrated into a system that probably already existed, and which he had neither initiated, nor directed or controlled", and for which he was therefore not responsible at that particular point in time", has been disproven. According to the statements of the cyclists, he had already been fully integrated into the doping system as early as the 1995 racing season, and soon became the local doctor in charge.

Doctors' sources of drugs for doping

Some of the doctors from the Department of Rehabilitative and Preventive Sports Medicine involved in caring for the cyclists of the T-Mobile racing team obtained most of their drugs over the period 29.12.2005 to 28.04.2007 from the Rathaus pharmacy in Elzach. A supplement of 10% was paid on the pharmacy's cost price of these drugs in addition to VAT at the applicable rate at the time, which according to one of the reports commissioned by the Commission is incorrect for prescription-only drugs. The invoices for the drugs include conspicuously frequent quantities of glucocorticoids, iron preparations and medical equipment not itemised in greater detail, but which is the most costly item at 3,837.51 EUR. Totalling up medical equipment without listing the items is contrary to the normal trading practice of public pharmacies, and leads to the suspicion that it was used to pay for drugs which had not been listed. If this was used to cover payments for drugs used for doping, the sum would, for instance, have sufficed to pay for 114 individual doses of 2000 units of EPO, enough to keep 16 cyclists effectively doped with EPO for three weeks.

The quantity of iron preparations supplied (Ferrlecit®, Kendural® C) is also, at a total of 3,458 daily doses, unusually high for the period in question. This would be enough to supply 10 patients with iron deficiency anaemia with a fully-effective dose of iron for a whole year. It is known from court cases that one of the main reasons for giving cyclists such huge amounts of iron is to stimulate the blood formation induced by EPO. Non-indicated use of iron preparations is associated with significant risks (e.g. haemochromatosis, liver cirrhosis). These drugs, and particularly injecting iron preparations, ought therefore to be included in the WADA list of prohibited substances.

Other unusual supplies of drugs relate to two receipts from a pharmacy in Milan for identical sums of 2,057.65 EUR, which Dr Heinrich had submitted to the Olaf Ludwig Cycling GmbH squad for payment. The first receipt does not name any drugs, while the second mentions four drugs commonly used by cyclists. An expert report concludes that the second receipt was forged so that the drugs listed could be reimbursed without any problems.

Autologous blood doping and the associated risks

In January 2006, Dr Heinrich took around half a litre of blood from Patrik Sinkewitz in his surgery at the Freiburg University Clinic. He then took new blood, and reinjected the blood previously taken at approximately one-month intervals. On Sunday, 2 July 2006 Professor Schmid, again in his surgery at the University Clinic, reinjected the three cyclists Patrik Sinkewitz, Matthias Kessler and Andreas Klöden with their own blood. In Patrik Sinkewitz's case, the transfusion had to be interrupted twice because the blood in two of the bags used had clotted. Professor Schmid then let Patrik Sinkewitz and the other two cyclists return to Strasbourg with no further supervision, where the Tour de France was continuing the following day. This is in gross violation of a doctor's duty of care, and blatantly infringes the measures that are required to be taken by law following blood transfusions in transfusions such as these. In effect, Professor Schmid had blithely accepted the fact that the cyclist had been exposed to the risk of severe complications in the form of septic shock or a lung embolism with possible fatal consequences.

It can be assumed with respect to the blood samples analysed by the Freiburg University Clinic on 9 and 14 July 2006, of which only a small proportion had been assigned to riders, the rest being assigned to Team Mobile assistants, that because of the very low reticulocyte count of 0.2% to 0.4%, the samples stated as being provided by the team assistants were very probably registered under a false name, and actually originated from the cyclists. The suspiciously low reticulocyte counts measured in the majority of samples on these two days indicate the possibility of blood doping manipulation.

Financial gain as a possible motive

At least from 2004 to 2006, a not insignificant financial gain arises as a motive for the doping activities of the doctors accused of doping. There were private contractual agreements in place between Dr Heinrich and the Olaf Ludwig Cycling GmbH and Neue Straßen Sport GmbH racing teams. Olaf Ludwig Cycling GmbH paid Dr Heinrich a fee of 60,000 EUR for the year 2006. When the NSSG took over the racing team, it is evident that Dr Heinrich succeeded in doubling his annual fee for 2007 to 120,000 EUR by taking on additional activities, including establishing and running an anti-doping programme. However, no other doping activity can be established for this period; on the contrary, NSSG had introduced a stringent anti-doping programme. Dr Heinrich failed to obtain proper permission for these secondary activities. The subject of the contract was services as team doctor to Team T-Mobile, although the provision of medical care for the cyclists was already within the duties of doctors from the Department of Rehabilitative and Preventive Sports Medicine under the contracts between the Freiburg University Clinic and various squads of Team T-Mobile. As a result, there is a violation of the restraint on competition pursuant to paragraph 60 of the HGB [Code of Commercial Law]. There are also documents for Professor Schmid showing payments without a regulation authorisation for additional activities.

Doping accusations against Dr Huber

On 29 May 2007, Dr Georg Huber admitted that in his capacity as federation doctor of the German Cycling Federation (BDR) from 1980 to 1990, he had given individual

U23 road cyclists the performance-enhancing hormone testosterone in order to neutralise an "imbalance" in the recovery phase he had found by way of medical tests. No explanation of the side effects and dangers was provided.

Two striking points arise from the documents on the care provided to the athletes by Dr Huber. In 2000 he asked the UCI for a certificate of exemption for Patrik Sinkewitz for elevated haematocrit levels, which the UCI refused. A "positive" doping test for the same cyclist for the local anaesthetic benzocaine was explained by Dr Huber as being due to a throat infection for which he had taken lozenges, which the BDR accepted with no further queries.

3. Possible Involvement of the Rehabilitative and Preventive Sports Medicine Department in the established doping activities of the doctors accused of doping

Professor Keul

There is no evidence that Professor Keul as head of the Department of Rehabilitative and Preventive Sports Medicine was actively involved in the doping activities of the doctors Professor Schmid and Dr Heinrich or indeed Dr Huber. It is, however, certain that Professor Keul did approve the controlled use of performance-enhancing substances, and that he was always available when the use of doping substances had to be played down. His interest in the possibilities of using drugs to influence physical performance goes back to 1976. This attitude to the use of drugs to enhance performance in competitive athletes was in tune with the general attitude of renowned public institutions at the time. The Commission is of the opinion that Professor Keul's basic attitude, combined with lack of procedural controls in the department, encouraged the doping activities of Professor Schmid, Dr Heinrich and Dr Huber.

According to a report by the internal audit department of Freiburg University Clinic, Professor Keul failed to adequately declare or account for external funding, both assigned and unassigned, or for private liquidation income from inpatient elective sports medicine services and outpatient sports medical treatment up to the point of his death. It was only when the Department of Rehabilitative and Preventive Sports Medicine was taken over by the head of the Commission Professor Berg in July 2000 that order was brought to the various accounting procedures. The Professor ensured that all externally funded projects were run by the university's external funding administration and subjected to the normal control mechanisms.

Professor Dickhuth

There are no grounds for believing that Professor Dickhuth was in any way involved in the doping activities of Professor Schmid and of Dr Heinrich and Dr Huber. It should, however, be assumed that the mention of the active involvement of his department in doping activities among professional cyclists was avoided. The Commission also found that Professor Dickhuth on taking charge of the department, instituted numerous organisational measures to make the activities of individual working groups, the patient registration system and the drugs ordering system, as well as access to examination rooms and outpatient activity much more transparent. When Professor Dickhuth took over the department, there was nothing to indicate that the sponsorship agreement with Team Telekom should be immediately terminated, which

would have been the only way of preventing further doping by the doctors involved. Due to the lack of evidence of doping activities by the doctors, doing so would have exposed the University Clinic to the risk of being held liable for breach of contract with Telekom.

After the thorough re-organisation of external funding administration by the University Clinic and Professor Berg in 2001, when Professor Dickhuth started his employment in Freiburg on 16 February 2002, he was taking over a properly functioning system. No more irregularities in accounting for funding occurred after that.

Professor Dickhuth's scientific publications similarly show no evidence of his approving of doping agents or other illegal methods of enhancing performance. Instead, Professor Dickhuth has often been critical of doping in sport and has frequently promoted anti-doping activities. He has, amongst others, promoted stricter methods for combating anabolic abuse, as one study showed that about half of the anabolic steroids used had been prescribed to amateur athletes by doctors and reimbursed by the health insurance funds.

Other doctors and staff

The recurring rumours that other medical and non-medical staff of the Department of Rehabilitative and Preventive Sports Medicine were involved in the doping activities of Professor Schmid, Dr Heinrich and Dr Huber or covered up doping activities have not been confirmed.

Two further assistant doctors from Sports Medicine received supplementary payments, declared as travel costs, from Olaf Ludwig Cycling GmbH in performance of their duties. They also charged and received additional expenses for "VIP hospitality". In two cases filed with the Stuttgart and Freiburg employment tribunals, the Land of Baden-Württemberg came to conciliation agreements with the doctors on reimbursing the payments received. In one case, an out-of-court settlement was reached.

4. Possible sponsor involvement in the activities of the doctors accused of doping

The Commission has no reason to believe that the two main sponsors of Team Telekom/T-Mobile were involved in the activities of the doctors accused of doping. The statements of the Telekom/T-Mobile managers did not add anything to the investigation into doping activities in the team. The sponsor, aware of the general issue of doping in cyclists, tasked the Freiburg University Clinic with looking after the team in such a way as to absolutely ensure that doping problems are excluded. The sponsoring agreement was not ended as the doping scandals increasingly came to light, but only when public opinion changed, and Team T-Mobile was no longer capable of enhancing its corporate image.

5. Recommendations on preventing and combating doping at the Freiburg University Clinic

The main means of preventing doping activities by doctors is, in the Commission's view, to restrict the medical care of competitive athletes by doctors to measures within the University Clinic. Other doctors should provide care during competitions and at training camps. Any drugs should be ordered exclusively through the clinic pharmacy.

As regards financing, the manifest deficits in external funding administration have been resolved since the thorough shake-up of the University Clinic administration by Professor Berg in 2001. To prevent infringements of the secondary employment regulation in the future, the University Clinic could build an exclusion clause into agreements with private external funding donors or other sponsors preventing them from entering into simultaneous agreements with University Clinic staff. The University Clinic has stated that contractual relationships between doctors and external donors have now been arranged so that doctors can no longer claim travel costs of this kind.

1. Remit and course of the investigation

1.1 Remit of the investigation

The Inquiry Commission investigating the doping accusations against doctors of the Department of Rehabilitative and Preventive Sports Medicine was set up by the Freiburg University Clinic on 15 May 2007 in agreement with the Albert-Ludwigs University in Freiburg. The original investigatory remit of the Commission, upon its creation, was to examine and evaluate the doping accusations made by Jef D'hont in the news magazine *Der Spie*gel on 30 April 2007 against two doctors from the Freiburg University Clinic, Dr Lothar Heinrich and Professor Andreas Schmid. Jef D'hont was employed as a masseur from 1992 to 1996 by the cycling team "Team Telekom".

The investigatory remit was then extended on 22 May 2007 to conducting the investigation for an indefinite period of time, in order to establish all the facts related to the accusations. On 23 May 2007, the doctors Professor Schmid and Dr Heinrich submitted written declarations that they had supported or aided in doping cyclists by administering Epoetin (Erythropoetin or EPO).

On 29 May 2007 the sports medicine doctor Dr Georg Huber, admitted prescribing testosterone to individual U23 road race cyclists between 1980 and 1990. For this reason, the University Clinic and the University asked the Commission to also look at these facts and circumstances, and to examine whether and to what extent Dr Huber was involved in doping practices.

From the moment it began work on 31 May 2007, the investigations of the Commission were aimed at reconstructing how the doping admitted to by the doctors and cyclists was carried out and organised. Accordingly, the investigations undertaken by the Commission also relate to the structure and organisational processes in the Department and the University Clinic, as well as cooperation with the cycling teams. Financial aspects are therefore also included. At the instigation of the University Clinic Supervisory Board in November 2007, the Commission will also give its views on the financial administration.
It is not for the Commission to perform a scientific method analysis of the performance of the Freiburg Sports Medicine Department in the areas of patient care or research and teaching. The task of evaluating Freiburg Sports Medicine was entrusted to an independent Evaluation Commission set up by the Rector of Freiburg University on 22 June 2007.

1.2 Course of the investigation

After its constituent session, on 31 May 2007 the Commission started its investigations. A total of 77 people were heard at 25 sittings: 37 of them were current and former employees of the Department of Rehabilitative and Preventive Sports Medicine, 7 were current and former employees of other University Clinic establishments, 1 was from the Central Public Relations Office of Albert-Ludwig University of Freiburg, 12 were cyclists, 13 were witnesses from the racing squads and sponsors of Team Telekom and Team T-Mobile, there were 6 experts and expert

witnesses, and 1 further witness. Some witnesses were heard more than once by the Commission.

Despite invitations being sent out, the proprietor of a pharmacy, a coach of the Germany Cycling Federation (BDR), a doctor formerly involved in transfusion medicine, and the cyclists Kessler, Klöden, Ullrich, Baumann, Burkhart, Gerdemann, Greipel, Klier, Korff, Ludewig, Pollack, Schreck, Wesemann and Ziegler did not appear at the hearings, and at least in one case the invitation is known not to have reached its addressee.

In its interim report of 17 March 2008, the Commission presented the result of its work so far. The focus of this was the doping practices of the doctors accused and the question of the extent to which other staff members of the Rehabilitative and Preventive Sports Medicine Department actively contributed to the doping practices. Extensive information was already available on the doctors Professor Andreas Schmid and Dr Lothar Heinrich. With regard to Dr Georg Huber, the basis of the information up to the interim report was far narrower.

By assessing the large amounts of additional information obtained subsequently, and on the basis of its collaboration with the Federal Criminal Police (BKA) and the Freiburg Public Prosecutor and with valuable advice from journalists, the Commission is now in a position to present its final report. The structure of the Interim report of 17 March 2008 was used as a basis for this, with the final report incorporating all the new findings into the text.

2. Doctors accused of doping

Despite its best efforts, the Commission was unable to obtain further concrete information from the doctors Professor Andreas Schmid and Dr Lothar Heinrich. They pleaded that this was unreasonable as long as the investigations by the public prosecutor were in progress. The two following sections therefore largely repeat the findings set out in the interim report of 17 March 2008.

2.1 Professor Andreas Schmid

Professor Andreas Schmid had been working in the Sports Medicine Department since 1988. After obtaining his licence to practise in 1987, he performed his civilian service there, and in 1988, became an assistant in the Department and so took over the function of team doctor for "Team Stuttgart". After a change of sponsor, this professional cycling team, which was founded at the end of the 1980s, became "Team Telekom", and then from 2004 to 2007 "Team T-Mobile". Professor Schmid served as team doctor for the professional cycling team continuously from 1988 until his suspension in May 2007. In a letter of recommendation in 2002, team manager Walter Godefroot wrote that the continuity in his medical treatment of "Team Telekom" had been extremely effective and successful. Further collaboration with Professor Schmid would be "extremely desirable for us in the future". Since 1989, Andreas Schmid had also been a federation doctor for the German Cycling Federation (BDR), and from 1996 until 2006 looked after the elite riders (professionals) at world championships and the Olympic Games.

During his time in the Sports Medicine Department, Andreas Schmid obtained a doctorate in radiology in 1990. In 1999, Professor Schmid became an internal medicine consultant. In February 2001 he obtained his postdoctoral qualification in internal medicine and obtained the Venia Legendi [university teaching qualification] for internal medicine. Further training for recognition in the additional area of sports medicine took place in 1998. Having become clinical attending doctor of the Physiotherapy Section of the Medical University Clinic in 2000, he was then promoted in 2001/2002 to attending doctor, senior attending doctor and chief attending doctor of the Sports Medicine Department. In an unscheduled promotion in 2003, Associate Professor Schmid was made Professor. In agreement with the Institute for Sport and Sports Science of Karlsruhe University (IfSS), thanks to a cooperation agreement between Freiburg University Clinic and Karlsruhe University, from December 2006/January 2007 until his suspension, Professor Schmid was given a part-time post at Karlsruhe University, and worked as a sports medicine specialist at the IfSS. At his request, in 2004 Freiburg University Clinic granted Professor Schmid authorisation, to take on secondary employment, working as an adviser in high level sport for five years. According to him, the remuneration received from the clients, e.g. Team T-Mobile, was 5,000 Euros a year. This work was said to occupy him for five hours a month.

On 23 May 2007, the University Clinic dismissed Professor Schmid without notice. Prior to this, Professor Schmid had admitted doping activities in a personal declaration made to the Clinic Board via his lawyer. In the key passages, he states:

> "I admit to having supported the doping of individual professional cyclists since the mid-1990s. Upon request, I gave the riders access to doping substances, in particular EPO. I give my assurance that I never injected or applied these drugs in other ways (...). I greatly regret my misconduct. As a doctor, I should never have acted in this way. I also regret having helped to damage the image of my University. Neither the Clinic management nor the Medical Director of Sports Medicine, Professor Dickhuth, knew of or could even have suspected my misconduct."

Shortly after his statement was published, Professor Schmid reduced the period cited in his statement. He claimed that he had in fact supported doping only in the 1990s. Professor Schmid has appealed against the verdict of the Freiburg Employment Tribunal to set aside his complaint of unlawful dismissal with the Provincial Employment Tribunal of Baden-Württemberg. A verdict has not yet been reached.

2.2 Dr Lothar Heinrich

Dr Lothar Heinrich worked in the Rehabilitative and Preventive Sports Medicine Department from 1 July 1994 to 31 December 1995 for training as a practising doctor. In connection with this, he was employed as a doctor, initially on a part-time basis. From 1997 to 2001, Dr Heinrich was employed full time as a doctor. He obtained his doctorate in 1998. Since 2002, he has been working for the University Clinic as a research assistant (doctor). In agreement with the Institute for Training Sciences (IAT) in Leipzig, under the terms of a cooperation agreement between the Freiburg University Clinic and the IAT, from the middle of 2006 until his suspension, Dr Heinrich had been delegated to a part-time position at the IAT, where he worked as a manager in the field of sports medicine. The IAT, which in 2007 received 5.3 million Euros from the state towards its budget of 5.5 million Euros, is very much involved in the sports scientific care for German Olympic high level sport. Dr Heinrich was granted a secondary employment authorisation on 15.12.1995/18.01.1996 for "assessment work on behalf of the manager responsible for liquidation/Head of Section, outside working hours". The administration also allowed Dr Heinrich to act as an adviser to the company Power Bar in 2001, and took note of his presentation work for the same company in 2001. In the employment contract for 2002, reference was made to the application for secondary employment the previous year. In the employment contracts for 2003 and 2004, there is no indication of any secondary employment. In 2005, he admitted to secondary employment, giving his assurance that an application would be forthcoming. His employment contract for 2006/2007 mentions nothing about secondary employment. Dr Heinrich was working for the German Cycling Federation as a doctor for elite riders (professionals) from 1996 to 2006 at world championships and the Olympic Games. Professor Aloys Berg recalls that Lothar Heinrich was already working for the Federation before working at the University Clinic.

On 23 May 2007, the University Clinic dismissed Dr Heinrich without notice. Prior to this, Dr Heinrich had also admitted to doping activities in a personal statement. Referring to the personal statement by Professor Andreas Schmid, he informed the Clinic Board of the following in writing on 23 May 2007:

> "I am aware of the contents of the statement which Professor Andreas Schmid gave via the lawyer Dr Gillmeister on 23.05.2007. I also admit that, in my function as a sports medicine doctor, I was involved in the doping of cyclists. I regret this medical misconduct, and hope that through my active contribution, doping can be combated effectively in the future."

In the framework of the protection against dismissal proceedings which he initiated, Dr Heinrich qualified this admission. In the written pleadings made through his lawyer on 11 January 2008 he stated that:

> "The statement cannot be compared in either quantitative or qualitative terms with that by Prof. Schmid, and must be looked at in isolation and appreciated in legal terms. The statement (…) is very vague and merely indicates that the plaintiff was part of a system which possibly existed already and which he neither initiated, nor led nor even controlled, and for which the plaintiff was therefore not responsible at that particular point in time. In the period on which the statement is based, the plaintiff was starting out in his profession, and was subject to the organisational and reporting structure of the Sports Medicine Department. To what extent there was involvement by the plaintiff during the given period, and also whether this was conscious or unconscious, and therefore whether the plaintiff can and could in fact be held legally responsible, is highly questionable and doubtful."

Regarding the accusations made publicly by the rider Patrik Sinkewitz, particularly as regards doping with his own blood in 2006, Dr Heinrich's lawyer said:

> "The plaintiff can therefore (he means because of not being able to see the files) neither rebut nor affirm the accuracy of this statement nor the credibility of Mr Sinkewitz."

The Commission has so far not been able to obtain any factual answers from the two doctors who are being legally represented. Dr Heinrich has since withdrawn his claim for protection against dismissal proceedings at the Freiburg Employment Tribunal.

2.3 Findings by the Commission with regard to the doping accusations against Professor Schmid and Dr Heinrich

The insights which the Commission has been able to gain so far in the framework of its investigations belie the statements by Professor Schmid and Dr Heinrich in terms of both the scope and the period of their doping activities. The interim report of 17 March 2008 found that the questioning of former "Team Telekom" and "T-Mobile Team" riders in particular revealed a different picture. This has since been confirmed by further questioning of riders.

In particular, Dr Heinrich's claims in the statement made through his lawyer on 11 January 2008, whereby he "was part of a system which possibly existed already and which he neither initiated, nor led nor even controlled," and for which he had not been responsible at that particular point in time, have been disproven. According to these riders, as early as the 1995 racing season he was fully integrated in the doping system, and very quickly became the "local boss" in charge. According to Bernhard Kohl's

statement of 20 November 2008, the situation after 2002 was such that the "medical preparation" of the team members had to be discussed in private discussions with Dr Heinrich.

In his statement to the Commission of 11 June 2008, Christian Frommert, T-Mobile's head of communications since 2005, expressed the relationship between Professor Schmid and Dr Heinrich as follows: "I always had the feeling that Lothar Heinrich was the main boss. And then there was also a nice elderly gentleman (meaning Professor Schmid), who I thought must be working under Lothar Heinrich. That was because Lothar Heinrich behaved as if he were in charge. But then someone told me that the nice elderly gentleman was in fact Lothar's boss."

2.3.1 Doping with medicinal drugs

The Commission has obtained no new information on doping from 1992 to 2000 since the interim report of 17 March 2008. The following section largely conforms with what was stated in the interim report.

In 1992, the soigneur Jef D'hont, known for his "magic drink", was hired by "Team Telekom", whose manager was Walter Godefroot. The "magic drink", which Jef D'hont had been serving up since 1977, consisted of a 300-mg capsule of caffeine and a tablet of the prescription drug Alupent® (active ingredient orciprenaline) and one of Persantin® (active ingredient dipyridamole), dissolved in cola. Orciprenaline has been a prohibited substance in sport since 1992, and is on the IOC doping list. The first contacts between soigneur Jef D'hont and sports doctor Dr Andreas Schmid were in early 1992. According to Jef D'hont, the aim of the contact was to establish the conditions required to establish a particularly strong team. Even then, the issue of doping was raised. It was said that in Germany, the glucocorticoid Urbason® (active ingredient methylprednisolone) was preferred to Celestan® (active ingredient betamethasone) and, to avoid doping accusations, a certificate of exemption was needed, and also that doping substances should never be given secretly to an athlete. According to the soigneur, Professor Schmid was reluctant at the time, and his position on doping was fundamentally negative.

2.3.1.1 Doping with Epoetin (EPO)

The lack of success in the 1992 Tour de France general rankings (best places 10th, 35th and 128th) and overwhelming dominance by Italian and Spanish teams in particular led to the subject of doping with EPO being raised. Developed as a therapeutic drug in 1982, biotechnologically produced epoetin was used chiefly to treat the anaemia of dialysis patients, in whom blood production is damaged as a result of kidney failure, and for cancer patients after aggressive chemotherapy cycles.

In 1993, the riders also wanted to use the "wonder drug" which foreign teams were already using. So in 1993, Uwe Ampler underwent a "course of doping treatment" with EPO he had obtained himself, with the knowledge of Professor Schmid. In the three-week EPO course of another top rider, which involved taking 1,000 units of EPO every three days combined with vitamin B12 and folic acid, plus 100 mg of aspirin to thin the blood in the morning and evening, Professor Schmid was responsible for the dosage. According to Jef D'hont, the rider involved was Olaf

Ludwig. In addition, Dr Schmid obtained the corresponding EPO preparation Recormon® (active ingredient epoetin beta), and had it sent by DHL to Jef D'hont and possibly another soigneur. Jef D'hont and his wife then gave it to the professional cyclists, who injected themselves. This is how medically controlled EPO doping made its entry into "Team Telekom".

For the Commission, there is nothing to cast doubt on the assertions of Jef D'hont and his wife. The following circumstance also gives them credibility: According to Jef D'hont's statement on 28 August 2007, which did not give further details about the substances used, he was personally aware that of the 17 riders of the 1993/1994 "Team Telekom", eight were using other doping agents as well as his "magic drink". These are said to have been Bert Dietz, Christian Henn, Brian Holm, Olaf Ludwig, Steffen Wesemann, Rolf Aldag, Udo Bölts and Jens Heppner. These riders were marked on a team photo by Jef D'hont. In 2007, Bert Dietz, Christian Henn, Brian Holm, Rolf Aldag and Udo Bölts admitted to doping. Other team members repeatedly asked for EPO, which was then supplied by Professor Schmid – the only exceptions being Christian Henn and later Bjarne Riis – and was then injected either by the soigneur or by the rider himself.

The statements by the former professional cyclists give the impression that the riders who knew about doping were extremely reticent, both with each other and towards the team leadership. Former professional cyclist Rolf Aldag justified this at his hearing on 21 June 2007 by saying that, unless there was a good reason for doing so, no doper wanted to let anyone know to what extent his performance was a result of prohibited substances. The other professional cyclists were rivals for a place in the team, and for the team leadership a doper could be blackmailed in the negotiations for a contract for the following year. Similarly, professional cyclist Christian Henn, who rode for "Team Telekom" from 1992 to 1999, when he was caught with a high testosterone level, confirmed this to the Commission, saying: "nobody wanted to admit that his performance was merely the result of doping, even though this was quite obvious". Erik Zabel also confirmed this secrecy towards the other riders and told the Commission that, apart from Rolf Aldag, he never trusted another professional cyclist.

Systematic EPO doping under the medical guidance of Professor Andreas Schmid and Dr Lothar Heinrich began with the training camp in Mallorca in January 1995. Dr Schmid was at this training camp, as was Dr Heinrich, who was incorporated into the team, and over time increasingly took over the role of attending doctor in Mallorca.

Professional cyclist Bert Dietz clearly and credibly explained at his hearing on 11 July 2007 that the riders were systematically prepared with EPO cures by the doctors. After this came the first training plans established by the doctors and suggestions on which riders should be entered for which races. While this suggestion was made to the whole team, the medical preparation was described in individual conversations between both doctors and Bert Dietz. Because he was picked to compete in the spring classics (e.g. Milan – San Remo, Paris – Roubaix), the EPO treatment had to begin very early, so that peak performance would be achieved at the right time. In the medical discussion, Professor Schmid went into detail about the way EPO works, its performance-enhancing possibilities and possible dangers. It was clear to all involved that nothing should be said about this conversation. It was also clear that only with good performances in the planned spring races would anyone have the chance to be a

helper on the Grands Tours (Vuelta Ciclista a Españia, Giro d'Italia, Tour de France) and not have to wait until the autumn classics (e.g. Classica San Sebastian, Tour of Lombardy) to have a chance to get involved in the racing. Bert Dietz started with 1,000 units of EPO NeoRecormon® in a three-week cycle. Both of the doctors, Professor Schmid and Dr Heinrich, also administered it. To complement the EPO substitution, folic acid, vitamin B12 and iron were added, for instance in the form of two iron tablets and 2 or 3 aspirin 500 per day during the courses of EPO. In parallel and to supplement EPO, in 1996 the growth hormone Genotropin® was administered (see 2.3.1.4).

According to Bert Dietz, the initial dose of 1,000 units at two-day intervals "didn't make any difference". In preparation for the Vuelta, this was then increased to 2,000 units every second or third day. For the whole of the 1995 season, Bert Dietz recalled having paid the equivalent of approximately EUR 3,000 for doping substances. With increased doses of EPO after autumn 1995, Bert Dietz's haematocrit count in the following years was an average of 52.5%. According to his statements, he was never above 53%. Until UCI introduced the 50% limit for haematocrit, he had a blood count made every two to three weeks when he was using to monitor this. Afterwards, EPO daily haematocrit checks were the norm.

In preparation for the haematocrit checks during races, on the previous night, a saline solution (500 ml) would be attached to a coat hanger in the rider's room. Infusing this provided a temporary reduction of haematocrit values of 1 to 1.5 percentage points, which also applied to the blood substitute Haemaccel® (active ingredient polygeline, a gelatine polymer) introduced later.

At home Bert Dietz injected the EPO himself. It was supplied to him by the doctors in an expanded polystyrene cool box with a cooling pack. Bert Dietz gave a vivid description of his communications with the doctors about his self-medication in his statement of 11 June 2007: The blood analysis printouts he was sent by Dr Heinrich and Professor Schmid had comments written on them like, *"Be careful, Bert", "OK, at 46 you can pump it up a bit"* or *"I don't know why the centrifuge shows 48 and the laboratory value is 52."* The riders were generally aware of the risk of being caught with excessively high readings because of the accuracy of the "centrifuges".

That year, the riders Aldag and Henn also had regular EPO treatments. As Rolf Aldag stated on 21 June 2007, from 1995 onwards, the EPO was administered in combination with vitamin B12, folic acid and iron. The dose was generally increased to a more effective 2,000 units. The normal procedure was a three-week course with evening EPO injections every three days. The injections were given partly by soigneurs and partly by Dr Heinrich. In his statement on 28 August 2007, Jef D'hont expressly indicated that the evening EPO injections were mainly given by Dr Heinrich. As the courses of treatment were partly carried out before races, the professional cyclists also injected the EPO themselves.

The EPO and other drugs were obtained through Professor Schmid. The drugs were supplied to either the soigneur during races, or couriered by DHL. Jef D'hont kept a record of the ampoules given, and at the end of the season worked out the consumption with the riders. But not all the doped riders needed this help from doctors. Particularly the riders who came to Team Telekom from "experienced"

teams looked after their own performance enhancement themselves, including EPO doping and administering cortisone preparations before the classic one-day races. This emerged from the statement by rider Christian Henn on 24 October 2007.

Despite the reasonable spring results achieved in 1995, Team Telekom was surprisingly not invited to the 1995 Tour de France. Only after long negotiations was a six-man team finally admitted, expanded by three riders from the Italian team "ZG Mobili".

Before the 1996 season, Team Telekom brought in the Dane Bjarne Riis, who had placed third in the 1995 Tour. This newly composed team thus became the top team: Bjarne Riis won the 1996 Tour de France; for his first appearance, Jan Ullrich was second in the general ranking and the best newcomer; Erik Zabel was the best sprinter.

Even though Bjarne Riis was not treated by soigneur Jef D'hont and the Freiburg doctors, the soigneur says it is known that, every other day during the Tour de France, Riis took 4,000 units of EPO and two units of growth hormone, which is double the usual quantity. The result was haematocrit levels of at least 60 per cent, and according to the soigneur even 64 per cent. When asked about this period, professional cyclists Aldag and Dietz both agreed that both doctors paid careful attention to ensure that the riders they were "treating" did not reach such extremely high and therefore health-threatening levels. According to his confessions published in the press, Udo Bölts also started doping with EPO and growth hormone in 1996, to be able to take part in the Tour de France. A hearing of the rider by the Commission to find out more details about the doping was not possible however, as after several telephone conversations with the Chairman, on 17 September 2007 he announced that he finally did not want to appear before the Doping Commission. He had sought legal advice, and wanted to leave his whole cycling past in peace. Erik Zabel too began a three-week EPO course in 1996 after the Tour de Suisse.

After Jef D'hont left Team Telekom, the doping substance orders were handled directly between the riders and doctors. The doctors took the preparations – usually after agreeing by telephone beforehand – to the riders, or sent them by express mail, delivery companies or IC courier to the address given by the riders in the place they were staying. In some cases, the professional cyclists had their blood levels checked by their GPs during the period when they were not competing. Both Bert Dietz and Rolf Aldag confirmed this. The introduction in 1997 of a protective ban by the International Cycling Union (UCI) for haematocrit levels above 50 per cent during races led to both the doctors and the professional cyclists having their haematocrit levels checked every morning using centrifuges. This was so that, in the event of borderline or higher levels, the haematocrit could be lowered as quickly as possible using appropriate measures (e.g. an infusion of physiological saline solution).

The Festina scandal in 1998 at least brought no long-term change to doping practices. But as a reaction to the scandal, a contract was signed between Team Telekom's sponsor and the "Doping-free Sport" group aimed at combating doping. The members of this group were: the NOC President, Professor Walther Tröger; the Vice-President of the German Cycling Federation (BDR), Olaf Ludwig; the President of the

German Sports Doctors Federation, Professor Joseph Keul; the Chairman of the Anti-Doping Commission of the German Sports Federation (DSB)/National Olympic Committee, Dr K.-F. Brodeßer; and later Professor Ulrich Haas and the directors of the Institute for Doping Analysis and Sports Biochemistry/Kreischa and the Institute for Biochemistry of the German Sports University in Cologne, Professor Klaus Müller and Professor Wilhelm Schänzer. The Chairman was Professor Keul, and the Secretary was Dr Lothar Heinrich. Deutsche Telekom was represented at meetings of the group by at least Jürgen Kindervater. Under the terms of the three-year agreement, the aim was to combat doping. The key areas were the further development of indirect detection of EPO, doping controls during training, information and education for the public about doping-free sport and close cooperation with the BDR, UCI, NOC, DSB und DGSP [German Society for Sports Medicine and Prevention]. Of the annual 450,000 DM budget, 300,000 DM was to be used for research projects. For information und education (especially a "hotline", internet pages and annual symposiums) and the close cooperation with the above-mentioned institutions, plus the costs of the group including administration, a total of 150,000 DM was budgeted. In 2002, the contract was extended by one year, with funding of 100,000 DM. Of the total of EUR 792,502.41 provided, EUR 423,673.67 stayed with the Sports Medicine Department of Freiburg University Clinic. A number of the projects supported by the group were run by Professor Andreas Schmid. For other institutions, a total of EUR 368,828.74 was made available for research purposes. Payments were made to the Institute for Sport and Sports Science of Freiburg University, the Orthopaedic Clinic and Polyclinic of the Munich University Clinic, the Department and Polyclinic for Sports Orthopaedics of Munich Technical University, the Institute for Biochemistry of the German Sports University in Cologne, the Institute for Sports Science of Bayreuth University and the Association for Doping Analysis specialising in biochemistry e.V. /Kreischa

While an official commitment to the fight against doping was announced, in Team Telekom doping with EPO and growth hormone under the responsibility of the Freiburg doctors continued. This was confirmed by rider Jörg Jaksche, who moved to Team Telekom in 1999, at his hearing by the Commission on 12 October 2007. According to his statement, at the traditional January training camp in Mallorca, he spoke to Dr Heinrich to find out "how Telekom managed things (doping substances)". Dr Heinrich immediately told Jaksche that he could see him if he needed anything.

Then in early May 1999, during an event at the Herzogenhorn performance centre, he received from Dr Heinrich, without a prescription, between 20 and 30,000 units of EPO in the form of the prescription drug NeoRecormon® (active ingredient epoetin beta). This event was presumably the "IOC – Cycling Seminar – Olympic Games Sydney 2000", organised by the Doping-free Sport group with the help of the NOC and supported by the IOC from 5 to 7 May in Herzogenhorn, led by Professor Keul and Dr Heinrich and attended by 88 people (German-speaking cycling, athletics and triathlon federations, coaches, soigneurs, doctors and journalists). For this delivery, like subsequent ones, Jörg Jaksche paid Dr Heinrich in cash. He also received a summary on the optimum use of the doping substance and on checking haematocrit levels using a centrifuge. Jaksche himself obtained one of these in 1999. He was not given Synacthen® or glucocorticoids. These preparations were a regular part of the Team Telekom travelling dispensary. The rider received other EPO deliveries either by IC courier and post, or he fetched the EPO himself from Freiburg. At his hearing,

Jörg Jaksche expressly wished to draw attention to the fact that, unlike the situation in his earlier team, he received good medical advice from his doctors and felt well looked after.

The delivery of a few drugs consignments, which Dr Heinrich sent by post, can be established by means of the corresponding invoices, which were processed using the "doping-free sport" external funding account. The name of the recipient of one drugs delivery is recorded on an invoice dated 16 March 2000 as "BHR Radhaus / for Jörg", Ansbach. Ansbach is Jörg Jaksche's home town. Another invoice dated 9 March 2000 records the drug delivery worth 1,000 DM to Mrs Bettina Jurkat, the then girlfriend and now wife of Andreas Klöden. Both invoices were examined by Professor Joseph Keul and authorised for payment as being "factually correct and established".

The Commission had not yet received concrete information about doping practices during the period 2001 to 2005 by riders from Team Telekom/Team T-Mobile before it issued the interim report of 17 March 2008. The conclusive explanation for this time limitation is that for this period, no criminal statute of limitations has yet entered into force. In some cases, riders with Team Telekom/T-Mobile are still active as professional cyclists. There is also the consideration that, as of 2000, it was directly possible to detect EPO in the blood, making it more risky to use the substance than had previously been the case. The experience of the professionals Jörg Jaksche and Patrik Sinkewitz in trying to find a squad in the period after their ban for doping had expired probably also put riders off doping practices in the period 2001 to 2005.

The fact that doping did take place during the period 2001 to 2005 can be seen by the personal remuneration of doctors by their teams, as listed in the interim report of 17 March 2008, and by the manipulation of the electronic personal identification system from 2005 by entering fictitious patients, uncovered by the University Clinic in early December 2007. These include names like "Maier, Ulrich, born 02.12.1937" and "Mayer, Alexander, born 02.07.1943". Rider Patrik Sinkewitz's allegations of autologous doping by the doctors Professor Schmid and Dr Heinrich in 2006 indicate that systematic doping of Team Telekom and its successor T-Mobile was intensifying.

2.3.1.2 Longitudinal analyses of blood parameters

To investigate possible evidence of EPO doping in competition athletes under the care of the Department of Rehabilitative and Preventive Sports Medicine, longitudinal analyses of a number of blood parameters (haemoglobin, haematocrit and reticulocytes) were conducted. However, these analyses only make it possible to evaluate abnormalities. According to the rules of the World Anti-Doping Agency, variations in blood parameters cannot be used as proof of doping.

To conduct the assessment, anonymous data from all the measurements which the Rehabilitative and Preventive Sports Medicine Department had asked the central laboratory of the Freiburg University Clinic to perform between 1 January 1995 and 31 December 2007, containing the data from 58,800 blood samples from 22,264 people, were considered. The laboratory values for haemoglobin, haematocrit and reticulocytes (red blood cell precursor cells), and the resulting scores such as the off-score value were taken into account. The off-score value is calculated on the basis of the reticulocyte count (%) and the haemoglobin concentration (g/L) using the

formula: Hb(g/L) – 60 x √Reticulocytes (%) (Gore et al. 2003). The value rises if the reticulocyte count falls, or if the haemoglobin concentration increases. Individual significantly raised off-score values could indicate doping manipulation, for example that a blood infusion has taken place.

Using defined exclusion criteria (percentage of reticulocytes < 0.4% or > 2.5%, off-score value > 119), the cross-sectional analysis shows that only 59 of the 732 people investigated for reticulocytes can be classed as unusual. Of these 59, 29 are from Team Mobile, insofar as they are known from the lists provided by T-Mobile for the years since 2005, but, due to anonymisation, their individual names or years are not known.

If we apply an off-score value of > 133 to this dataset, which with a significance level of 1:10,000 (cf. Gore et al. 2003) shows non-physiological variations in blood values and therefore indicates possible manipulation (e.g. EPO doping or autologous doping), only four samples appear unusual. These samples are all from Team Telekom/Team T-Mobile. They relate to three riders and one official. Because in the total population of 22,264 people, Team Telekom/T-Mobile riders (53 riders) are under-represented, the number of repeat measurements is generally higher than in the rest of the investigational group, which consists of other competition athletes, amateur athletes, study patients and other patients, the significance of this figure is reduced. An evaluation of the anonymised overall data means that details of the exact number of riders who had been doped with oxygen transport-enhancing drugs in the period from 1995 to 2006 cannot be given. The data do, however, show a high tendency towards abnormal blood values in the Team Telekom/T-Mobile riders, which indicates doping manipulation of an undetermined extent.

Further indications of systematic EPO doping arise from the report by Professor Dr med. K.-M. Braumann dated 21 and 29 October 2008, who evaluated the blood values of 31 members of the Team Telekom/T-Mobile over several years in Freiburg in the Department of Rehabilitative and Preventative Sports Medicine and in the central laboratory. This report was obtained by the Freiburg State Prosecutor. In contrast to the Commission's evaluation, Professor Braumann was able to carry out the assessment in relation to individual names, as the anonymisation requirement had been waived. In this report, Professor Baumann [describes] abnormalities that can be ascribed to individual persons in terms of blood counts, reduced reticulocyte counts and increased haemoglobin concentrations in a total of nine riders and one soigneur. These, however, are not evidence of manipulation.

2.3.1.3 Doping with cortisone preparations

After EPO, the doping substances of choice were Glucocorticoids (cortisone preparations), growth hormone (somatropine) and testosterone. Cortisone preparations are used as an anti-inflammatory with many diseases and to suppress allergic reactions, especially in bronchial asthma. If cortisone preparations are used, this should be reported to the UCI, and since 2004 an exemption certificate, an Abbreviated Therapeutic Use Exemption, or ATUE, is required.

According to professional cyclist Bert Dietz, since at least 1994, these were injected by the soigneur or the rider himself in the form of Diprophos® (an injection suspension with the glucocorticoid betamethasoe). In addition, in 1997/98 the ACTH preparation Synacthen®, which stimulates the synthesis of the body's own glucocorticoids in the adrenal cortex was introduced for doping.

Jörg Jaksche has also confirmed that cortisone preparations were administered while he was a member of Team Telekom from 1999 to 2000. The team doctors' contribution to cortisone preparation doping was to obtain the required ATUE. The therapeutic purpose (e.g. tendonitis) the accused doctors cited to the UCI was untrue. Cortisone preparations were injected on the basis of these "tailored" certificates, as Jörg Jaksche put it, without any medical indications. It is evident from Patrik Sinkewitz's statements that ATUEs with no medical indications were ordered so that he would be able to take performance-enhancing drugs, with cortisone preparations in particular being prescribed for this purpose and administered intramuscularly. Because Patrik Sinkewitz authorised the Commission to view his medical documents, the Commission was able to investigate this. But checks of the patient records raise the question of whether they were subsequently tampered with. The records themselves only contain basic descriptions of the medical treatment that was actually carried out at the University Clinic. For example, they do not contain documents with the test results for issuing the ATUE, doctor's notes from sports orthopaedics and laboratory results, although it is normal practice to file these documents in the department.

2.3.1.4 Doping with other drugs

According to Jef D'hont, growth hormone was already being used in 1994 by Rudy Pevenage in the Team Telekom, and this was generally applied by the soigneur or the rider himself. Growth hormone (somatropine) is a peptide hormone produced by the body in the anterior pituitary lobe and is also produced by genetic engineering. In medicine, it is used almost exclusively to treat growth restricted children with an endogenous lack of growth hormone to increase the growth of the body. In adults with a lack of growth hormone, growth of the skeletal musculature, glucose tolerance, performance and well-being are increased. In his statement on 11 July 2007, Bert Dietz said that he obtained the growth hormone in the form of Genotropin® from the team doctors, Dr Heinrich and Professor Schmid from the 1996 season onwards. He said that the growth hormone was administered every second day during the EPO administration cycles. The Commission still has unanswered questions regarding the dosage. The doctors told the cyclists that growth hormone helped recovery, and constituted no danger in the doses administered.

Continued doping with EPO, growth hormone and cortisone preparations has also been proved in other cases. The Commission has also obtained the statements of riders who rode for Team Telekom/T-Mobile over the period 2001 to 2005, which prove that Team Telekom/T-Mobile was systematically supplied with doping substances. For example, one rider who rode for Team Telekom in 2003 and T-Mobile in 2004 made statements before the Federal Criminal Police on the doping system in both teams. Because of their right to inspect the documents, the Freiburg University Clinic-appointed Commission has these statements in its possession. The clinic obtained them from the Freiburg Prosecutor's Office. We will not divulge details of this in order not to jeopardise the ongoing proceedings of the State Prosecutor's Office. Although this witness has not made a statement before the Commission, the Commission is as convinced of his credibility as it is of the credibility of other witnesses.

As can be seen from his statements, the previous practice of systematic EPO, growth hormone and cortisone preparation doping persisted and was refined. As previously, the peaks in the riders' performance in the season were established, and they were then referred for "medical support" to the team doctors Professor Schmid and Dr Heinrich. Although the doctors told them what to do to prevent positive test results, they provided no further information about the risks and side-effects of the drugs. Both doctors stressed the need for the supply of the doping substances to be left in their hands in order to "prevent positive test results that would have affected the entire team." The pre-cooled preparations were ordered from Professor Schmid or Dr Heinrich by text message or e-mail, and when an appointment had been arranged they were picked up from Professor Schmid's office at the Sports Medicine department and then carried by car in a cooler bag. According to this witness's statements before the BKA, the other team doctors were not involved in doping. Dr Temme, Dr Blum and Dr Vogt did, however, administer blood enhancing substances such as iron, vitamin B12 and folic acid throughout the year from their medicine cabinets, which also contained a centrifuge.

The statements by this witness tally perfectly with the statements made before the Commission by the riders Rolf Aldag (21 June 2007), Erik Zabel (25 June 2007), Bert Dietz (11 July 2007), Jörg Jaksche (12 October 2007), Christian Henn (24 October 2007) and Patrik Sinkewitz (30 November 2007). They revealed that the systematic doping of Team Telekom/T-Mobile which started in 1995 was increasingly intensified and professionalised. This included keeping riders who did not fit into the system at arm's length and removing them from the team as quickly as possible.

This was the fate of track rider Robert Bartko, who spoke before the Commission on 11 June 2008. Since 1999, he and his coach had been making unsuccessful attempts by way of Walter Godefroot to join Team Telekom. After winning the two gold medals in the team race and the singles at the 2000 Sydney Olympics, Bartko again attempted to get a contract, which was turned down by Olaf Ludwig. Then, just before he was about to conclude a deal with the recently established Coast professional cycling team following two refusals by Walter Godefroot, Walter Godefroot phoned and offered him a professional contract with Team Telekom for 2001 and 2002 with a one-week cooling-off period. The witness explained this sudden change of mind as being down to the fact that the sponsor did not want to have to negotiate with another

team for a two-times gold medal winner. From the outset, Robert Bartko was, as he clearly put it in his statement, the "unplanned child" of the team.

In the first year after the Regional Tour he had a sub-normal haematocrit value of 36%, which is why he probably did not get any training or competition plans, unlike the other riders. All his Telekom career brought him was the role of "accomplice". There was no contact with the doctors: "I was simply there, a number in the system, and whenever somebody dropped out, they called Bartko, and then got rid of me again the minute they didn't need me any more."

The statements of the Austrian rider Bernard Kohl before the WADA on 20 November 2008 made available to the Commission confirm that new professionals joining Team T-Mobile at first had little contact with established team members. The practice of discussing "medical preparations" behind closed doors with Dr Heinrich continued.

In 2005 Bernhard Kohl joined Team T-Mobile, and after winning third place in the Dauphiné, started negotiating for a contract with a number of racing teams. Seeing this, the team doctor Dr Heinrich offered him a "chat about his future" at Freiburg University Clinic, an offer that seemed rather peculiar to the witness, and which he interpreted as being a first step towards involvement in doping practices. However, the "chat" did not take place. Bernhard Kohl was not nominated for the Tour de France 2006, because the only riders considered for it were those "which the team doctors Professor Schmid and Dr Heinrich had dealt with intensively." For this reason Bernhard Kohl changed teams the following year.

2.3.1.5 Health risks of doping with medicinal drugs

The health risks of doping with medicinal substances have been known for decades. Since 1996, marketing or dispensing prohibited substances has been a criminal offence. The Medicinal Products Law (Arzneimittelgesetz/AMG) introduced an explicit ban on placing drugs on the market to use for doping purposes in sport, on the prescription of such drugs and on using them on others (AMG Section 6a). Anybody who infringes AMG Section 6a(1) and markets drugs for doping purposes in sports, prescribes or administers them to others is subject to three years' imprisonment or a fine (AMG section 95). According to the Commission's findings, the doctors Professor Schmid, Dr Heinrich and Dr Huber used medicinal drugs for doping purposes over many years on many competitive athletes, in gross contravention of the AMG.

The Freiburg Sports Medicine doctors did discuss the health risk of doping with medicinal drugs, but repeatedly played down the dangers. As Section 3.1.1.1 of this Final Report on the possible involvement of the Department of Rehabilitative and Preventive Sports Medicine in the activities of the doctors accused of doping will show in further detail, Professor Keul declared as early as 1976 that he was going to focus on the opportunities of using drugs to enhance physical performance in humans. Anything that did not harm athletes would be considered.

When in 1988 the first epoetin preparation was introduced in medicine, and the first cases of abuse had become known in sports, the press reported Professor Keul's

assertion that if used properly, EPO was harmless (Internet quote: http://www.cycling4fans.de/index.php?id=3951). According to this report, Dr Huber did not know that "physiological quantities of EPO can cause harm."

However, the literature had already been warning of the risks of administering epoetin to enhance athletes' performance for several years before then. The US sports medical expert David Shasky (Salt Lake City, Utah) and Gary Green (University of California Los Angeles, California) in particular emphasized that the the use of epoetin could even be more dangerous than invasive own-blood doping (Shasky and Green 2000). In the case of traditional autologous doping, the transfused blood is known, whereas EPO has variable effects on blood production at various times, and can therefore increase haematocrit to very dangerous levels. An excessive increase in red blood cells increases the viscosity of the blood, and thereby the risk of thrombosis, which could lead to venous thrombosis, pulmonary embolism, coronary thrombosis and even stroke. This risk is compounded by the loss of fluids resulting from heavy perspiration during physical exertion, which in turn can result in a further increase in haematocrit.

Between 1987 and 1990, the public was shocked by the mysterious deaths of almost 20 European competitive cyclists, for whom the main suspect was abuse of EPO (Eichner, 2007). Another dangerous long-term risk of epoetin preparations in recent years has been an increased mortality in cancer patients. A possible cause being considered is the stimulation of tumour growth by hyperexpressed epoetin receptors. As a result, the American Food and Drug Administration (FDA) only recommends their administration for a limited time for chemotherapy-induced anaemia, and their subsequent discontinuation. The cancer risk of epoetin could be even higher, if it is taken over long periods by athletes as a performance-enhancing substance (Tentori and Graziani 2007).

The doctors from the Freiburg Sports Medicine department played down the risks of other doping substances as well. For example in 1987 Dr Huber administered testosterone in the form of Andriol® capsules (active ingredient testosterone undecanoate) to cyclists – particularly the U23 young cyclists – when testosterone was already on the IOC's list of banned substances. At the time Andriol® capsules were only authorised for the treatment of male hypogonadotropic disorders, male climacteric symptoms, and infertility caused by spermatogenic androgen deficiency. Afterwards, Dr Huber tried to justify the use of Andriol® capsules in riders by claiming he had not administered them for doping purposes, but to remedy what the medical profession considered an "imbalance" at the time (see also Section 2.4.1).

During his hearing by the Commission, Dr Huber said regarding the use of testosterone on cyclists that he had not conducted any investigations into the matter himself, but had referred to the available literature published in the Sports Medicine Department in 1988 by Jakob, Donike and Keul. However, the study conducted by Jakob et al. (1988) into the application of testosterone and performance in long-distance skiers, was unable to establish any improvement in performance and recovery capacity under the influence of testosterone, which conformed with previous works other teams had conducted in 1975 and 1986. When Dr Huber started to illegally administer testosterone to young cyclists in 1987, his thesis regarding the supportive effect of testosterone was based on a so-called hormonal "imbalance" or "recovery deficit" from exertion during training had already repeatedly been

disproven in the very literature to which he referred. The theory of "hormonal imbalance" has therefore proven to be a dangerous pseudo-scientific argument used by Dr Huber to try and justify doping young athletes with prohibited testosterone.

International literature had warned of the health risks of testosterone and other anabolic steroids long before the Freiburg sports doctors had started their doping activities. The health risks included cardiovascular disorders in the form of water retention and high blood pressure as well as liver damage such as jaundice, hepatitis and liver cancer (Percy 1980). A few years later, the case of acute myocardial infarction with massive hypercholesterinaemia (596 mg/dl) and increased thrombocyte aggregation was recorded in a 22-year-old weightlifter, who until then had been completely healthy after he had taken oral and parenteral androgenic steroids six weeks earlier (McNutt et al. 1988). Over the following four years, eleven further cases of life-threatening cardiovascular events were reported following unsupervised self-medication with high doses of anabolic steroids, including a sudden cardiac death after testosterone cypionate (overview in Rockhold 1993).

In addition, human growth hormone (human somatropine) has for some time been used for doping purposes because of its anabolic and lipid mobilising effects. In medicine, growth hormone is used to treat growth hormone deficiency. For this purpose it is indicated in adults at a recommended dose of 0.2-1 mg/day (3-15 µg/kg/day) in a subcutaneous injection. However, the effectiveness of growth hormone as a doping substance is questionable, as there is no scientific evidence that the exogenous administration of growth hormone has additional effects on the muscles or enhances athletic performance. It is, however, suspected that the significantly higher doses of growth hormone (15-180 µg/kg/day) over longer periods and in combination with other performance-enhancing drugs such as anabolic steroids, insulin, anti-oestrogen or EPO are used in doping. Numerous side-effects in people treated with growth hormone have been described: soft tissue oedema, fatigue, aching joints and carpal tunnel syndrome have been observed more frequently in these persons than in persons not treated with growth hormone. It has also been demonstrated that the administration of additional growth hormone further aggravated the cardiac hypertrophy caused by anabolic abuse (overview in Segura et al. 2009).

From the current standpoint it is shocking how three doctors from Freiburg University Clinic who were involved in doping could ignore and play down the health risks of doping. By contrast, other sports medicine institutions in Germany took active measures against doping at an early stage. For example, the Tübingen Department of Sports Medicine, then under Professor Dickhuth, introduced effective anti-doping regulations in 2002, and promoted the development of effective methods for revealing the presence of doping substances (Striegel et al. 2002).

2.3.2 Doctors' sources of drugs for doping

Even with the Interim report of 17 March 2008, it was clear to the Commission that the pharmacy of Freiburg University Clinic did not dispense epoetin preparations or anabolic steroids to the Department of Rehabilitative and Preventive Sports Medicine from 2001 to 2007. Any glucocorticoids were adequately explained by Cardiology as being needed to stock the ambulance. There was only on ampoule of Synacthen® (an ACTH preparation stimulating the adrenal cortex) for which no adequate explanation

could be found. Nor did the sports orthopaedics unit obtain any epoetin preparations or anabolic steroids from the University Clinic dispensary during the period 2001 to 2007. The Clinic dispensary supplied 112 packs of glucocorticoids with a total of 149 individual ampoules, which were mainly used for intra-articular injection (Volon® A40 crystal suspension, 93 ampoules) with a smaller number for systemic injection (Fortecortin®, 56 ampoules). For a period of more than six years, these amounts can be sufficiently plausibly justified as being for the orthopaedic treatment of sports injuries of the joints and other injuries.

The total consumption of the EPO preparations supplied by the University dispensary to the units of the University Clinic is 3,646.5 packs including 20,295 ampoules and other forms of administration in the period from 2001 to 2007. The overriding majority of 2,508 packs containing 14,768 ampoules are accounted for by the dialysis unit. The Clinic pharmacy has taken numerous organisational measures to prevent these medicaments from being used in a way for which they are not intended. A separate investigation by the Clinic Board into whether EPO was supplied to doctors in the Sports Medicine Department by the Nephrology and Oncology Departments have likewise not given rise to any grounds for doubt.

Although since 2001 it has only been possible to order drugs from the University Clinic pharmacy solely through the SAP system, prior to that orders were made in writing. The order dates were, however, stored electronically The Clinic IT centre has developed a program to process the data for the period from 1995 to 2000, allowing the University Clinic dispensary to reconstruct the data. The data on consumption show that no epoetin or anabolic steroids were supplied to the Sports Medicine department by the University Clinic dispensary. The bulk of the epoetin preparations were also delivered to the dialysis department of Freiburg University Clinic during the period 1995 to 2000.

A few months ago it had not been possible to ascertain who supplied the epoetin preperations to the doctors. Having heard the Director of the Clinic dispensary and the former President of a Chamber of Pharmacists, the Commission found out about several ways in which the doctors could have obtained EPO. There was also the possibility that the doctors had been given the doping substances from batches already written off, e.g. from overproduction, with special discounts, or even free of charge. For this reason, the statements by the professional cyclists heard by the Commission to the effect that the doctors supplied them with the doping substances at the standard selling prices cannot be taken as proof of the doctors acting disinterestedly. In view of the current investigation and the proceedings pending before the employment tribunal, details about this are unlikely to be forthcoming from the doctors.

In the Interim report of 17 March 2008 the Commission did express its suspicion that since 2001 doping substances had been procured outside the clinic dispensary, as some of the doctors attending the racing teams had received large additional remuneration. The Commission has since then obtained bills and invoices for medications that various pharmacies had supplied at the order of doctors responsible for the team with the sports medicine department of the Olaf Ludwig Cycling GmbH (OLC) and which the doctors then forwarded to Sports Medicine for reimbursement.

The largest proportion (37) of the over 100 bills and receipts are from the Rathaus pharmacy in Elzach, and date from 29.12.2005 to 28.04.2007. Some of those made out to Olaf Ludwig Cycling GmbH (OLC), which refer to orders made by the team medics, listed the drugs together with their pharmacy prices. All prices were subject to a supplement of 10% plus the then applicable VAT of 16%. This system of price formation is illegal for prescription-only drugs, according to a special report ordered by the Commission on this issue, as the higher prices set by the *Arzneimittelpreisverordnung* [Drugs Pricing Ordinance] are applicable, as indeed they were in 2006. A study of the drugs listed in the receipts also established that the Sports Medicine doctors attending Team T-Mobile ordered glucocorticoids, iron preparations and other drugs not specified more closely for the team cyclists with suspicious frequency. To what extent the individual drug groups could be used for doping purposes will be examined in the following sections.

2.3.2.1 Glucocorticoids

Glucocorticoids (cortisone preparations) were usually procured in the form of Diprosone® Depot (active ingredient betamethasone), used exclusively for injecting into the joints and for infiltration therapy. A total of 110 ampoules of glucocorticoids were ordered for the Team T-Mobile cyclists in 2006 by the Sports Medicine doctors responsible for the team. This is an unusually high quantity, as such substances may only be injected every 3-4 weeks due to their long-lasting depot effect. If the daily doses recommended by the WHO are taken as a basis, the amount ordered here is the equivalent of 2,391 defined daily doses, or sufficient doses to provide ten riders with joint injection treatment for a period of 239 days, or eight months. This is something that is hard to imagine with normally health athletes.

When in 2007 Neue Straßen Sport GmbH (NSSG) took over Team T-Mobile as a new squad, by contrast, they obtained a far lower quantity of 10 ampoules of injectable glucocorticoids over a period of four months. This leads to the suspicion that, unlike 2007, the glucocorticoids in 2006 were used not just for medical, but primarily for doping purposes. At that time, all glucocorticoids, except for topically applied preparations, were already on the prohibited list (The World Anti-Doping Code. The 2006 Prohibited List.) of the World Anti-Doping Agency (WADA) and could only be used with a therapeutic exemption certificate. Only the sports organisations in question can shed light on whether the glucocorticoids obtained were used according to the regulations.

2.3.2.2 Iron preparations

For the year 2006, iron preparations were used in even greater numbers of defined daily doses than glucocorticoids. It should be noted, however, that iron preparations have not been put on the WADA Prohibited List. This group includes Kendural® C Tablets for oral administration, and the injectable iron preparation Ferrlecit® ampoules, obtained almost exclusively from the Rathaus pharmacy in Elzach. Kendural® C is an over-the-counter drug freely available in any pharmacy. It is authorised for the treatment of iron deficit anaemia and other iron deficit conditions, and is therefore available without a prescription. Ferrlecit® , on the other hand, is prescription only, and only authorized for treating severe iron deficiency where oral iron replacement therapy is not possible. Iron deficiency anaemia is very rare among

elite international athletes (males 0.7%, females 2.4%) (Parisotto et al. 2003). Among the German population at large, however, it is much more common (males 1-2%, females 5-10%). This makes it unlikely that the cyclists were given the iron preparations on the basis of medical indications for the treatment of iron deficiency anaemia. The amount of iron preparations procured for the athletes makes this unlikely.

In the 2006 season 108 Ferrlecit® ampoules and 67 packages of Kendural® containing 50 tablets each, i.e. a total of 3,350 tablets, were procured from the Rathaus pharmacy in Elzach by the Sports Medicine doctors serving the team. If the manufacturers' recommended daily doses are applied to this number of procured tablets of both iron preparations, they equate to 3,458 daily doses. Theoretically, this is enough to supply 9.5 patients with iron deficiency anaemia for a whole year (3,458 daily doses divided by 365 days) with a fully effective dosage of iron. This would mean that the majority of the riders of Team T-Mobile had a manifest iron deficiency anaemia. However, this is highly unlikely, because of the restrictions on physical performance iron deficiency causes.

By contrast, over many years various court cases and the media have brought up an important reason for excessive iron intake among cyclists. The use of drugs which stimulate blood formation, in particular epoetin preparations, increases the iron demand to such an extent that the iron reserves in the storage tissue available under physiological conditions are no longer sufficient (Zotter et al. 2004). It is also known from investigations of patients with renal anaemia that the blood formation induced by epoetin preparations is improved if the blood iron level is increased before EPO is administered. This explains why athletes who use EPO as doping also use iron preparations, often by intravenous injection, such as the Ferrlecit® ampoules in this case. An investigation of over 1000 cyclists found frequent iron overload, which over the longer term can have life-threatening side-effects as with haemochromatosis, such as liver cirrhosis, cancer, cardiovascular disease and neurodegenerative disturbances (Zotter et al. 2004). Non-induced use of iron preparations by competitive athletes is therefore associated with significant risks. These drugs, and the parenteral application of iron preparations as injection solutions, should therefore be included in the WADA list of prohibited substances.

2.3.2.3 Medical equipment

In terms of cost, the largest group of medical supplies procured by some of the Rehabilitative and Preventive Sports Medicine doctors working for the Olaf Ludwig Cycling GmbH (OLC) team in 2006 are 12 items for medical equipment totalling EUR 3,837.51. In contrast to the detailed lists of drugs, only the final amounts are given here. According to a report commissioned by the Commission, such generalised statements for the purchase of medical equipment do not conform with the usual business practice of a public pharmacy, and are not recognised by the fiscal authorities for VAT purposes. It is therefore suspected that a certain sum had to be reached to correspond to the price of medications that were not specified. The largest item for medical equipment is given on Invoice No. 1871 issued by the Rathaus Pharmacy in Elzach on 01.07.2006, ordered by Professor Schmid and for a sum of EUR 1,464.06. This is approximately equal to the 2006 pharmacy selling price of EUR 1,446.76 for 14 packs of 6 prefilled syringes of NeoRecormon® 1000 or

Erypo® 1000 (EUR 103.34 for 6 prefilled syringes) or of EUR 1,379.00 for 7 packs of 6 NeoRecormon® 2000 prefilled syringes or Erypo® 2000 (EUR 197.00 per pack of 6 prefilled syringes). It could not be established what the item "medical equipment" actually concealed. It remains to be seen whether comparing the receipts corresponds with the drugs dispensed by the Rathaus Pharmacy in Elzach in the previous period will shed further light on the issue. In total, several of the Sports Medicine doctors working for the racing team purchased medical equipment totalling EUR 3,837.51 in 2006. Here too again it is possible that a large part of these charges were for EPO preparations that were not itemised. Again, it is possible to compare this sum with the costs of EPO preparations. At the pharmacy selling price of EUR 197.00 per pack of 6 NeoRecormon® 2000 or Erypo® 2000 prefilled syringes which was applicable in 2006, EUR 3, 743.00 would have bought a total of 19 packs. These 19 packs would therefore contain 114 single doses of 2000 units of EPO. As stated in the Commission's Interim report of 17 March 2008, cyclists were normally given a three-week course of treatment with 2,000 units of EPO every three days. 114 individual doses of 2,000 units of EPO would therefore have sufficed to provide 16 riders with effective EPO doping doses for three weeks.

Here again the question of whether this sum conceals the purchase of doping items, and whether a comparison of the bills with the drugs dispensed by the Rathaus pharmacy in Elzach will divulge further information remains open. The results of the search of the pharmacy premises ordered by the State Prosecutor's Office are not yet available. The above considerations of manipulation of pharmacy bills are further supported by the fact that in 2007 the item of medical devices does not appear in the records of the Rathaus pharmacy Elzach for the new Neue Straßen Sport GmbH (NSSG) team. This squad took over the Team T-Mobile in early 2007, when, using a testing programme developed by Professor Walter Schmidt of Bayreuth University, it introduced a more stringent anti-doping programme.

2.3.2.4 Other unusual supplies of drugs

The Commission also has in its possession two receipts issued by Farmacia Esculapio in Milan dated 19 June 2006, which Dr Heinrich submitted to the Olaf Ludwig Cycling GmbH team on 28 June 2006 for reimbursement under the heading "Tour de France". These are two till receipts were printed out by different tills within 13 minutes of one another. The two receipts are for an identical sum of EUR 2,057.65, with slightly different cash discounts. The 16:24 receipt shows an amount for product group 5 (abbreviated as REPO 5 for Reparto, or "department"). It cannot be seen what the drug in question was, as the proprietary name of the drug was not printed out. The receipt shows the pharmacy's PI number of 09519540158. PI stands for "Partita IVA", or the VAT registration number used to identify every business in Italy. Italian pharmacies usually show this number on receipts for drugs issued. After a discount of 11.2% (EUR 230.46), a total of EUR 1,827.19 was paid in cash.

Just 13 minutes later, at 16:37, an invoice for four further drugs was issued in the pharmacy. It refers to the following drugs:

- 5 x 40 Ansiolin tablets (= 200 tablets). Ansiolin is the Italian proprietary name of the benzodiazepin diazepam, a prescription-only drug used for sedation and as a muscle relaxant.

- 10 x 10 Tationil ampoules 600 mg/4 ml (= 100 ampoules). Tationil is a commercial proprietary medicinal product which contains glutathione. Glutathione is made up of the three amino acids glutamine, cysteine and glycine, and is used to activate the cells. It's use has been known for some time to mask various substances (including doping substances). Masking substances prevents their toxicological detection.
- 12 x 4 Esafosfina 500 mg ampoules (= 48 ampoules). Esafosfina is a physiological metabolite of the sugar metabolism. Its chemical name is fructose-1.6 diphosphate. Studies show that Esafosfina promotes the cerebral blood circulation and improves the blood supply to the muscles. As the public prosecutor in Chambery found in 1999, Esafosfina requires an import licence in France.
- 108 x 100 ml Esafosfina liquid

The receipt from 16:37 was for an identical sum as the 16:24 receipt. The likelihood of two exactly equal receipts in excess of EUR 1,000 being issued within 13 minutes of one another in a public pharmacy is extremely small. The discounts of 11.2% and 11.5% are unusual, according to the report, because in Italy prescription-only drugs are sold with fixed mark-ups. Farmacia Esculapio is not situated in the centre of Milan, where it can be easily reached on foot, but is on the outskirts of the city near the A4 motorway exit (Brescia – Milan – Turin), which can quickly and easily be reached by passing vehicles. That it would stock 108 bottles of Esafosfina, for example, is highly unlikely, unless it was expecting a particular client. A report commissioned to investigate this matter concludes that the second receipt from 16:37 was forged on the assumption that the four drugs mentioned on it would be easily reimbursed by the racing team, as it was something that was administered to cyclists as a matter of course. This is further supported by the fact that, unlike the first receipt from 16:24, there is no PI (VAT) number 09519540158 of the Farmacia Esculapio on the second receipt.

2.3.3 Doping by autologous blood transfusion

The Expert Commission made a number of findings regarding autologous blood transfusion doping in its Interim report of 17 March 2008 based on the statements of the rider Patrik Sinkewitz. Since then it has become clear that not only Patrik Sinkewitz, but also Andreas Klöden and Matthias Kessler carried out autologous blood transfusion doping on the premises of Freiburg University Clinic's Sports Medicine department.

The improved chances of directly detecting EPO in the blood led to a "comeback" in autologous blood doping. The Commission had already investigated thoroughly whether the doctors had set up a structure for autologous blood doping within the University Clinic before Patrik Sinkewitz'ss statements on the subject became known. The Commission's inquiry with the central Transfusion Medicine section on 21 September 2007 showed that no blood preparations were delivered by the Sports Medicine Department during the period from 1998 to 2007, and that there were no items on any of the sports medicine cost centres for either allogenic or autologous preserved blood. In the same way, the two studies carried out in the autumn of 2006 by Transfusion Medicine in cooperation with Sports Medicine on the detectability of fluctuations in the total erythrocyte mass of the donor using carbon monoxide re-

breathing do not allow any blood doping activities in the University Clinic to be inferred.

2.3.3.1 Autologous blood doping before 2006

It has frequently been suspected that autologous blood doping was introduced in Team Telekom as early as 2003. However, these suspicions have not been confirmed as far as the Team Telekom doctors are concerned. However, Dr Heinrich had showed interest in this method before then. There is a link to doping with a contact which, according to witnesses, Dr Heinrich sought through Transfusion Medicine in 1998. Saying that he had to take a patient's own blood, he inquired about blood bags. He was told that Transfusion Medicine in the University Clinic occasionally gave blood bags to resident doctors, but, like any other clinic, Transfusion Medicine would never accept blood that had been taken.

A few weeks later, on a Sunday morning during the Tour de Suisse, an off-duty doctor from Transfusion Medicine is alleged to have received a unit of stored blood from Dr Heinrich. This blood had allegedly been produced in a wholly unprofessional manner. The blood bag was only half full, so that there was air in the bag. As the extraction tube was only knotted and not pinched off or fused, bacterial contamination could not be ruled out. The doctor on duty therefore advised the doctor not to centrifuge the blood bag.

Inquiries into this case, which has been known only since 8 March 2008, have not brought any further results. The doctor working in Transfusion Medicine who had received Dr Heinrich's blood bag did not respond to the Commission's invitation to provide further details on the matter. But it is likely that in 1998 Dr Heinrich gained practical knowledge about obtaining and storing blood bags in this way. There are no grounds to believe that this case is indicative of further doping activities by Transfusion Medicine.

2.3.3.2 Autologous blood doping by Patrik Sinkewitz from January to June 2006

The statements made by the professional cyclist Patrik Sinkewitz on 4 October 2007 before the BKA and obtained by the Commission offer clear evidence of the involvement of both Professor Schmid, the leading team doctor of Team T-Mobile and Dr Heinrich in the autologous blood doping activities of the T-Mobile riders in 2006.

On 30 November 2007, the professional cyclist confirmed at his hearing by the Commission Chairman that in 2006 blood had been taken and reinjected. Sinkewitz's first contact with Dr Heinrich had been in late October/early November 2005 in a hotel in Munich, where Dr Heinrich said he was prepared in principle to give blood transfusions. Details of the plan were discussed at the T-Mobile training camp in Mallorca in January 2006.

In January 2006, Dr Heinrich first took around half a litre of blood from Patrik Sinkewitz at Freiburg University Clinic. Apart from Dr Heinrich and himself, nobody else had been present. The blood was taken in Dr Heinrich's office. When the blood had been taken, further autologous blood doping appointments were agreed to

coincide with individual races in the season. Blood was then taken or transfused at approximately monthly intervals:

- In late February 2006, Dr Heinrich took the same quantity of blood from Sinkewitz (500 ml), and reinfused the contents of the blood bag from January, because of the limited conservation period for blood.
- In late March, the same procedure was followed again.
- In April, after the Tour of the Basque Country from 3 to 8 April, Dr Heinrich reinjected a bag of blood for the spring classics, without taking any blood. This was because Sinkewitz, a classic rider, in agreement with Dr Heinrich, was aiming to reach the peak of his performance for this race.
- On 2 or 3 May 2006, in Freiburg, he had another half litre of blood taken following the traditional May Day "Rund um den Henninger-Turm" race held in Frankfurt.
- On 23 May 2006, one day before the Tour of Bavaria, Sinkewitz got Dr Heinrich to take two bags of blood, and the blood taken at the start of the month was reinjected. In this way, Sinkewitz had a stock of two blood bags with Dr Heinrich for the Tour de France. Because Patrik Sinkewitz's performance in the Tour de Suisse from 10 to 18 June 2006 had only been moderate, he believed his participation in the Tour de France to be in jeopardy. However, the team leader Rudy Pevenage dispelled these doubts, referring to Sinkewitz's plentiful own blood supplies.
- On the Monday after the Tour de Suisse, on 19 June 2006, Dr Heinrich took a further two bags of blood from Sinkewitz in the University Clinic, and reinjected the blood from the two blood bags that had been filled on 23 May 2006.

2.3.3.3 Autologous blood doping during the Tour de France 2006

On the evening of the first day of the Tour de France, on Sunday 2 July 2006, Patrik Sinkewitz was driven by his then girlfriend from Strasbourg to the University Clinic in Freiburg. Dr Heinrich had arranged this appointment with Professor Schmid, who was in the clinic without any other assistants, in order to carry out the reinjection. According to Sinkewitz, the injection had to be abandoned, as the blood in both bags was contaminated. At both his hearings in 2007, Patrik Sinkewitz told the BKA and the Commission Chairman that he was the only T-Mobile rider to have been in the Sports Medicine Department on that Sunday. He said he paid the doctors EUR 40 to 60 for the blood bags, a total of EUR 400.

The credibility of Sinkewitz's claim that he was the only rider in Freiburg on 2 July 2006 and that the blood clotted during his transfusion is undermined by the fact that, on the evening of Sunday 9 July 2006, blood samples from several team members were tested in the central laboratory at the request of Sports Medicine. This led the Commission to conclude then that other cyclists had also been given autologous blood transfusions in Freiburg during that period.

The doubts regarding Sinkewitz's witness statements, which arose in relation to the number of participants in the race and the nature of the transfusion have since been dispelled. When he upheld his version of events in his statement of 18 February 2008 and was warned that as a witness he could be prosecuted for making a false statement, he did on 3 March 2008 admit that his former girlfriend had also driven the team

members Matthias Kessler and Andreas Klöden from Strasbourg to Freiburg and back again. This was corroborated by his former girlfriend in her statement before the BKA of 20 March 2008.

At about 18:00 hours, Patrik Sinkewitz, Matthias Kessler and Andreas Klöden left the team accommodation in Blaesheim, and were met by Professor Schmid outside the Freiburg University Clinic Sports Medicine department. Together they went down to the lower storey. All three riders were then re-infused with their own blood in a surgery containing a couch which Professor Schmid had blacked out. The entire procedure took about three quarters of an hour for all three. They were then driven back to the team accommodation by a car which was waiting in the University Clinic car park. Although clots had formed in the two bags of Patrik Sinkewitz, he had been given around 500 ml of blood, with the result that the reticulocyte count on 9 July 2006 made sense in his case as well. This is because the reticulocyte count is particularly telling when a blood transfusion has been successfully carried out. During transfusion, the body's production of reticulocytes diminishes considerably, leading to a corresponding reduction in the blood values.

The intensifying rumours about another vehicle and its prominent driver from Strasbourg for a blood doping session in Freiburg (code name "Rhine convoy") were not confirmed. Luuc Eisenga, the squad's former technical director, who was consistently named as the driver of the second vehicle, told the Freiburg State Prosecutor on 28 October 2008 and the subsequent hearing by the Chairman of the Commission that he was with the team on the evening of 2 July 2006, which was accepted. He also stated convincingly that everybody had noticed that the riders Sinkewitz, Kessler and Klöden were missing. This is indicative because the original race squad, consisting of nine riders, which usually sat separately from the rest of the team, only consisted of seven riders after Jan Ullrich and Oscar Sevilla were disqualified. Those present would therefore have noticed if first four (one of the riders arrived half and hour late), and then three riders had gone missing. If further team riders had had autologous blood transfusions, this would have happened on a different day.

2.3.3.4 Blood tests at the Freiburg University Clinic central laboratory during the 2006 Tour de France

On 9 July and 14 July 2006, Patrik Sinkewitz and other riders' reticulocytes, haematocrit and haemoglobin concentrations were measured in the central laboratory. Because of the importance of reticulocytes following a blood transfusion, it can be expected that during the follow-up tests on 9 July and 14 July, the samples of the cyclists Matthias Kessler und Andreas Klöden would also have been taken to the Central Laboratory for testing. However, there were no such samples. Instead, a total of seven blood samples were tested on 9 July 2006. But apart from Patrik Sinkewitz's blood sample, only three other samples were from riders in the team, but none from Matthias Kessler and Andreas Klöden. Three other samples came from team support staff

During the measurements of 9 July 2006, the reticulocyte counts of two named team support staff showed unusual scores of 0.4% and 0.2%. If we calculate the off-score values for these data for the two team staff members (Hgb values of 16.9 and 16.2

g/dl), we get a result of 131.1 and 135.2. These elevated off-score values indicate a high likelihood of manipulation being carried out (see Section 2.3.1.2).

There were six blood samples in the central laboratory for the blood tests of 14 July 2006. Apart from Patrik Sinkewitz, only one other blood sample was from a rider. The other four samples were from team support staff. The reticulocyte counts of the two named team support staff on that day were 0.2% each. It is notable that on that day only reticulocyte counts were carried out on all the four team support staff and that those of the two other staff members were also only 0.2% and 0.4%. It seems highly unlikely that team support staff should have blood values indicative of doping manipulations such as blood transfusions. It can therefore be assumed with a high degree of likelihood that the samples came from riders, but were registered under false names.

How these samples got to the central laboratory on 9 July 2006 had not been explained at the time of the Interim report. However, the travel costs which Dr Heinrich had reimbursed from the team on 31 July 2006, the flight tickets he booked and the Tour de France race stage schedule has enabled us to reconstruct the events with greater accuracy. On Saturday 8 July 2006, stage 7 was due to end in Rennes. On Sunday, 9 July, Dr Heinrich flew from there to the Euroairport Basel-Mulhouse-Freiburg, where he arrived at 17:00. From there he continued at 19:05 to Bordeaux, where stage 8 ended and where he arrived at 22:15. The distance between the airport and Freiburg is 60 km, about a 45-minute drive. According to his travel cost breakdown of 31 July 2006, he rented a car from Europcar, which would enable him to get from the airport to Freiburg and back in the time available to him. He could easily have dropped off the blood samples in Freiburg.

The question of how the blood samples of Patrik Sinkewitz, the other riders and team support staff tested for reticulocytes got to Freiburg on 14 July 2006 is still unresolved. It is interesting in this connection that Professor Schmid was on holiday from 7 to 14 July 2006, so Dr Heinrich could have taken over responsibility for looking after Team T-Mobile during his absence. He would then have been in a position to smuggle the blood samples into the clinic on 14 July 2006, particularly as it is clear from many statements by various doctors that responsibility for teams was often associated with leave.
A UCI study which was broadcast on ARD on 4 July 2006 entitled "Blood Doping in Cycling" is of interest in this connection. In it, Zorzoli (2005) compared the changes in the blood and reticulocyte count distribution of cyclists in the period 2001/2002 and 2003/2004. The reticulocyte count for 2003/2004 in particular showed a distinct drop on the values of the previous period, which Zorzoli explained by increasing blood transfusion doping replacing EPO doping.

On 4 July 2006 in a statement about the study, Dr Heinrich debunked the study as well as the dangers of blood transfusions published in *Stern* magazine on the same day. After explaining that blood had to be handled carefully, which was why clinics had special haematological departments, he continued: *"If blood is not taken and stored by qualified staff, contamination and changes can occur. Athletes who are given contaminated blood could contract severe infections. There is also the danger of circulatory collapse if the blood volume suddenly increases by transfusing half a litre or a whole litre of blood. In addition, life-threatening clotting could occur."*

2.3.3.5 Dangers to the health of athletes through autologous blood doping

The way in which Professor Schmid conducted Patrik Sinkewitz's blood transfusions was in gross violation of the 1 July 1998 *Gesetz zur Regelung des Transfusionswesens* (Transfusionsgesetz – TFG), or law on blood transfusions, and the guidelines on taking blood and blood components and the use of blood products (haemotherapy) pursuant to TFG Sections 12 and 18 (as amended 2005) dated 19 September 2005 (Haemotherapy Guidelines). According to TFG Sections 4, 6, 13 and 14, with reference to sections 2.3, 2.8, 4.3, 4.5 and 4.6 of the Haemotherapy Guidelines, taking blood and the use of blood products requires trained staff, proper installations, premises and equipment.

When blood is donated and tested, the donor has to be provided with full, expert, clearly expressed information regarding the nature, significance and procedure of the blood transfusion, as well as evidenced confirmation that the donor in question has understood the information and gives his/her consent. If a transfusion is to take place, patients need to be informed as soon as possible to give them adequate time to think about their decision. After donating blood, the donor has to be given a reasonable opportunity to rest under supervision.

Transfusion of one's own blood (autologous haemotherapy) also always requires a medical indication (Haemotherapy Guidelines No. 4.6). The recipient has to be informed about the possible symptoms. The patient needs to be adequately monitored during and after the transfusion. If there are undesirable effects, these should be dealt with in accordance with Haemotherapy Guideline No. 4.5. In particular it should be ensured that the blood is not mixed up, does not become contaminated or damaged due to improper preparation or storage (Haemotherapy Guideline No. 4.6.2). Before an outpatient is discharged, a check must be made for any symptoms that may be indicative of undesirable reactions. The date and the time must be written down in the patient notes (Haemotherapy Guideline No. 4.3.10.) The recipient has to be informed about the possible symptoms that may occur later (Haemotherapy Guideline No. 4.3.4).

Aside from the fact that three infusion stands with one couch does not meet the requirements for adequate premises and equipment, neither Dr Heinrich nor Professor Schmid bothered with the guidelines in any way. They did not inform Patrik Sinkewitz about the procedures, nor was he monitored in any way after the procedures.

Professor Schmid's actions after the incidents during the blood transfusion of 1 July 2006 were particularly irresponsible after the blood of Patrik Sinkewitz's first bag had "clotted" and only half of the contents could be infused. Instead of discontinuing the transfusion after this incident and acting accordingly, Professor Schmid simply proceeded to infuse the second bag. When it became clear that only half of the contents of the second bag could be transfused as well, Professor Schmid stopped this infusion too, and let Patrik Sinkewitz and the two other riders, whose transfusions had also finished, travel back to Strasbourg. His behaviour during these two transfusion incidents were a gross violation of his duty of professional care.

Transfusion devices are fitted with standard filters with 170 to 230 micrometres pore size (Haemotherapy Guideline No. 4.3.3). As an expert witness credibly stated in his opinions of 22 October and 8 November 2008, this means that with an erythrocyte diameter of 5 micrometres, small clots could already have passed the transfusion filter, and there was the risk of a lung embolism.

However, if the stored blood has particles big enough to prevent the blood passing through the transfusion filter, or from entering the transfusion tube because it is blocked by a clot, this in the expert witness's opinion, is due either to incorrect procedures when the blood was taken (failing to mix the coagulating blood while it is being taken with anticoagulant in the bag), or to bacterial contamination. Bacterial contamination carries a risk of severe septic shock, even after a certain latency period, which in the view of many transfusion specialists can be anything from a few minutes to several hours. It is usually therefore the procedure to discontinue the procedure where blood clots are found, to consult a transfusion specialist and to inform the supplier of the blood.

When the patient's own blood is administered, any suspect stored blood should lead to checking the procedures used to take and process the blood. Therefore, the second blood bag should not have simply been transfused without further thought. It is also totally unacceptable for a patient to be discharged when these risks (embolism, shock) have been established. The doctor giving the transfusion must make sure that the recipient does not have any acute complications, and that no complications requiring emergency treatment arise later.

As Patrik Sinkewitz said to the Commission's satisfaction, Professor Schmid's only response was "that's too bad". Not only did he fail to monitor the patient following these incidents, but he did not even ensure that when he arrived in Strasbourg, he would be monitored and if necessary treated by Dr Heinrich. Instead Patrik Sinkewitz competed in the first stage of the Tour de France of over 184 kilometres the following day, as the team only numbered 7 riders after Jan Ullrich and Oscar Sevilla were banned.

The fact that Professor Schmid made no effort to follow up the two incidents during the transfusions meant that he had blithely accepted the fact that Patrik Sinkewitz was exposed to a high risk of severe complications, either in the form of a septic shock, or of a pulmonary embolism, during his night-time trip from Freiburg to Strasbourg in his girlfriend's car, or subsequently.

2.3.4 Financial gain as a possible motive

As the Commission already noted in the Interim report of 17 March 2008, one of the motives to be considered for the doctors to carry out their doping activities, at least between 2004 and 2006, was financial gain. The agreements between the University Clinic and the various Team T-Mobile squads included medical care for the riders as part of the duties of the doctors from Rehabilitative and Preventive Sports Medicine. Any additional payment to the doctors was only possible with the agreement of the University Clinic.

According to information from the Freiburg State Prosecutor's Office in December 2007, there were contractual agreements for 2006 and 2007 between Dr Heinrich and the racing teams Team T-Mobile, Olaf Ludwig Cycling GmbH and the Neue Straßen Sport GmbH (NSSG). The annual fee agreed by Olaf Ludwig Cycling GmbH for 2006 was EUR 60,000. When NSSG took over the team, Dr Heinrich's responsibilities were extended to include setting up and overseeing an anti-doping programme, which Professor Walter Schmidt of Bayreuth University had developed and evaluated for NSSG. This clearly allowed Dr Heinrich to double his fee for 2007 to EUR 120,000. However, no doping activity can be established for this period, in particular as NSSG had introduced a stringent anti-doping programme. In the files in the possession of the BKA, further payments appear. In addition, as of 12 June 2006, Dr Heinrich was in a contractual relationship with the firm PowerBar Europe GmbH. The subject of the contract signed was services to Team T-Mobile as team doctor. This constitutes a violation of the restraint on competition pursuant to paragraph 60 of the HGB [Code of Commercial Law].

Another doctor, Dr Stefan Vogt, also managed to get payment from NSSG without the knowledge of the University Clinic along the example of Dr Heinrich, although in his case involvement in doping cannot be proven on the basis of the evidence available. For 2007, Dr Vogt signed a contract to work as team doctor for a fee of EUR 72,000. He received about half of this up to the time of the premature termination of their collaboration.

By contrast, the University Clinic's revenue from the externally funded project "Training and Competition Provision for Competitive Cycling" over the whole period from 2000 to 2007 was only between EUR 82,000 and EUR 140,000, an overall total of around EUR 800,000, with both sides failing to perform in full in 2007 due to premature termination by the University Clinic.

Contrary to the claims made in the written declaration presented by Dr Heinrich's lawyer of 23 January 2008, Dr Heinrich did not apply for permission for secondary employment so he could work for NSSG. What is true is that Dr Heinrich submitted a completed application to the Medical Director of the Sports Medicine Department, Professor Dickhuth, on 16 March 2007 for secondary employment consisting of "Organisation, Personnel and Structural Management Training and non-medical care (e.g. nutrition advice and sports psychology) for Team T-Mobile". The scope of the intended activity is stated as "4–5 hours a week", and the monthly fee as "approx. 1,000 Euros". The form is dated 20 December 2006 and signed by Dr Heinrich. Dr Heinrich never submitted the original of the application to the relevant personnel department of the University Clinic. It should also be noted that activity as a team doctor, indicated as the subject of the service provider contract concluded with NSSG, cannot be a secondary employment. Secondary employment is legally defined as another activity not linked to the main activity in and outside public service (Section 1(2) of the State Secondary Employment Act). However, the tasks assigned to Dr Heinrich in his principal activity included looking after Team T-Mobile. In addition, this is prohibited by the so-called ban on splitting, where the same activity is performed as both a principal and secondary occupation, and thereby "split" (Section 3(1)(1) of the University Secondary Employment Regulations). The above-mentioned civil service law regulations on the right to secondary employment are relevant

because of the reference of Section 11 BAT to the corresponding application of the Civil Service Law Regulations (Section 83 State Civil Service Law).
In addition, it should be noted that, pursuant to Section 10 BAT, employees in the university field are permitted to accept remuneration and gifts linked to their official activity only with the agreement of their employer. Such offers must be notified to the employer immediately and without being asked. In this connection, it also needs to be established whether Dr Heinrich had an Audi provided for him. Under criminal law, such cases may be regarded as the acceptance of an advantage (Section 331 StGB [Criminal Code]). The Land of Baden-Württemberg consequently filed a complaint against Dr Heinrich before the Freiburg Labour Court on the grounds of services known and as yet unknown that Dr Heinrich performed as a sports medical doctor and medical carer for athletes for employers other than Freiburg University Clinic.

The BKA possesses files on Professor Schmid showing payments made to him. For this reason, the Land has also filed a suit against Professor Schmid. No legal ruling has yet been made in either of these cases.

Like Dr Henrich, Dr Stefan Vogt also failed to apply for a secondary employment permission for acting as team doctor. Dr Stefan Vogt started on 1 May 2002 as an intern, then worked as a doctor on a limited duration employment contract at the University Clinic. When these agreements came to light, his employment was terminated without notice on 10 March 2008. In court, the Land Baden-Württemberg und Dr Vogt agreed to terminate the contract of employment, and on the reimbursement of payments received.

It was clearly the racing teams' practice to pay medical staff of the University Clinic additional amounts without its knowledge. The same applies to other lump sum payments made to the doctors in lieu of bonuses. According to a witness statement, Olaf Ludwig Cycling GmbH paid EUR 20,000 in this way at Dr Heinrich's proposal.

2.4 Dr Georg Huber and an evaluation of the accusations of doping against him

As the Commission stated in its Interim report of 17 March 2008, Dr Georg Huber had been working in sports medicine at the University Clinic since 1972. Because of this, Dr Huber enjoyed extended protection against dismissal. From 1972 until May 2007, Dr Huber was also federation doctor for the German Cycling Federation, for many years in a leading position. He was suspended on 6 June 2009, and went into official retirement in February 2008.

2.4.1 Doping accusations from the road and track cycling world

On 29 May 2007, when questioned by the Clinic Board, Dr Georg Huber admitted that, when acting as federation doctor for the German Cycling Federation from 1980 to 1990, he had given individual U23 road cyclists the performance-enhancing hormone testosterone. Unlike Professor Schmid and Dr Heinrich, on 11 July 2007, Dr Huber made statements before the Commission. During his hearing, Dr Huber restricted his declaration to the Clinic Board to admitting having administered the hormone testosterone only to two U23 road cyclists for medical reasons in 1987, and

only to counteract the "imbalance" in the recovery phase which he had identified through medical tests.

One of these riders was Christian Henn, who was then 21. Christian Henn told the Commission that, at the time, he would never himself have had the idea of asking for any kind of performance-enhancing substances. The offer was "included in the care" provided by the federation doctor, Dr Huber, and federation coach Peter Weibel. In 1988, Christian Henn won the Rheinland-Pfalz Tour and a bronze medal in the road race at the 1988 Olympic Games in Seoul. The Commission has no doubt as to the veracity of this statement.

The findings of the interim report to the effect that Dr Huber had, at least in 1987 and 1988, as federation doctor of the German Cycling Federation systematically doped several amateur cyclists have been confirmed. The assertion before the Commission of 11 July 2007 that he had given only the amateur cyclists Jörg Müller und Christian Henn Andriol® capsules "to redress an imbalance as a consequence of severe training conditions" has been inherently disproven.
It is clear that Dr Huber administered Andriol® capsules, which had been banned in sport since 1984, to illegally enhance the performance of amateur cyclists not only in 1987 but also in 1988. The testosterone, given together with nutritional supplements and vitamins, was part of the care provided by Dr Huber and coach Weibel. At the time, no explanation of the side effects and dangers was provided in any way. What was mentioned was the performance-enhancing increase in muscle mass by anabolic steriods and the ability to hasten recovery after high levels of exertion.

As attending doctor, Dr Huber also doped the long-distance cyclist Robert Lechner, who had just turned 18. In addition to food supplements and painkillers, while he was in his care he gave him testosterone in the form of Andriol® capsules, thereby systematically drawing him into doping. Robert Lechner was also systematically doped with the anabolic Stromba® (active ingredient Stanozol) and the cortisone preparation Urbason® (active ingredient methylprednisolone) in preparation for the Seoul Olympics in 1998. It is no longer possible to conceal this kind of treatment for the subsequent 1000 metre bronze medal-winner behind the wording "redressing an imbalance as a result of severe training conditions".

However, as federation doctor Dr Huber only doped the amateur cyclist Jörg Müller with Andriolo® capsules in 1987 and 1988. Jörg Müller had been active in the German Cycling Federation as an amateur and member of the junior national team since 1983. In 1988 he became a member of the extended Olympic team, but then dropped out in 1989 because of poor performance, after which he completed his studies in business management.

In 1987 Jörg Müller joined the road cycling national team headed by federation coach Peter Weibel. He was supposed to replace Udo Bölts, who had gone on to professional sport, and rode for the German national team at home and abroad from 1987 to 1988. According to Jörg Müller's statements as witness before the Commission on 13 February 2009 in Heidelberg, regarding whose veracity there is not the slightest doubt, he was given the testosterone preparation Andriol® capsules by his coach Weibel during circuits in autumn 1987. From about the fifth day of track practice, Weibel started giving him one or two "dark red gel capsules" of Andriol®,

saying that those amounts would not show positive in drug tests. Every rider knew this. Nobody discussed the matter any further. During the sports medicine check-ups held every three to four months, the amateur Jörg Müller also received Andriol® capsules from Dr Huber. In at least one case he was given an opened package of Andriol® Capsules to take home, and in a further case he obtained the capsules from a pharmacist he knew with a prescription made out by Dr Huber, it also being clear that the pharmacist was aware that this was a doping substance. During his questioning by the Commission, Jörg Müller expressly stated that the doping administered by coach Weibel and Dr Huber was restricted exclusively to Andriol® capsules. The reasons given for prescribing them was to speed up recovery.

Jörg Müller obtained and took other doping substances such as testosterone preparations and amphetamines, some of them injected subcutaneously. He never discussed these additional substances with Dr Huber.
Jörg Müller was introduced to doping practices by his "mentor" in the federation. The suppliers were older cyclists who dealt in the drugs. From these riders he also knew that the then superficial checks during competitions were nothing to be afraid of, because the samples were only analysed in individual cases, or only to a limited extent. The light-handedness of the checks can be seen by the situation in 1986 before the world championships in Colorado. A few urine samples had been taken during the training camp in Munich that had just finished. According to the witness, these would certainly have given positive results, even with the state of the art at the time, because of the various performance-enhancing substances taken. However, nothing happened. Although checks did take place under the well-subsidised conditions in the Palatinate clinics of the 1980s, the riders knew that in these competitions nothing would show up. During the 1990 Coca-Cola Trophy tests were carried out every two to three days, but no riders tested positive. He himself had been selected for a doping check by a doctor. But the doctor took a detour and arrived too late for the test. Nobody spoke of it, nor were there any consequences. There is no doubt about the testing practices as described by the witnesses.

All amateur cyclists agreed that on the basis of their confidence in their federation doctors, no doubts were raised on the use of doping substances, and any that were were effectively dispelled. It was made clear to them that performance-enhancing substances were necessary to keep up in the international rankings, as Robert Lechner, who never tested positive, said (Ralf Meutgens, *Frankfurter Allgemeine*, 28 February 2008): It was an honour to receive all-round care from the federation doctor, starting with the harmless introduction of food supplements right to the systemic administration of doping and changing the mindset of the athletes under his care to the concept that "It's only doping when you test positively."

As the young amateurs were prepared in this way, it is no wonder that during the 1990s, after increasingly extensive use of EPO, professionals themselves would approach the doctors to ask for the controlled and supervised administration of these substances. There is no evidence of the continuation of doping by Dr Huber among the amateurs after the 1988 Olympics.

The former federation doctor Dr Huber and the suspended federation coach Peter Weibel could shed some light on this. However, Dr Huber, through his attorney, turned down the invitation to a second hearing, as he felt unfairly treated by the

interim report of 17 March 2008. Peter Weibel did not accept the invitation to the Commission hearing from the outset, and provided only a letter from his lawyer dated 29.11.2007 regarding the events in Plouay in 2000.

The doping accusations of the former cyclist Markus Wilfurth, who was cared for by Dr Huber from 1997 to 1999 in the BDR national squad, have not been confirmed, however. A conversation between the Chairman and Markus Wilfurth, who was known as an opponent of doping in the squad, showed rather that he personally was never offered doping substances. He merely drew the conclusion from his failure to be selected for the 1999 World Championship in Verona that this decision by coach Weibel was only on account of his opposition to doping practices. He could not offer any evidence that other athletes in the squad were given prohibited substances. In his comprehensive statement of 12 October 2007, the cyclist Jörg Jaksche, who knew Dr Huber well from his several years as an amateur cyclist, expressly denied having been given any doping substances by Dr Huber or the coach Weibel, or even discussing them. The track cyclist Becke confirmed this in his hearing on 11 June 2008. The assertion of an earlier professional cyclist that Dr Huber had given him a prescription for EPO in the mid-nineties which he had then reimbursed from the organisation's health fund could also not be verified.

2.4.2 Care given to the young rider Patrik Sinkewitz

From 1995 until 2000, Patrik Sinkewitz was cared for as a young rider by Dr Huber. Comprehensive patient records are available for this period, which contain performance diagnostic laboratory findings. The haematocrit and haemoglobin data show an unusually broad fluctuation, although the UCI haematocrit limit of 50% was not exceeded. Between the end of 1995 and 2000, the fluctuations in Hkt range from 37.7 per cent to 48.1 per cent, and in 2000 (5 investigations) from 39.6 per cent and 47.4 per cent. During the same period the fluctuation in Hb ranged from 13.9 to 16.3g/dl, and in 2000 alone from 14.2 to 16.3 g/dl. This does not constitute proof of doping measures.

There is no evidence to implicate Dr Huber's involvement in the Sinkewitz doping affair during the 2000 world championships in Plouay, particularly as the available documents show that Dr Huber was not present. Two striking points appear in the files on care for the athletes. In 2000, Dr Huber asked the UCI for a certificate of exemption for Patrik Sinkewitz for elevated haematocrit levels, which the UCI refused. Here, too, the UCI noted the striking fluctuations in Hkt.

In June 2000, Patrik Sinkewitz tested positive (for the local anaesthetic benzocaine, the use of which is restricted) during the Tour of Thuringia. Benzocaine is authorised only for local application, and should have been reported to the relevant federation. Dr Huber attributed the findings to a throat infection for which he had taken Dolo-Dobendan throat lozenges , an unauthorised systemic administration, mitigated with the justification of an "unusual" accumulation, which was accepted by the BDR without further question.

2.4.3 Further findings on medications It can be seen from the documents on the finances of the "Doping-free Sport" working group that in 2000, Dr Huber had two drug deliveries made to two masseurs and a subordinate doctor. These drug deliveries to the masseurs are apparently linked with the BDR's "South Training Course for

Juniors" from 5 to 26 March 2000 in Mallorca, which both masseurs were supposed to attend. The postal costs were disputed by the "Doping-free Sport" account. As already mentioned however, the cost of the medicinal products was not charged to the account.
The "Special Investigation into Doping" project group set up by the Federal Interior Ministry has provided the Commission with files on the medicinal products ordered by Dr Huber in his function as BDR federation doctor which were queried in the framework of the special investigation of the federations. An analysis of drugs delivered in July 2006 has revealed that, among 41 such products, there were four linked to doping (Salbutamol Dosieraerosol Stada, Furosemid Stada, Beloc Zok 95 mg, Dexamethason Creme), which can be prescribed to competitive athletes if they have certificates of exemption for specific illnesses (e.g. bronchial asthma).

In his hearing before the Commission, Dr Huber made no mention of any kind of collaboration with Professor Schmid and Dr Heinrich. As was stated in the interim report of 17 March 2008, because of the joint activity in the BDR, there was contact between the two doctors, all the more so as Team Telekom/T-Mobile had long been considered tantamount to "the national cycling team". What is more, Dr Huber is described in a Team Telekom information brochure from 1993 as one of the medical support staff. Closer contact between the doctors or even exchange of experience over doping practices are refuted in the statement of Dr Wolfgang Stockhausen, who regarding Dr Huber, told the Commission on 19 February 2008 that he had kept himself out of the Telekom affair.

3. Possible Involvement of the Rehabilitative and Preventive Sports Medicine Department in the established doping activities of the doctors accused of doping
As stated in the interim report of 17 March 2008, the Commission took a close look at the structure and main activities of the department. To determine whether, and if so, to what extent, the directors and employees of Rehabilitative and Preventive Sports Medicine had been involved in the doping practices discovered, all doctors, researchers, medical and technical assistants, technical staff and administrative staff of the Commission were interviewed, some repeatedly. Some doctors who were no longer practising in sports medicine were also interviewed. These were Dr Ernst Jakob, Dr Wolfgang Stockhausen and private lecturer Dr Andreas Blum. In addition, a secretary who had worked for Professor Keul for many years was questioned.
The Commission further obtained internal Clinic information from the personnel administration, the external funding administration, the University Clinic pharmacy, the transfusion medicine section, the internal audit section, the outpatient accounts, the faculty, the technical department, the data processing centre, the central laboratory, the office for technology transfer and the Sports Medicine Department, as well as the Sports Orthopaedics Department and Ethics Commission. It also commissioned two experts to evaluate the data records of the Sports Medicine Department.

When the interim reports had been completed, the Commission heard the former commercial director of the University Clinic, and two of his former employees on the question of departmental structures, and evaluated the University Clinic internal audit documents on the administration of third-party funds between 1994 and 2000.

3.1 Origin and Structure of the Rehabilitative and Preventive Sports Medicine Department

3.1.1 Leadership of Professor Keul

The Sports Medicine Department has been an independent unit since 1974. The Department was created when Sports Medicine was split from the Chair of Circulation Research and Performance Medicine and Internal Medicine III. At the same time a Tenured Professorship of Sports and Performance Medicine was set up for the new department in the Medical University Clinic. The leadership of the newly created sports and performance medicine unit was entrusted to Professor Joseph Keul. The staff of the department initially comprised a medical director, an assistant and a medical/technical assistant. They were allocated four working and laboratory rooms in the medical clinic.

The creation of an independent sports medicine department at the Freiburg University Clinic was closely linked to the national and local policy of the time, and in particular with the decision taken in 1973 by the state of Baden-Württemberg to create, in the public interest, a centre for the study of sports medical care for competition athletes at the Freiburg University Clinic. This was manifested particularly in the fact that the building work and costs for the construction and fitting out of the building with a research and laboratory unit for the Sports Medicine Department on the land of the University Clinic were seen to by the specially created association "Herzogenhorn – Freiburg Federal Performance Centre e.V. for skiing, performance and sports medicine and sports traumatology" in 1975/76. Of the total cost of 1,332,000 DM, the federal government paid 847,000 DM, the Land paid 216,400, the Baden Sports Federation and the city of Freiburg 160,000 DM, with the remaining 108,200 DM funded by donations to the association. In addition, the state included funding for staff and equipment costs for the sports medical care of the state's competition athletes in the budget, and entrusted the administration of this funding to the University Clinic.

The sports policy adopted, in particular the greater financial support for competitive sport by the federal and local governments encouraged the set-up and expansion of the Sports Medicine Department in the following years. By 1979, in addition to the Medical Director, six doctors and a chemist, five medical and technical assistants and three secretaries were already working in the Department. Subsequent negotiations by the Medical Director led to the creation of additional posts in the Department in 1980, with a senior doctor, assistant, secretary and two medical and technical assistant positions. Then again, largely through donations from third parties, especially from tennis, the premises were expanded considerably in 1989.

In addition to "conventional sports medicine", in the sense of caring for competition athletes, the Department expanded into the areas of rehabilitation and prevention over the course of time. This was reflected in both the sports medicine outpatient work and the research work by the Department. The examinations of patients and research areas unconnected with top-level sport and of volunteers for scientific studies not linked to competition sport increased steadily. As a result of this ongoing broadening of the spectrum of the Department, in 1994 a name change from the Department of Sports and Performance Medicine to the Department for Sports, Rehabilitation and Preventive Medicine was requested. Both the University bodies responsible and the Ministry for Science and Research agreed to this request, with a slight difference from the original proposal, and in 1995, the name was changed to the Department for

Rehabilitative and Preventive Sports Medicine. One of the reasons for this orientation and readjustment of other core areas can be found particularly in the restructuring and decentralisation of sports funding after German reunification and the increasing importance of widespread diseases such as metabolic syndrome, obesity and type 2 diabetes mellitus.

Before a new professor was appointed in 2000, more than 42 people were working in the Sports Medicine Department, of whom more than 60 per cent were financed by external funding. The external funding totalled EUR 1,258,475.55, of which 35 per cent came from the federal and state governments for the care of 1,232 federal and Land high level athletes. These included the "D-level" athletes, who are usually aged from 9 to 16. In all, in 2000 the Rehabilitative and Preventive Sports Medicine Department treated 5,172 people, which in addition to the high level athletes included around 500 athletes from competition and professional sport. At the same time, 2,508 patients and 946 volunteers were handled by the outpatients section, with the focus on prevention and rehabilitation and on clinical research. Apart from standard patient care, this included care relationships in the area of cardiac sport, obesity programmes, especially for children, tumour programmes and lifestyle operations, and lipid outpatient treatment.

3.1.1.1 Doping practices

According to the documents available to the Commission, Professor Keul was a frequent presence at Team Telekom events and among the team generally. However, there is no evidence of active involvement of this kind by the doctors Professor Schmid and Dr Heinrich or indeed Dr Huber. Interviews with the decision-makers at Deutsche Telekom/T-Mobile also drew a blank.

The same applies to statements made by other former doctors of the department, particular those in leading positions. A former member of the medical staff, when interviewed by the Medical Director of the University Clinic and the chairman of the Commission on 20 March 2008 did, however, state that the whole doping affair had only gone on between Keul, Schmid and later Heinrich. All the others, including Dr Huber, had only been on the outside. However, it would always have been clear to the others working in sports medicine that there was a sense of unease about "the stuff that's going on in professional cycling". No further statements were obtained about Professor Keul's involvement in doping in cycling.

It is, however, certain that Professor Keul did approve the controlled use of performance-enhancing substances, only in the men, and that he was always at hand when the use, as well as the effects and side effects, of doping substances had to be disputed or played down. The fact that Professor Keul played down the effects of anabolic steroids, and so indirectly regarding their use in adult males as harmless, is documented in the report of the International Congress of Scientists and Coaches on Biomedicine and Training (Knebel 1972).

At this international congress, held in Mainz in November 1971, Professor Keul reported on his series of investigations on the effectiveness of anabolic steroids on 15 weightlifters from Baden, who significantly increased their competitive performance

by using them and become Baden champions for the first time in the history of the association. Knebel's report on this congress (1972, p. 100) reads:

> "Extensive liver investigations in this group allowed Keul to establish that the injected substances had not caused any liver damage. Keul was of the view that these substances could be administered without any danger of harm. There were no medical reservations regarding the use of these substances. However, using anabolic steroids had to be avoided on grounds of sports ethics."

The main thrust of Professor Keul's attitude over many years was: Testosterone and nandrolone should not be banned, as they cannot harm adult males (see also Section 3.1.1.3). In 1976 in a television interview, he said: "Over the next few years in particular we want to focus on the possibilities of using drugs to influence the performance of humans: what is possible, what can be used, and what benefits athletes without harming them." (cf. Huenerfeld on SWR TV "Re: Doping and Freiburg Sports Medicine", broadcast on 26 May 2008 at 22:25).

In their book "Doping in Elite Sports", Andreas Singler and Professor Treutlein, for example in the Chapter "1976/77 Between official prohibition and tacit consent", cite a report from the *Frankfurter Rundschau* of 7 May 1977 (Singler and Treutlein 2007). This describes sports medicine specialists including "Prof. Dr Keul of Freiburg Sports Doctors-Hochburg as being among the most prominent individuals playing down anabolic steroids", who described the side effects as "either pure fiction", or regarded them "as the consequence of unskilled overdosing". In a spate of honesty, Professor Keul conceded that even seasoned medal-hunters were not immune to harmful side effects. In Keul's words: "Various scientific studies show liver function disorders in a small number of adult athletes after using anabolic steroids." By way of consolation, the "athletes' comforter" added that these disorders regressed completely when the hormones were discontinued.
A more recent example of the fight against doping activities among competitive athletes is how the Festina scandal was dealt with during the 1998 Tour de France. This, the biggest doping scandal in sporting history, was triggered off when raids on the Festina team's accommodation found large quantities of EPOs and other doping substances, leading to the disqualification of the team from the Tour de France after stage 7.

The immediate reaction of Team Telekom to the allegation that Professor Schmid and Dr Heinrich had been systematically doping the team with EPO and other substances can be seen from the statement of Deutsche Telekom's former head of communications, Jürgen Kindervater, to the local press:

"First of all I should like to say that we are absolutely certain that there is no doping going on in our team. This is backed by two names: Professor Keul from the medical department and Walter Godefroot from the team management" (Huenerfeld IOC. Cit.).

Professor Keul then sent the following fax, which the Commission has in its possession, to Jürgen Kindervater on 29.07.1998:

"I am pleased to inform you that since our last phone conversation I have given 5 TV and 9 radio interviews in which I made it clear that our Telekom team is under our control and is not taking any doping substances… I have also spoken with a number of journalists I know, who have written comments to that effect… But it is inevitable that the occasional article to the contrary will come out."

On 19 June 1999, in the aftermath of the Festina scandal, Professor Keul also gave press interviews in which he informed the *Badische Zeitung* that Team Telekom athletes had not taken any substances they should not have: "They didn't get any, that can be ruled out completely. At least the test results give no indications of that," or, to another question by the journalist: "Our test results do not indicate any enhancement in performance whatsoever due to prohibited substances. There was nothing sound in the *Spiegel*...But if you don't believe us when we say that we found no evidence of doping in team Telekom, you may not believe the test results, either."

In an interview before the *Franfkurter Allgemeine* of 22 July 1997, he said with regard to amphetamines, anabolic steroids and EPO:

"Amphetamines and stimulants help, because they release additional reserves and stave off exhaustion. It does take more than a night's sleep to recover, though. It slows you down a lot on the following day. Abusing these substances is checked just as closely on the Tour as the use of anabolic steroids. But steroids don't help with recovery in any way. We proved this some years back in tests, for which we were severely criticised. EPO increases the red blood cell count, and thereby the blood's capacity to transport oxygen – that is one side of the coin. On the other, it thickens the blood. This decreases the stroke volume of the heart, and reduces its pressure output. The effect is therefore slight. People take it, but definitely not in Team Telekom. We check our riders' haematocrit levels, and with the sole exception of Jens Heppner, for which there were natural reasons, they are below the critical level of 50."

Other statements by Professor Keul (quoted in *Spiegel* magazine of 01.02.1999, page 138) such as "what the data claiming that somatropine (a growth hormone) enhances performance are based on is a complete mystery", of "half of all doping cases arise from misunderstanding and mistakes," or formulations such as "doping hysteria" show that he constantly strove to dispute or downplay the effects of performance-enhancing drugs in public. When in 1988 the first epoetin preparation was introduced in medicine, and the first cases of abuse had become known in sports, it was reported in the press that Professor Keul claimed that if used properly, EPO was harmless (Internet quote: http://www.cycling4fans.de/index.php?id=3951), even though the specialist literature had been warning of the risks of giving athletes epoetin as a performance-enhancer for many years (cf. Section 2.3.1.5 of this report).

Professor Keul's underlying attitude in his capacity as the head of Rehabilitative and Preventive Sports Medicine does not convey the impression of someone who is rigorously fighting doping. Furthermore, he aided and abetted the lack of supervision of processes in the doping department of Professor Schmid and Dr Heinrich.

Professor Keul's attitude on the use of drugs to enhance performance in professional athletes conformed with the general spirit of the 1970s, as expressed in the speech of the Ministerial Advisor of the Ministry of the Interior, Dr Gerhard Groß, at the official

opening of the new department of Sports Medicine at Freiburg University Clinic in 1976. This said:

"I am aware that Freiburg, if I may take the liberty of identifying you, Professor Keul, with Freiburg, has also often spoken about this. If there is no danger or harm to people's health, you believe that performance-enhancing drugs are acceptable. The Ministry of the Interior wholeheartedly supports this view. Our athletes should not be deprived of what other countries have successfully used as aids in training and competitions, and which many years of practice have shown to be harmless to athletes' health. We have to adopt this view if we want to keep up with the peak in the world sports movement. And that is what we want." (SWR TV comment of 21.10.1976. "Kontraste" programme, radio Berlin-Brandenburg, 14.09.2006).
The former chair of the Bundestag Sports Committee, Dr Wolfgang Schäuble also made positive comments during a public enquiry in the Bundestag on 28.09.1977 on the use of performance-enhancing drugs. He wanted equality of opportunity, and spoke in favour of performance-enhancing drugs, and in particular anabolic steroids, which had been classed as doping substances since 1976:

"We only want to use such substances in a highly restricted way and under the strict supervision of sports medicine, in other words, medical supervision,… because there are clearly disciplines where it is no longer possible to keep up in high-performance world competitions without using such substances."(Federal Gazette, 6th session of the Sports Committee 6/101.102 M/G).

With high-ranking members of government making statements like this on the use of performance-enhancing drugs, the impression is that at that time there was a lack of proper distinction between such measures and the use of prohibited substances.

3.1.1.2 External funding administration and private payments

As the report of the internal audit department of Freiburg University Clinic of 29.03.2001 shows, until his death, Professor Keul failed to adequately declare or account for external funding, both assigned and unassigned, or for revenue from private payments for the outpatient sports medicine investigations for sports clubs and individuals, or for inpatient treatment. It was only when the Department of Rehabilitative and Preventive Sports Medicine was taken over by the head of the Commission Professor Berg in July 2000 that order was brought to the various accounting procedures. Professor Berg made all external funding projects in the university's external funding administration subject to the standard control mechanisms.

Professor Keul had used the private accounts system available to external funding administration to channel research funding to accounts and sub-accounts of the Nenad-Keul Foundation of Preventative Medicine, which he had set up, and which was approved on 26.08.1992 by the head of the local Freiburg government, without the knowledge of the University or the University Clinic.

Raising and administering external funding is one of the tasks of the members of the University research staff. Use of the private accounts procedure instituted as from 01.01.1990 was, according to Section 59 paragraph 2 sentence 4 of the University

Regulations of the time, subject to the researcher making an application to the University Administration for waiving the administration of the funds by the university. This application had to be accompanied by a notice of the intention to accept external funding, along with the reasons and the conditions set by the funding provider. According to these regulations, the funding recipient was obliged to report and account for the funds when asked to do so, and, unless otherwise required by the sponsor, to make any surplus available after the completion of the research project to the University for use in the relevant specialist area. This was not done during Professor Keul's lifetime, because, in breach of his professional duty, he circumvented the private accounts procedure by failing to provide the university administration with the required applications and notifications.

The assigned funds came from the Federal Interior Ministry (BMI) and the German Sports Federation, competition and professional sport. According to the internal audit by Freiburg University Clinic carried out on 29.03.2001, the revenue from grant funding during the period between 1994 and 1999 – not closed yet - was 373,347.00 DM, plus an additional drawing of 107,005.22 DM allowed by the German Sports Federation, in addition to separately-charged laboratory costs of 102,583.40 DM. Professor Keul had these amounts transferred to the Foundation's accounts without the University Clinic's knowledge. He did, however, transfer the payments received for laboratory costs to the University Clinic administration. However, according to the internal audit report, the payment rates were not taken from the Doctors' Fees Regulation (GOÄ), but set by himself, and were not comprehensible to the internal audit department.

Professor Keul also allowed the non-assigned external funding, totalling 1,338,456.99 DM at the time, again provided by the German Sports Federation, performance sports department, in addition to the German Disabled Sports Federation, the German Deaf Sports Federation and the German Cycling Federation, performance sports department, to be transferred to the Foundation's accounts in contravention of the private account procedures. For example, the Commission has in its possession an invoice dated 27.11.1998 for a sum of 13,075.80 DM in respect of a project in 1998, which Professor Keul had paid by the Nenad-Keul Foundation to a head doctor of the department, even though the invoice had not been signed. This expense was therefore not a regulation use of the funding, because the suspect was being paid for what was already part of his duties as a member of staff.

It was impossible to check the monies paid out of these accounts, because the account statements were with the Nenad-Keul Foundation. A memo 15 January 2001 given to the Chairman of the Commission during the interview with the internal auditor stated that the auditor believed it necessary to inspect the Foundation's relevant accounting documents in order to precisely determine the income and expenditure of the Foundation. However, the commercial director of the University Clinic at the time saw no possibility of obtaining the statements. It was therefore impossible to verify whether the funds raised by Professor Keul had been transferred to the Nenad-Keul foundation and used for the purposes of the relevant projects. The auditor was therefore unable to establish whether Professor Keul had, for example, claimed non-existent expenditure in two of the expenditure documents which the Commission has in its possession. The statement of expenditure of 1997 for the project "Optimisation of performance diagnosis procedures for training control of road racers…" includes a

remittance advice number 6, dated 26.11.1997, described as "A. Berg assistance", paying his deputy, head doctor Professor Aloys Berg, the sum of 1,875.00 DM, which Prof. Berg claims not to have received. There are at least two medical assistants who did not receive sums mentioned in the statement. It could not be established whether Professor Schmid and Dr Huber, who were also named as recipients in the statement, had received the amounts in question. Professor Schmid made no statements before the Commission. Dr Huber was not heard, as he had refused to appear before the Commission again.

The statement of expenditure for the project, "Elevation and individual adaptation to hypoxy irritation in long-distance skiers and biathletes" includes a remittance advice numbered 4, dated 02.12.1999, described as "A. Berg assistance", for a sum of 3,600.00 DM, which Prof. Berg states he had not received. It would appear that Professor Berg and the medical assistants were simply used as fictitious cost factors in these cases, leaving money that had been improperly credited to the Foundation unaccounted for.

The total undocumented cash flow balance of the Nenad-Keul Foundation resulting from these two external sources of funding were found by the internal audit report of 29.03.2001 for the unexpired period, i.e. from 1994, to stand at 288,148.49 DM. The University Clinic requested recovery of the funds in a letter of 10 April 2001, which was subsequently carried out.

Professor Keul received the payments from outpatient sports medicine studies for sports federations and individuals privately, but did not reimburse the University Clinic for the cost of materials or the use of facilities.

For inpatient, selective services, Professor Keul earned 61,253.50 DM between 1994 and 2000, which again he did not declare to the University Clinic. This led in February 2001 to a demand for payment for the use of facilities from the personnel department, and reimbursement of costs under the National Ordinance on Hospital Rates totalling 16,886.81 DM which was also not paid.

The internal audit report found there were no complaints about revenues from private outpatient treatment in 1999. For this reason, the auditors decided not to check the preceding years.

The Doping-free Sport project – external funding by Deutsche Telekom AG – was a genuine third-party funded project. The agreement of 04/28.02.1999 with Deutsche Telekom was concluded by Professor Keul himself, and the two follow-on agreements for 2000 and 2001 were concluded with Freiburg University Clinic on behalf of the Department of Rehabilitative and Preventive Sports Medicine, represented by Professor Berg as acting head of department. But with this agreement again, Professor Keul failed to provide either the agreement or the correspondence necessary for managing the funding with the donor, despite repeated requests to do so. The VAT totalling 144,000 DM which he invoiced but did not pay in was subsequently paid by the University Clinic to the fiscal authorities on the basis of the internal audit report of 29.03.2001.

It is not clear to the Commission why the failures in practically all areas relating to the income of Professor Keul, which had been going on for years, were only uncovered by his successor after his death. It is clear that the great confidence that Professor Keul enjoyed in the University Clinic played a major role in this. It was only when Professor Berg took over the Department of Rehabilitative and Preventive Sports Medicine in July 2000 that as the acting head, in collaboration with the University Clinic, he had the painstaking work undertaken of properly resolving the assigned and non-assigned external funding as well as the private income from in-house selective medical services and outpatient sports medicine treatment, particularly as a consequence of the internal audit report.

3.1.1.3 Research activities

The evaluation committee commission set up by the rector of the university is investigating the research activities of the Department of Rehabilitative and Preventive Sports Medicine. By way of example, a single study by Professor Keul will be mentioned here, in which he quite openly favours the use of anabolic steroids by athletes, and does not recommend banning these substances (Keul et al. 1976).

The study investigates 15 weightlifters who were given nandrolone decanoate over a two-month period, 6 weightlifters who were given nandrolone decanoate over three years, and 57 further athletes who used anabolic steroids (of which 26 took nandrolone decanoate and 31 alkylate steroids). The summary states: "No evidence of harm caused by nandrolone decanoate was found, thereby showing that there are no grounds for the general assertion that anabolic hormones are harmful. Five instances of harm/functional impairment were found in 31 of the investigated athletes and three of the investigated weightlifters after taking alkylate anabolic steroids. After discontinuing the anabolic steroids the pathological biochemistry results diminished again, indicating that the liver function disorder is probably reversible."

Professor Keul's presentation of the results in the Discussion section of the research paper is particularly telling about his views on doping using anabolic steroids: "For males there is currently no corroborated evidence against the use of anabolic hormones if therapeutic doses are taken. In women and young people they should be avoided because of the danger of irreversible functional disorders and lack of knowledge about damage. Ethical grounds are the only reason for prohibiting them in male adult athletes. Warnings should be given about the dangers of overdoses, which can frequently occur with normal self-medication, as the above refer to doses which have been subjected to clinical testing. A ban on anabolic hormones because of unproven harm caused would make medical advice, and indeed the doctor himself, seem dubious and is therefore not recommended."

3.1.2 Professor Dickhuth's leadership

When Professor Dickhuth took over the chair in 2002, care for national and Land squad athletes and of outpatients was continued. In 2006, 1,157 high-level athletes and 446 athletes from competition and professional sport were treated. With 651 studied, the young high-level athletes aged from 9 to 16 accounted for more than 40 per cent of all the sports medical care under the category of "high level sport". This

compares with the treatment of around 3,457 patients in the outpatient prevention and rehabilitation sector. There were also around 3,800 volunteers included in scientific studies. Of these, 302 were taking part in projects linked to competition sport. The health-related projects in the Department in the "M.O.B.I.L.I.S." and "Fitoc" obesity area are regarded as generally successful prevention programmes, and not only by specialists. At the same time, the area of occupational medicine, which in Freiburg has traditionally been established within sports medicine, was also expanded. Thus the Department provides occupational medical treatment for a large number of firms with a total of 5,500 employees. There is also close cooperation with transplant medicine, in order to be able to delimit the optimum window of opportunity for transplants using the lung function test procedure used in sports medicine. In 2006, the total budget for the Department was EUR 2.1 million (including external funding of EUR 1,164,093.37, which included the allocations for high level athlete care totalling EUR 417,354.59). The Department employed a total of 38 staff (24 medical or scientific staff, 9 medical and technical assistants and 5 administrative staff).

3.1.2.1 Monitoring for doping activity

As the interim report of 17 March 2008 stated, there are no grounds for believing that Professor Dickhuth was in any way involved in the doping activities of Professor Schmid, Dr Heinrich and Dr Huber. It should, however, be assumed that any mention of the active involvement of his department in doping professional cyclists was avoided.

It was, however, checked if there had been any omissions in the supervision of the doctors who systematically doped athletes during their care for the cyclists of Team Telekom and its successor, the T-Mobile team since 1995. However, the initial situation when Professor Dickhuth took over the leadership of the Freiburg Department of Rehabilitative and Preventive Sports Medicine in February 2002 was unproblematic. All that was known was the *Spiegel* article of 12 June 1999, "The results are going wild" (24/1999), which read as follows:

Deutsche Telekom is a two-class organisation: "Marching at its head are the media group's staff, trained in rhetoric, and alongside them the medics of Freiburg University Clinic. One tier down in the hierarchy there are forces at work who can do more than just fix a puncture." The article goes on to describe the connections the Telekom cyclists had with one Belgian and four Italian doctors, who were the target of an official investigation into doping. On one occasion Dr Heinrich is quoted as saying that his riders had regular blood tests – except they were "not for EPO, but to determine iron and magnesium deficiencies." This in itself should not have given any grounds for the department head to take any serious measures or even to terminate the agreement with Deutsche Telekom, with all the consequences that then arose in 2007.

However, the Commission did make a detailed check of what Professor Dickhuth instituted as head of the department. According to the "Report on my activities in the Department of Rehabilitative and Preventive Sports Medicine since my takeover on 15.02.2002 (first draft 21.05.2007, revised 06.11.2007)" he gave to the Commission, Professor Dickhuth instituted a number of organisational measures directly or indirectly relating to doping:

- Moving his office from the 3rd floor "right into the middle of the outpatients department, so that all examination rooms were only a few meters away" to allow him to check up on the employees' clinical activities,

- Setting up first two and then three neutral testing rooms to put an end to the previously hard to monitor, usual tests in the doctors' surgeries and to establish a standard test procedure. The courses of the tests and documents were systematically standardised,

- Dividing the department into areas with one head doctor for each area, e.g. Biomechanics, Teaching and Research, Laboratory Diagnosis, Outpatients,

- Allocating assistants to each attending, e.g. Dr Heinrich, Dr Blum and Dr Vogt to Professor Schmid,

- Introducing daily morning doctors' meetings and monthly staff meetings on the subject of doping generally, and from 2002 about doping in cycling,

- Introduction of a Science Day on the first Friday of each month in which the individual scientific working groups swapped around (Science Day). In addition, a colloquium of doctoral candidates was introduced to oversee and influence activities there,

- Drafting guidelines both for orthopaedic examinations (together with Dr Birnesser and other authors and for internal examinations of competitive and professional athletes to achieve a standardised level of checks among athletes,

- Introduction of an electronic registration and monitoring system for patients and the services performed, including doctors' notes to monitor patient and athlete flows (AIMS) which was compatible with the MEDOC system,

- Setting up a modern security system to prevent unmonitored and out-of-hours access,

- At least annual audits of the orders for drugs submitted via SAP,

- Introduction of regular staff meetings,

- Random inspections of all rooms (at least once per year) by the medical director to check that medications have been properly stored, medical documents properly processed and to ascertain requirements for equipment,

- Implementation of further measures, which are included in the Quality Management (QM) Report.

These measures were clearly insufficient to uncover or prevent the doping activity that was possible at that time. When the accusations against Professor Schmid and Dr Heinrich in April 2007 became public, Professor Dickhuth implemented an 8-point programme "to prevent lapses among medical staff". The most important points the report brought up were:

- All staff had to sign an undertaking committing themselves against doping,

- Obligatory further training sessions would be held once yearly on the latest doping regulations, with attendance confirmed by signatures,

- When providing care to athletes outside the department, all medical measures, and particularly the administration of medication and food supplements, had to be recorded and presented at the end of the campaign to the departmental management (regardless of the Federation's requirements),

- All orders for medications by department staff, particularly outside the clinic pharmacy, had to be recorded and presented to the departmental management. This also applied to food supplements, and also if the drugs or food supplements were paid for directly by a federation or an individual,

- No prescription-only medication could be stored in the departmental pharmacy, other than in the ambulance. This also applied to drug samples,

- Any abnormalities indicating doping in patients and athletes should be promptly notified to the department management or its office, retaining doctor-patient confidentiality

- The Department of Sports Medicine would emphasise all anti-doping aspects in its teaching (medicine, sports science). This was aimed in particular at medical students in order to raise awareness of banned manipulation in sports,

- In the future, care would only be provided for Federations and for professional sports if the sport in question operated a credible anti-doping policy.

Reporting on measures outside the department, and submitting these to the head of department would probably have been a sensible measure to increase the transparency of these activities – if they were complied with. Whether these measures would have been successful among doctors who had already proved their criminal inclinations as regards doping is questionable.

Even before the 1998 Festina scandal, doping practices among doctors were not usually a subject addressed in sports medicine. Dr Stockhausen, who had and still has an insight into the cycling scene and who is not a suspect as regards the doping past of sports medicine, expressly told the Commission on 19 February 2008: "I was there until 1996, and I neither knew nor believed that doping was actively going on in the Clinic. Everybody on the scene knew that cyclists took drugs. Dealing went on right up to the starting line. I knew that the clinic was taking measures to cover its tracks and skew the haematocrit results".

But even if we assume that until the 1998 Festina scandal doping with EPO was regarded as a kind of peccadillo, this was no longer the case after the scandal. Not only the French legal system but also the public was now highly aware of the problem of taking banned substances. The result is that from 1998 at the latest, it would not have been the intention of the cyclists, or of the team, and by no means the intention of the Freiburg University Clinic doctors who supplied the drugs, to allow details

about any doping manipulations to come out into the open. This means that Professor Schmid and Dr Heinrich probably did everything they could to deceive the head of department who was appointed in February 2002 about their doping activities. Even in 2006, when referring to the relationship between Ullrich and Spanish doctors, they hid their involvement in doping.

Would other measures have been successful? Removing the doctors from team care would probably have been successful. However, the information available when Professor Dickhuth took over the department in February 2002 was insufficient to warrant this. The *Spiegel* weekly article of 12 June 1999 (Issue 24/99) "The results are going wild" may have had clear references to the connections between former and current Telekom riders to "famous doctors abroad", four of which it named, but it made no specific accusations against the Freiburg sports medicine doctors. Only Dr Heinrich is mentioned with the above-cited quote: "Of course... his riders had regular blood tests – just not for EPO, but to determine iron and magnesium deficiencies." After the statements by the Telekom manager Kindervater were cited in the article in the *Spiegel*, the sponsor remained steadfastly faithful to Freiburg sports medicine and its doctors. Similar statements were also made by the other witnesses related to the sponsor when they were heard by the Commission. The tenor of their statements was: Freiburg University Clinic was chosen to ensure that athletes received the best medical care and to ensure that there was no doping. This fundamental view always remained the same. For this reason there were no evident or compelling grounds for the immediate termination of the sponsoring agreement when Professor Dickhuth took over the department in February 2002, i.e. three years after the publication of the article in *Spiegel*. At that time this would also have entailed a high risk of being held liable for breach of contract with Deutsche Telekom. This view was borne out in 2007, when the University Clinic faced a number of lawsuits after terminating the agreements.

Any further control and supervisory measures in addition to those enumerated by Professor Dickhuth would have proceeded in the same way as all the previous measures. This is convincingly borne out by the manipulations that the doctors accused of doping carried out in the electronic ID systems of the University Clinic's central laboratory. On 29 June 2005, three days before the Tour de France, the fictitious patients "Maier, Ulrich, born 02.12.1937" and "Mayer, Alexander, born 02.07.1943" were registered in the system. Sports medicine staff only managed to find evidence of these manipulations in December 2007 through targeted investigation work based on significant suspect areas, and with a significant amount of criminological flair. Without this, the manipulations would not have been uncovered.

3.1.2.2 External funding administration and private payments

Following a thorough review of the inaccurate way in which the monies raised by Professor Keul were accounted for by the University Clinic administration and Professor Berg in 2001, Professor Dickhuth was able to take over a "tidy shop" when he took over the department on 16 February 2002. No more irregularities in accounting for funding received occurred after that.

For this reason the Commission is of the view that the financial management of the Department of Rehabilitative and Preventive Sports Medicine under the temporary

management of Professor Berg and under Professor Dickhuth differed greatly from that run by Professor Keul. In contrast to previously, since 2000 external funding is obtained solely from the external funding administration department of the university clinic, and is not administered by the head of the department through private accounts, or indeed in deviations from this procedure *à la Keul*. Outpatient examinations of competitive athletes has also been reorganised by the university clinic administration. At the initiative of the supervisory council of 12 November 2007, the Commission first appointed an auditor to report on the cash flows within the department. In consequence of the audit of human resources and finance which the university clinic supervisory board resolved on 19 December 2007 and which was carried out in January 2008 in the Department of Rehabilitative and Preventive Sports Medicine by a firm of auditors commissioned by it, the Commission withdrew its expert opinion assignment to avoid duplicating work. The supervisory board's assignment to the auditors and its report were not brought to the knowledge of the Commission. It probably had not resulted in any revelations of irregularities.

In a letter dated 14 May 2008, the chairman of the University Clinic's supervisory board suggested that the Commission state its opinion on additional findings made since the interim report and state whether and in what timeframe questions on human resources and financial management issues could be comprehensively answered. Following an interim report of 26 May 2008, the Commission stated in a letter of 9 September 2008 that it did not as yet have any results that would allow a conclusive assessment, and that the documents made available by the University Clinic and the University as well as interviews with administrative staff had given no indications of any irregularities.

This assessment has since been corroborated by the final report of the auditors appointed by the University Clinic, PricewaterhouseCoopers AG (PWC) dated 20 January 2009. This report also saw no grounds to believe that the processes of the external funding administration had not been properly conducted since 1 January 2001. The supervisory board has familiarised itself with the PWC report on the human resources and financial management, and therefore believes that its audit assignment issued during the session of 19.12.2007 has been completed.

3.1.2.3 Research activities

Professor Dickhuth's research publications are another area where there is no evidence of his approval of doping agents or other illegal methods of enhancing performance. According to an evaluation by the American literature database PubMed, between 1972 and 2008 Professor Dickhuth published a total of 127 research works as author or co-author, 15 of them on subjects which could relate to doping.

Five of the 15 publications investigated the effect of iron and α-tocopherol (vitamin E) on erythrocytes, EPO and leukocytes on healthy subjects with no reference to their performance-enhancing properties (Keul et al. 1987, Niess et al. 2000, Niess et al. 2002, Schneider et al. 2003, Niess et al. 2004).

Five further studies dealt with the measurement of muscle performance and cardiovascular parameters in professional cyclists, including three conducted during the Tour de France and the Giro d'Italia. None of these five works on performance physiology investigated drugs or doping-related substances (König et al. 2003, Vogt et al. 2006, Vogt et al. 2007, Vogt et al. 2007, Vogt et al. 2008).

Two more recent studies deal with the quantitative determination of haemoglobin mass using an optimised carbon monoxide re-breathing method (Schumacher et al. 2008, Pottgiesser et al. 2008). These studies had been written because of the illegal use of blood doping in professional and competitive sport, which had been known for some years. The main aim of blood doping is to increase the haemoglobin mass to enhance performance, as haemoglobin is the most important component for the maximum uptake of oxygen. While there are now sensitive detection methods available for doping with recombined EPO and homologous blood transfusions from other persons, autologous blood transfusions with the athlete's own blood have not so far been practically detectable. These two studies showed that quantitative haemoglobin measurement through carbon monoxide re-breathing has sufficient accuracy to determine absolute differences in haemoglobin mass after the draining and re-infusion of the person's own blood. Professor Dickhuth and his team used methods developed by Professor Schmidt (Bayreuth) to make a significant contribution towards the detection and combating of illegal autologous blood doping.

Ultimately Professor Dickhuth has shown what he thinks about doping in sport and has frequently promoted anti-doping activities. His first work on this subject dates back 20 years (Dickhuth et al. 1989). While at Tübingen University, Professor Dickhuth had promoted effective anti-doping legislation and the development of suitable detection methods in 2002, with the broad support of the athletes (Striegel et al. 2002). In a third study, co-authored by Professor Dickhuth, the abuse of anabolic substances was investigated in a survey of 620 visitors to 113 fitness centres (Striegel et al. 2006). This made the shocking observation that about half of the anabolic steroids used had been prescribed to amateur athletes by doctors and paid for from the health reimbursement funds. These findings resulted in stricter methods for successfully preventing and combating misuse of anabolic steroids.

In contrast to his predecessor, Professor Dickhuth, by reorganising the internal work processes, ensured the flawless administration of external funding, and through his research publications on active anti-doping measures laid significant foundations for the realignment of the Freiburg Department of Rehabilitative and Preventive Sports Medicine.

3.2. Possible involvement of other medical and non-medical staff in doping practices

3.2.1 Doctors

As the interim report of 17 March 2008 shows, all doctors were closely questioned by the Commission. All of them denied any involvement in the procurement or administration of doping substances, or any knowledge of doping activities by other doctors. With a large proportion of the doctors, this is clear from the very fact that

they did not have anything to do with competitive athletes, let alone professional cyclists.

Evidently Professor Schmid and Dr Heinrich also observed the unwritten rule of professional cyclists not to mention the nature and scope of prohibited performance enhancement with fellow professionals. This compartmentalisation was confirmed by Professor Berg, who after the death of Professor Keul was acting head of department from 2000 until 2002, and who expressly declared in his statement of 11 June 2007 that, "they always packed their things themselves; they had their own rooms. Life at Telekom sent on in two separate rooms, and we had no access to them". Based on the statements by all the other Sports Medicine staff, this statement may be regarded as credible.

For his part, the internist Dr Stockhausen said the following at his hearing: "I was there until 1996, and I neither knew nor believed that doping was actively going on in the Clinic". When questioned on 11 June 2007, he admitted that, because of his insider knowledge of the cycling scene, he knew that doping was widespread, *"but I didn't know that Freiburg was doing something, only that it was concealing it"*, meaning the doping of professional cyclists. When questioned on 19 February 2008, he referred several times to the fact that "of course, only very few had insider knowledge, like Huber and me". Based on several conversations with Professor Schmid, it was clear to him that, unlike Dr Heinrich, he was "always torn", and on one occasion said "I'd rather leave that and go to my disabled patients", and that "he wanted to get out. It was too hot for him; he would rather deal with disabled sport, which was a safe world. He was scared and afraid". But if Dr Stockhausen, who was intimately acquainted with doping practices in cycling, was unable to learn anything about the active involvement in doping practices of both doctors for Team Telekom, despite his good contacts with Professor Schmid and several specific conversations, and Dr Heinrich did not say anything about it either, this is all the more true for the other, less familiar and in some cases not interested staff members in the Sports Medicine Department. With them, the compartmentalisation and secrecy was considerably easier. In this connection, it should also be considered that, according to Dr Stockhausen, Professor Keul had told the staff of the Department that he would have to leave them to their fate if it became known that they were involved in doping activities.

For the doctors working outside the Clinic for races involving Team Telekom/T-Mobile, the danger of getting involved in doping practices, and the possibility of at least becoming a confidant, were considerable. Even if one is basically sceptical about the truth of the statements by the doctors on account of the subsequent experience with the statements by Professor Schmid, Dr Heinrich and Dr Huber, the fact remains that all the riders who confessed unanimously exonerated the other doctors working at the races. They all confirmed that these doctors were responsible for the "usual medical tasks", and for all possible other duties such as driving vehicles from the start to the finish, waking the team and accompanying the professionals to doping controls. In addition, if one compares the detailed statements by Patrik Sinkewitz on the administration of cortisone without a medical indication in the patient records, it can be seen that only Professor Schmid and Dr Heinrich took responsibility for administering the cortisone.

Two further assistant doctors of the University Clinic Sports Medicine Department were provided with declared supplementary travel cost payments by Olaf Ludwig Cycling GmbH to carry out their duties. They also charged and received additional expenses for "VIP hospitality". In two cases filed with the Stuttgart and Freiburg employment tribunals, the Land of Baden-Württemberg reached conciliation agreements with the doctors on the repayment of the payments received; in one case, an out-of-court settlement was reached.

In particular these cash flows, to the named doctors of Team Telekom/Team T-Mobile who failed to declare them to the University Clinic and the Sports Medicine Department, are reminiscent of the practices of Professor Keul, as set out in the internal audit report of March 2001.

3.2.1.1 Private lecturer Dr Schumacher

The recurring rumours that Dr Schumacher, a private lecturer, doped the track cycling team during the 2000 Olympics in Sydney, concealed the increased blood levels of one of the cyclists and had also doped one of the mountain bikers under his care have not been confirmed. The same applies to the assertion that he concealed the doping of Patrik Sinkewitz during the 2000 world championships in Plouay.

The Sydney Olympics doping accusation was based in particular on the fact that the team had rented a hotel room near the cycling track where they could carry out medical procedures unobserved. In the Olympic Village, on the other hand, all doors were open so nothing could be concealed. The road cyclists Jan Ullrich and Alexander Vinokourov were also alleged to have visited them there.

According to a letter by the BDR of 11 June 2006, it can be assumed that the NOC had booked a motel near the cycling track for the Sydney Olympics. Only the team's assistants were accommodated there, due to lack of space in the Olympic Village. The track cycling team Jens Lehman, Robert Bartko, Daniel Becke and Guido Fulst, questioned by the Commission, stated that like the attendant doctor Dr Schumacher and BDR sports director Bremer (single rooms), they had lived on the first and second floors of a house in the Olympic Village along with the substitutes Torsten Rund, Jens Fiedler and Sören Lausberg. The cyclists had been among the first athletes to move into the Olympic Village some three or four weeks before the Games as they had been on a tour of Tasmania before then. The cyclists all stated that they had not met Jan Ullrich or Alexander Vinokourov. This was unlikely anyway, as the track cyclists would have had to vacate the Olympic Village before the start of the road competitions. Jens Lehman and his room-mate Daniel Becke left for Germany immediately after the end of their competitions, because they needed to prepare for the world championships in October. All four riders stated that they had not stayed in a hotel or motel near the cycling track. They denied taking any doping substances. The blood test results in the patient records of the track racers Christian Lademann, Thorsten Rund, Robert Bartko, Daniel Becke und Guido Fulst also showed no signs of the use of prohibited methods or substances to improve oxygen transportation.

However, there were unusual blood test results from samples from four cyclists taken three, two and one months before the Olympics. In all cases they showed a significant reduction in haematocrit count and haemoglobin concentrations, the reduction in

haematocrit being unusually higher than the haemoglobin reduction. The MCHC (medium corpuscular haemoglobin concentration) was an average of 9% above the normal in all the cyclists, which is hardly indicative of manipulation, and is rather an indication of analytical problems. In future it would be desirable if such changes in blood values are commented in detail in the athletes' files and relevant medical measures and further diagnostic tests are documented. At the same time, a reasonable assessment of the measurement and equipment conditions would be helpful.

A comparison of the research data for the period of their care by Dr Stockhausen until 1999 and, from the end of 1999, by Dr Schumacher, did not show any significant differences either. The haematocrit counts of two track racers were similarly elevated in both periods, and in both periods the attending doctors, Dr Stockhausen and Dr Schumacher were given exemptions by the UCI for increased haematocrit levels on individual physiological grounds. One of the riders in his statement of 11 June 2008 said that for this reason he had had to go to Lausanne for three days to medical examinations involving several urine and blood tests.

Assessing the development of the track times of the winning cycling teams at Olympic Games and world championships between 1976 and 2004 is extremely difficult. Improvements in performance through continuous optimisation in coaching methods as well as in riding technique provide plausible explanations for improved performance and, occasionally, for sudden leaps in performance. But neither do they show that no doping manipulation took place.

The times in the singles races also provided no conclusive evidence for doping manipulation. Rober Bartko, who until 1998 had been under Dr Stockhausen's care, and was then under Dr Schumacher, came first in the 1998 world track cycling championships in Bordeaux with a time of 4:23.9 minutes, and again came first eight years later, in 2006, on the same track with the same time (4:23.1 minutes). At the 2000 Sydney Olympics, Robert Bartko came first with 4:18.9 minutes, while at the 2004 Olympics in Athens, he "only" took eighth place with exactly the same time. The relatively "poor" time of 4:25.8 minutes at the Los Angeles world championships, which nevertheless was the best time, was undoubtedly due to the condition of the track. The wood of the newly-constructed track was damp, and therefore caused greater rolling resistance. Bartko's failed attempts to succeed during his two-year contract with the T-Mobile professional team following his two gold medals in Sydney in 2001 throws doubt on his use of the doping substances that were then available. According to his own statement of 16 June 2008, this did not even make him an assistant, but only the team's "accomplice", leaving the team when the agreement ended. Daniel Becke had a similar fate. Following his Olympic victory, in 2001 he also tried as a professional with a Spanish road cycling team. According to his statements, it was only then that he became aware of riders being supplied with doping substances. He described his own performance in the road team as follows: "I managed to get into the hill with them, but fell over after two minutes, and had to be almost resuscitated, and after seven kilometres uphill I was ten minutes behind." This does not seem likely if he had just had a successful career on the then common doping substances, and underlines the credibility of his statements before the Commission.

Former German Cycling Association (BDR) president Sylvia Schenk's assertion that in the summer of 2004 Dr Schumacher had kept unusual blood counts of the track

cycling world champion Christian Lademann which may have indicated EPO doping from her and the national anti-doping agency (NADA) were also not proven. As a result of a decision of the Hamburg Provincial Court of 17 August 2007 (case reference 324 O 454/07), Mrs Schenk can no longer uphold this allegation.

The rumour that Team T-Mobile's mountain bike team had a reputation among mountain bikers as being highly doped, and Dr Schumacher as a doper, has also not been confirmed. The Freiburg University Clinic member of staff who intended to name a mountain biker to substantiate this accusation failed to do so despite several reminders by the Commission. The Commission heard coach Thomas Schediwie, whom he had named as another informant, on 16 September 2008. He denied any knowledge of doping activities among the mountain bikers and Dr Schumacher. He did say that he had heard rumours connecting Dr Schumacher with doping, but as the mountain biking team coach working with the national team doctor Dr Schumacher, he had "not managed to observe that sort of thing". There were no grounds for assuming that this statement was untrue.

Dr Schumacher is also associated with dealings in the run-up to the 2000 world championships in Plouay, when Patrik Sinkewitz was sent home by coach Weibel because of his high haematocrit levels of over 50%.

As the Commission's letter from the law office representing the coach of 29 November 2007 shows, Patrik Sinkewitz's haematocrit levels of 48% ad 49% after training in Hockenheim before leaving for Plouay were in the critical range. According to information provided by the coach, the measurements had been made as a result of the instructions of the BDR to the attending doctors to carry out blood tests to determine irregularities in the haematocrit level. During the repeat checks of the Plouay riders, Patrik Sinkewitz's haematocrit levels had been between 52% and 54%. The coach said that he had passed these results on to the BDR (Mr Brenner). As required contractually, he then got in contact with doctors to take medical steps to reduce this level. After Dr Schumacher and Dr Kretsch had taken blood, and plasma expander and glucose infusions were carried out, the count again went down to 49%. Enquiries had also been made at the hospital in Plouay to get precise details of the real haematocrit count. After the count dropped below 50%, Patrik Sinkewitz was again registered for the long-distance race. Because after the race the test result had again increased to 50%, Patrik Sinkewitz was sent home by the BDR after discussions with Mr Brenner.

The only thing that is still unclear is whether the coach was aware of and abetted the EPO doping that had given rise to these results, as Patrik Sinkewitz's lawyer stated in his letter of 15.11.2007 to the Federal Sports Tribunal, or whether he was doing his best to prevent the doping of Patrik Sinkewitz, as the coach's lawyer asserts.

Whether Dr Schumacher actually had any knowledge of these events is also still unclear. In any case, in a letter dated 27 December 2007, Patrik Sinkewitz expressly declared to Dr Schumacher that he had put everything he had known about doping in cycling in his statements as key witness and, with the exception of fellow cyclists, had in particular given the names of the brains behind it, i.e. officials and doctors. To his knowledge there had been no instance of doping at any time in which Dr Schumacher had been involved. Specifically, Dr Schumacher had not supported him with his

doping, or otherwise aided him or mentioned it to him. He also knew nothing to indicate that the situation was different with other cyclists. According to Patrik Sinkewitz, therefore, Dr Schumacher had had nothing to do with his EPO doping in the run-up to the 2000 world cycling championships.

Dr Schumacher also denies outright any involvement in the doping of Patrik Sinkewitz. In a letter dated 14 December 2007, he declared before the BDR that on 9 and 10 October 2000, immediately after his arrival in Plouay, he and Dr Kretsch, who had been appointed as substitute team doctor in place of Dr Huber, had treated Sinkewitz after consultation with glucose or physiological saline infusions. This was the therapy of choice for the effects of gastro-intestinal infection, which the athlete was (allegedly) suffering from. He stated that he had never used plasma expanders or other illegal substances. During the treatment the question of the effect of fluid loss on the haematocrit count was raised several times. This had been determined by a decision of the BDR presidium dating from 2000, and had been near the critical level of 50%.

There are no other avenues open to the investigation, and in particular it was not possible to arrange a confrontation between Dr Schumacher and coach Weibel because Weibel was not prepared to make a statement before the Commission.

3.2.1.2 Professor Röcker

In an aide-memoire by the honorary president of the German Triathlon Union which became known in October 2008, Stefan Vukovic, the silver medal winner at the 2000 Sydney Olympics, was charged with doping in the 2001 European Championships in Karlovy Vary, Czech Republic, to which he admitted when questioned by doctors in a clinic in Bayreuth following a severe collapse with liver and kidney failure. In response to Stefan Vuckovic's attorney's claim that he could produce a report to show that he had suffered from Legionellosis, the press reported that the author of the document, which had only been written after his stay in the clinic, was Dr Kai Röcker, who was then employed by Tübingen University Clinic. It goes on to say: He "had himself been active as triathlon athlete for SG Reutlingen, and knew Vuckowic well".

Professor Röcker is currently the head doctor of the Department of Rehabilitative and Preventive Sports Medicine at Freiburg University Clinic, and in 2002 moved from Tübingen University to Freiburg together with Professor Dickhuth. On the basis of previous knowledge, Professor Röcker's involvement in doping at the department in Freiburg can be ruled out. It was also certain that he had not brought any doping "baggage" from Tübingen, and in particular he had not drafted a favourable report for his team-mate Vuckowic, but had instead, as staff member of Tübingen University's Sports Medicine Department, drafted the doctor's note of 27 August 2001 which is on Stefan Vuckovic's web page.

This shows that on 18 July 2001 Stefan Vuckovic was examined in the sport outpatients department. Two serological results from the Microbiology Department of Tübingen University Clinic of 17 July 2001 and 18 August 2001 were also revealed, which in the first test found a marginal positive value for Legionella serology IgG with a score of 1:128, while the follow-up test result was: "Definitely positive antigen titre (IFT 1:512"... corresponding to the Legionella pool with 6 sub-species) and

positive Legionella antigen in the urine." The summary gives a bacterium of the Legionella group as being with some certainty the case of the severe infection, and in view of the clinical course of the infection, it was seen that Pontiac fever was the most likely. These comments in the doctor's note are not a report, but refer to serological findings and subsume them in assessing the other findings indicative of Legionella or pneumonia (ICD-10: A48.2). The note makes no statement regarding the use of doping substances.

Stefan Vuckowic did not move to TSG Reutlingen until 2005, prior to which he had been in the Witten association. It is therefore not true that Dr Röcker knew the patient well.

3.2.2 Non-medical staff

The Commission found no reason to believe that the non-medical staff of the Sports Medicine department were involved in EPO doping practices even after the completion of the interim report of 17 March 2008. All staff members heard by the Commission stated convincingly that they knew nothing of the doctors' doping practices.

The performance measurements and the physical examinations and blood tests they carried out in the daily routines did not need any knowledge of doping-related values. Even the typical reference value for haematocrit, as is usually printed out in the test results, is above the doping-related value (normal upper limit: 52%, limit for doping for the threshold introduced in 1997 50%). As such, there was no reason for an outsider to have any suspicion of doping with values of around 50 per cent.

Nor does the Commission have any evidence of involvement by non-medical staff in autologous blood doping. All the staff heard stated credibly that they had no knowledge of either the taking of the required quantity of roughly half a litre of one's own blood or of the storing or reinjection of such blood.

In agreement with the Federal Crime Office (BKA), the Commission and the Clinic Board also looked several times at whether three medical and technical assistants were involved in the blood doping activities. A third party had given the names of these staff members to the BKA, claiming that they were confidants of Dr Heinrich and involved in the blood doping activities. None of these claims made to the BKA could be proved. As such, they do not concern staff with two-year contracts, but those with open-ended contracts, who have worked for many years and can thus be fired only on exceptional grounds, nor confidants, who are supposed to have worked for them "almost exclusively in the care of cyclists in the preparation and follow-up of blood samples and reinjections". In the view of the Commission and the medical director in charge, none of these staff was involved in the alleged events.

Like all the other Rehabilitative and Preventative Sports Medicine staff, in recent years, and including on 1 July 2006, these three staff did not work at weekends in the Sports Medicine Department or in the central laboratory. This is evident from the fact that the Rehabilitative and Preventative Sports Medicine Department was closed at weekends and from the duty rosters of the central laboratory.

Contrary to the generally held view, no assistance is required for reinjections, even where several blood transfusions are involved. On this subject, the Commission obtained information from experienced emergency doctors and the Transfusion Medicine Department of the University Clinic. According to them, it is possible for a doctor on his own, and so without any auxiliary personnel, to perform several blood transfusions simultaneously and very quickly. According to information provided by the Transfusion Medicine Department on 25 October 2007, a certain level of experience and a relatively large Braunüle (e.g. 14 gauge) are required. Then, with a good vein, provided the blood is not too thick and the bag is pressed, e.g. with a pressure cuff as is common in emergency medicine, you can transfuse 80 to 120 ml per minute with no problem. Again for storing the blood removed, no special precautions or help from staff are required, as "a standard household fridge will do the job".

4. Possible sponsor involvement in activities of the doctors accused of doping

The Commission finally investigated the question of whether there were any grounds to believe that the two main sponsors of Team Telekom/T-Mobile were involved in the activities of the doctors involved in doping. The statements of the Telekom/T-Mobile managers do not add anything to judging doping activities in the team. The tenor of their statements was: The sponsor, aware of the general issue of doping in cyclists, assigned Freiburg University Clinic with caring for the team in such a way as to be absolutely certain that problems with doping are ruled out.

4.1 Team Telekom sponsor

The witness Jürgen Kindervater, who was group communications director of Deutsche Telekom AG from 1990 to 2002, described it vividly in his hearing by the Commission on 13 October 2008:

"The most decisive thing for me was…that we did not let a medic directly into the team on our payroll, but that an institution like Freiburg, a University Clinic, do this, so that we could be absolutely certain that there be no systematic doping because of the assistance of Freiburg University Clinic. They were our guarantee. We did consider going to another medical university. But that was really the guarantee for us: we believed that nobody there would be foolish enough to risk their careers by giving athletes performance-enhancing drugs"

The witness Stefan Althoff had been working with Telekom since 1993, and first got involved with cycling after Team Telekom's success in 1996. From 2003 he was responsible for corporate sponsorship. In his statement before the Commission on 8 September 2008, he emphasised the importance of separation between sponsor and squad. Although the team was named after Telekom, this was solely on the basis of the sponsorship agreement. The team itself was an independent squad. Regarding resolving the issue of doping practices in the team, he said:

"The subject of doping was really with us practically all the time. I don't know exactly what things were like in the first half of the nineties, but from Festina and after 1998 at least, it was something of a powder keg, with various suspicions,

assumptions, etc., coming up all the time. And the question that kept arising in this context was: is there any point in this, isn't it harming our corporate image? We always concluded that the right position for the company was to become actively involved in the fight against doping, for example through involvement in the "Doping-free Sport" project, or through NADA, through additional checks, or by including additional checks in the cyclists' contract, like the general clause in the sponsorship agreement. Unfortunately we got off one year too late. We should have seen the Ullrich case in 2006 as a warning to get out at the end of the year. But one is always wiser with hindsight. Nowadays such suspicions arise even if a medic has a large number of caffeine tablets on him. Lother Heinrich would have been questioned at the time, and would probably have given the same reason, that they were for personal use. I can't remember any more how many tablets there were, I simply can't remember. But he would have been believed.

We all believed in the system of control. You can't accuse us of being naïve now, after the fact. All I can say now is that there might be something in it, but there's nothing we can do now to change things. I wouldn't have imagined it… Especially of Andreas Schmid. I wouldn't have thought it possible. But that's how it is."

4.2 Team T-Mobile sponsor

The witness Christian Frommert, head of T-Mobile International sponsoring communication since 2005, had been a journalist with the *Frankfurter Rundschau* for 15 years before that. When he was heard by the Commission on 11 June 2008, he described his relationship with the team as follows: "I was the sponsor's man, nobody trusted me. I never saw anybody's contract….I was always kept at arm's length." When he started to ask how it was at all possible for doping to be used everywhere except with Team T-Mobile, the answer he generally got was: "Freiburg University guarantees clean sport." While other teams had their field doctors in various campervans going around with them, "Telekom had Freiburg University." Regarding the professional conditions, he described the team bus: "It was the sort of bus where people say, 'Now that's really something!'. He had always been very sceptical, because outsiders were never allowed to enter the bus. This even went so far that even René Obermann (then CEO of T-Mobile International AG) was curtly refused entry by the driver when he wanted to board the team bus while paying the team a visit during the Tour de France.

The witness Franz Stefan Hornung said that he was first involved with T-Mobile Germany, but in 2003 moved to T-Mobile International, the international holding company for all T-Mobile companies. In July 2003 he started preparing the transition from Team Telekom to T-Mobile, which was completed on 01.01.2004. He was head of sports sponsorship in T-Mobile International, which meant he was responsible for all T-Mobile sports sponsorship platforms from T-Mobile Hungary to T-Mobile Netherlands.

According to him, T-Mobile entered into Telekom's existing agreement with Walter Godefroot GmbH, which involved a specified fixed budget, with no auditing or need for accounting. In his hearing of 29 July 2008, he described his relationship with the partner in the sponsorship agreement, team leader Godefroot:

"I never actually saw any bills between individual, how shall I put it, suppliers, to show what we actually paid for a truck or a bike, say. There was a fixed sum we had agreed on at the start. It was something like an overall financial plan, so that we could see that the team costs us so-and-so much, that includes riders, mechanics, etc. But whether that's how things actually were, I don't know."

He used professional football as an example of how from his point of view the role of sponsor only provided limited opportunities for influencing how the cycling team actually used the funding, and how this was not the main focus of the sponsor's interest.

"For instance, if we buy the strip for a football team, like FC Bayern Munich, Telekom pays sum X. In return, we get the space on the players' chests. FC Bayern Munich don't then send us a breakdown of what they do with the money. We just get the service, which in this case is advertising space. What they actually do with the money is FC Bayern Munich's business. And it was the same with Walter Godefroot. We got the advertising space on the bikes, on the cars, on the T-shirts, on the helmets and on their trousers, and that was the deal."

Although the agreement with Olaf Ludwig Cycling GmbH for the 2006 cycling season was more transparent, the level of involvement was the same. He stated that the financial planning in this agreement went into greater detail. It also stipulated more detailed accounting or expenses. There was an auditor, although the auditor's duty was to concentrate on financial analysis. The witness was unable to say whether individual documents were verified, or whether random sample checks were made. Regarding the team doctors, he said that he had assumed that they were men of integrity. If doctors from the respected Freiburg University Clinic made out an invoice, it was assumed that everything was above board, duly accounted for, and that the doctors had properly informed their employers of what they were doing with the teams. Accordingly, the sponsors were not interested in the doctor's dealings with pharmacies, either.

It is clear from the point in time at which the sponsorship agreement ended that what interested the sponsor in the first place was not doping-free sport, but identifying the T-Mobile brand with the team to bring it worldwide attention and give the company a positive image. The agreement was not ended as the doping scandals became increasingly clear, but only when public opinion changed, and Team T-Mobile was no longer capable of enhancing the corporate image. When the two leading riders Jan Ullrich and Oscar Sevilla, along with Ullrich's carer Rudy Pevenage were suspended from the team for their connection with the doping doctor Fuentes on the day before the start of the 2006 Tour de France, the limit had not yet been reached. Even when Sergie Honchar was suspended on 11 May 2007, and Patrik Sinkewitz's blood test was positive on 8 June 2007, nothing happened.

It was not until 27 November 2007 that Deutsche Telekom announced in a press statement (www.telekom.com/dtag/cms/content/dt/de/480540) that its executive board was terminating its sponsorship of the T-Mobile men's and women's cycling team with immediate effect. The Bonn telecoms giant, which had been involved in professional cycling since 1991, had decided to put its money elsewhere. This decision was not because of disagreements with the team management, or

misbehaviour on its part. Instead, Telekom and T-Mobile International CEO Hamid Akhavan justified his decision with the fact that the group had obligations to its core business, and thereby to its employees, customers and shareholders.

5. Possibilities for the prevention and combating of doping activities at Freiburg University Clinic

5.1. Staff

The Commission's findings show that Professor Schmid, Dr Heinrich and Dr Huber's doping activities had been encouraged above all by their close involvement in caring for the cyclists at training camps and at competitions. It is therefore the Commission's view that the most important measure to prevent doping on the part of doctors is to concentrate the functions of university clinic staff primarily to medical care for competition athletes at their establishments (internal clinical care). The University Clinic ensured as early as 2007 that it would no longer conclude agreements with professional racing squads. In the Commission's view, university clinic staff should no longer be assigned to the care of professional athletes in sports which are susceptible to doping outside the university clinic (external care).

These restrictions on the functions of doctors can also be deduced from the tasks of university clinics as set out in the law. This will guarantee in close cooperation with the university, that medical care is linked with research and teaching (Section 4 of the Law on Freiburg, Heidelberg, Tübingen and Ulm University Clinics, the University Clinics Law as amended on 15 September 2005 – UKG). Medical care for competitive athletes within a university clinic will become the primary task of the clinic for research and teaching purposes, as well as meeting its need for providing various forms of education. Routine care for competitive athletes by doctors in training camps and during competitions, on the other hand, is more in the character of general health care, with no direct relation to research and teaching. Individual doctors involved in doping spent more than 200 days a year tending to racing cyclists outside the clinic, which only left them limited scope for carrying out their functions in the department of the university.

The Commission therefore does not regard it as necessary for the University Clinic to have to dispense with care for competitive athletes in the Department of Rehabilitative and Preventive Sports Medicine entirely. Such a demarcation would considerably limit it in carrying out its tasks in research and teaching, as well as in various forms of education in the field of sports medicine. These recommendations should also be incorporated whenever permission for supplementary activities is requested.

5.2 Drugs

Much of the doping activities of Professor Schmid, Dr Heinrich and Dr Huber related to the illegal use of medicinal drugs. Investigations by the Commission show that it is unlikely that doping-related drugs were supplied via the pharmacy of Freiburg University Clinic. The Commission also has evidence that many of the drugs were

ordered from and then delivered by German pharmacies, and in individual cases pharmacies abroad.

The Commission also believes that another important measure in preventing doping by doctors is that orders for drugs made by doctors of the Department of Rehabilitative and Preventive Sports Medicine are carried out through, and delivered only to, the clinic pharmacy. The same should apply to samples of drugs. Apart from that, there should be regular stock-taking of the drugs in the clinic pharmacy, as is normal for other in-house establishments of departments of the University Clinic.

5.3 Finances

As regards finance, the Commission has found significant failings both in the administration of external funding and in the declaration of supplementary activities, which made it easier, and indeed at all possible, for the doctors involved in doping to gain financially from their activities. Regarding the administration of external funding, these defects have been remedied by the thorough reorganisation carried out by the University Clinic administration and Professor Berg in 2001, and since then no irregularities have occurred in accounting for the funding raised.

However, doctors involved in doping, as indeed other doctors of the department, have continued to commit significant breaches of the regulations on additional activities since the reorganisation of 2001. By providing medical services which were part of their official duties in return for sometimes significant payment without the University Clinic's knowledge meant that they were competing with their employer and therefore in breach of the statutory ban on competition under Section 60 of the HGB. Furthermore, some of the information given in declarations of secondary employment was untrue, which again was in breach of the contracts of employment. The Commission believes that incorporating a general prohibition on additional contracts with employees of the University Clinic into contracts made between the University Clinic and private external donors or other sponsors would be one way of preventing any further such infringements.

The board of the clinic has already taken this up, and established that any medical services performed for competitions, or provided in agreements with sports federations or unions, should be part of the doctor's contractual duties. Staff will be prohibited from receiving any expense allowances, per diems, or fees for such activities. To implement this, the University Clinic will in future make agreements with sponsors on such medical services, ensuring on the one hand that its staff will not be paid in person by the sponsors, and on the other that any additional costs (e.g. for overtime, travel costs, etc.) incurred by the university will be reimbursed by the contractual partners.

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