



European Commission



Community Research

# Harmonisation of Methods and Measurements in the Fight against doping

*(HARDOP)*

*Final Report*

*Project SMT4-1998-6530*



EUR 19076

COMPETITIVE AND SUSTAINABLE GROWTH

European Commission  
General Directorate XII  
Science, Research and Development  
**Standards, measurements and testing programme**

**HARMONISATION OF METHODS AND MEASURES IN THE FIGHT  
AGAINST DOPING IN SPORT**

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Final Project Report SMT4-CT98-6530

1999

EUR 19076 FR/EN

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## INTRODUCTION

The problem of doping appears to have been around ever since sport became a social phenomenon. Its first manifestations were noted in the 3<sup>rd</sup> century BC by Philostratus and Galerius at the ancient Olympic Games. The incredible number of statuettes of Jupiter that can be found around ancient sports arenas bears witness to the desire to be forgiven by the god for one or two liberties with the established rules, and gives an indication of the extent of the phenomenon.

Men have always tried to artificially improve their performance, using relatively simple methods in the beginning. In “modern” times, probably the first fatal incident occurred during the Bordeaux-Paris cycling race in 1879, where England’s Linton died after having been doped with trimethyl by his “manager”, who was the owner of a cycle factory. Around 1910, oxygen came into fashion, and was used by Belgian and English football teams. Later on, boxers used strychnine and mixtures of brandy and cocaine. It was at this time that the great traditional excuse of all practitioners of doping appeared: “We were drugged without our knowledge!” “Someone must have spiked my coffee!” James Effraie stated in 1910 after being knocked out by Jack Johnson that drugs had been added to his tea to diminish his capacities. More recently, in 1988, this was the childish excuse offered by Canadian leaders, who pointed the finger at another great rival star in an attempt to clear the name of the famous 100 metres runner, Ben Johnson, who was found guilty of using Stanozolol (an anabolic steroid).

During the famous six-day cycle races, everyone had their own favourite recipe. For some, it was caffeine, and for others, it was sugar soaked in ether. At the 1960 Olympic Games in Rome a Danish cyclist died after having taken a large dose of amphetamines and a derivative of nicotinic acid. They had been administered by his coach. The deaths of Tommy Simpson on Mont Ventoux after taking amphetamines, the boxer Billo Billo in 1963 from heroin, or Dick Howard, silver medallist in the 400 metres at the Rome Games in 1960, also from a heroin overdose, are some of the examples that have had a profound effect on public opinion. The phenomenon is spreading, beginning to threaten all sports, undermining the very foundations of Olympic thought and the Olympic ideal.

If we are to halt the use of doping as a means of improving performance, it is vital that we look for its causes. The transformation of sport from the reality our grandfathers knew to today’s high-level sport has unleashed a phenomenon that brings with it major financial implications that have somewhat obscured the traditional role of sport as a vehicle of the old ethical and moral values. The spirit of relentless competition that reigns in elite sport, the glory of victory and its attendant financial and social advantages, can push athletes to employ all possible means to improve their performance. Some, encouraged by unscrupulous political leaders, hope in this way to prove the quality of a social system that produces great athletes who are capable of challenging and beating the rest of the world. Others wish simply to have a better life and climb a few rungs on the social ladder. The lure of fabulous wealth has naturally tempted many athletes. A large number of parents have seen doping as a means of standing out from the crowd, and have resolutely pushed their children down this route. Some leaders, often with a large reserve of athletes (some courts have put athletes in prison to protect the capital of a bankrupt club) from which they wish to draw the maximum advantage, have not hesitated to force athletes into doping if this will ensure victory or financial gain. Still others, out of a concern for profitability, have made the events so demanding that they are beyond the capabilities of the athletes. A

never-ending succession of events, taking place in the four corners of the world, without any intervening rest periods, makes doping almost obligatory for athletes who have to fulfil the contractual obligations they signed up for so enthusiastically.

In parallel with the fabulous advantages high-level sport brings to its practitioners, their entourage, its sponsors and the nations that support it, scientific doping has gained a foothold. By alternating overtraining and the use of carefully measured medicinal preparations, the “gurus” of doping have developed a form of scientific cheating. Complex chemistry has replaced appropriate training. Finally, the success of all manner of energy drinks, pills and injections illustrates perfectly the dangerous slide towards acceptance of doping by society.

The sports world, concerned by the rapid growth of doping, is trying to define its activities and to set limits. To no avail, since each definition whose philosophical content might have appeared satisfactory has not stood up to examination by legal minds. Indeed, such definitions enable the guilty party to declare their innocence and evade the punishment they deserve, and they offer the hope, through morally unjustifiable damage payments, that athletes can make their fortune at the expense of trusting and naïve organisations. The IOC has adopted a practical view of the situation by declaring the principles that, in its eyes, justify the fight against doping:

1. Protection of athletes' health;
2. Defence of medical and sports ethics;
3. Equal chances for all in competition.

Added to these is a list of classes of banned substances, methods and manipulations, illustrated by examples intended to facilitate the task of the medical corps. This is its definition. Any action that goes against these principles or infringes the banned list constitutes an act of doping.

When the first large-scale tests were officially instituted at the Olympic Winter Games in Grenoble and the Olympic Games in Mexico City in 1968, equality of treatment among athletes was easy to ensure. As there were at the time no rules, the rules laid down by the IOC, containing the procedures and the list of banned products, were easily accepted by the International Federations. The sanction, which could be summed up as withdrawal of medals and exclusion from the Olympic Games, was unique and simple. Today, one of the most intractable problems of the anti-doping campaign is the harmonisation of rules and sanctions. On the recommendation of the IOC and under the pressure of an increasingly demanding reality, the International Federations and the NOCs have set up medical commissions that create rules inspired by those of the IOC, but respond to the specific nature of their own sport. Some governments also wish to pass legislation on this issue.

Today, an Olympic Movement Medical Code has replaced the International Olympic Charter. There remains, nevertheless, the difficult problem of harmonisation of sanctions: a sanction may involve being excluded from all competition for several years, or a three-month suspension out of season. The fault lies with the lax attitude of certain sports associations, and the system of fixed sanctions that is generally adopted in sport. Sport, being an important social phenomenon, runs in parallel with the life of that society. It should therefore abandon the “private club” system of sanctions in favour of those in force in all forms of activity governed by criminal law.

Although negative actions are unavoidable, deriving as they do from the very existence of rules, athletes must be shown a positive way of improving their performance without deviating from the laboriously instituted legal framework. This is why the IOC Medical Commission has turned to science in an attempt to favour scientific training based on biomechanics and sports physiology over empirical training

that leads to doping. This action cannot be conceived of without reference to education, through actions to be carried out in various countries. At international level, an IOC educational congress on sports sciences has enabled scientists to meet in Monaco with coaches from all over the world, who were able to convey their knowledge through practical exercises.

The Olympic ideal, supported by the ideal of Baron Pierre de Coubertin, has placed mankind at the centre of its preoccupations. His quality of life and environment are the constant concern of all leaders who are faithful to the thinking of the reviver of the Olympic Games. We can therefore honestly conclude that the Olympic Movement, although it has evolved alongside the profound changes in modern society, has at no time renounced or betrayed the fundamental principles that governed its creation. It has adapted, and changed, while jealously retaining its original characteristics. The fight against doping, which it has led for over thirty years, is one of its most salient characteristics.

In conclusion, I should like to emphasise that today there are few significant differences among the various parties involved in the fight against doping. Many difficulties remain to be overcome, but I believe that the International Olympic Committee showed in 1968 the way to follow, and has continued to mark out its path. It has therefore fulfilled its mission. It must now join with public authorities, national governments and international organisations, in order to give the anti-doping campaign the resources it needs to eradicate the networks and trafficking of the cheats, and to counter their professionalism.

The present report marks the conclusion of a preliminary project to set out a strategic approach, jointly undertaken by the IOC and the European Union, to bring the anti-doping campaign into line with new developments and new challenges. It shows the way forward, on a scientific, legal and political level.

Prince Alexandre de Merode  
Chairman of the IOC Medical Commission

# 1. THE HARDOP PROJECT: PROCEDURE AND APPROACH

The HARDOP project has been submitted by the Medical Commission of the International Olympic Committee (IOC) to the Standards, Measurements and Testing (SMT) research programme of the European Union. After having been evaluated in January 1998 by independent experts, it was accepted for Commission financing, the SMT programme committee having been consulted in June of the same year. The contract setting up the project was signed by both parties in October 1998.

The aim of HARDOP was to identify the research needs necessary for improving the way in which doping in sport is being combated. In order to be able to cover all the aspects of this vast problem, the project leaders straight away insisted on consultation with the various parties concerned. Three reflection and discussion seminars were organised. In order to ensure maximum effectiveness for these consultations a major information-gathering exercise was implemented: two targeted questionnaires were produced and, in addition, the available elements and results obtained by other organisations were analysed (in particular, the data collected by the Council of Europe on the basis of a questionnaire sent to its member states). Finally, the information and experience of the IOC Medical Commission and its members provided significant input and guidance for the advancement of the project.

The course of the project was structured, as it developed, around several factors: the doping-related events in recent sports headlines; the activities initiated by the IOC (Lausanne Conference) and by the member states, under the coordination of the European Commission (Directorate General for Education and Culture); and the evolution of certain national legislation in terms of anti-doping.

The first seminar (Brussels, November 1998), brought together the members of National Olympic Committees and people involved in the anti-doping effort. The second (Rome, March 1999), brought together heads of anti-doping laboratories, industrialists and experts in other areas of fraud and crime-fighting. Athletes, coaches, sports doctors and journalists took part in the third of these meetings (Toulouse, May 1999).

A questionnaire for the purposes of updating the information collected by the Council of Europe (see Appendix 3) was sent to the participants in the Brussels meeting, at a time when national situations were changing rapidly. A second questionnaire (see Appendix 4) was sent to the athletes and members of the IOC Athletes' Commission after the Toulouse seminar (<sup>1</sup>).

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<sup>1</sup> The appendix contains a list of the people invited to all three seminars and the athletes to whom the questionnaire was sent.

## **2. RESULTS OF THE SEMINARS**

### **2.1. SHARING OF RESPONSIBILITIES IN THE FIGHT AGAINST DOPING**

Sports disciplines are numerous and varied, and they are practised by a broad cross-section of the population — on an individual basis or within clubs, in the workplace or with school, etc. Competitions are organised and governed by sports federations (local, national, regional and international), but also by public authorities and independent organisations, such as the IOC. These competitions may be open to amateurs or professionals — categories whose boundaries are sometimes rather blurred. The rules governing the events at these different levels are generally harmonised. Professional practice is subject to labour laws (the ruling by the European Court of Justice known as the “Bosman ruling” confirms this) while amateur sport is governed by respect for the individual and social legislation.

Athletes in various disciplines have recourse to pharmacological, medical and paramedical aids to help them or to improve their performance. On a private basis such aids are legal, on condition that they comply with medical and pharmaceutical ethics and that the substances concerned are not prohibited (hard drugs). Certain substances, a list of which is defined by sports or legal authorities, are prohibited during competition.

The fight against doping nevertheless remains an extremely complex one. The variety of sports disciplines, the different approaches by their governing authorities, international practice — particularly in high level sport — the amateur/professional dichotomy, and the absence of legislative harmonisation from one country to another, do not make things any easier. And this is without considering the imagination, the organisation and the unscrupulousness of the suppliers, and those whom they supply.

Even the definition of doping can vary from one country to another, from one discipline to another, and within the same discipline (according, for example, to whether it is practised by professionals or amateurs). In concrete terms, this differentiation is expressed, depending on the case, in the list of banned substances and practices. The competent sports or judicial authorities therefore hand down their judgements in a completely heterogeneous manner.

In fact, very few countries have effective legislation for stopping the practice of doping. The actions of judicial authorities are often limited to aspects relating to the illegal practice of medicine or pharmacy and trafficking in toxic substances. Recent events, and the nature of some accidents that have arisen in certain sports (including at amateur level) have made people aware of this deficiency and of the need to remedy it quickly. This situation led to the emergence of the political will in Europe to cooperate, and eventually to harmonise the approach of member states to the problem of doping.

### **2.2. THE FORMS OF DOPING**

Doping seems to be as old as sport itself. Although purely anecdotal a few decades ago, it has now become highly sophisticated. The contribution of chemistry and pharmacology has, in some particularly demanding disciplines, led to intensive, scheduled and systematic doping, which can drastically shorten an athlete’s life expectancy. The potential financial rewards of an athletic career increase the temptation to cheat. It appears that the sums at stake and the discreet, even secretive, side to remuneration (not only for professionals) encourage under-the-table payment

and consequently attract dubious characters and mafia-style gangs, who then take over trafficking in doping substances. The cases recently brought to light by legal authorities (1998 Tour de France, Chinese swimmers in Australia, etc.) seem to point to the existence of international networks involving health professionals (doctors, pharmacists, trainers), lawyers and athletes. The police have succeeded in demolishing networks for the traffic of medicinal substances — intended for livestock or produced in clandestine pharmacies — that were distributed to body-builders in gyms; these products were not even subject to the quality control imposed on medicines intended for human consumption, nor, by the same token, to control by public health authorities.

Other alarming examples of “doping mixtures”, accessible to ordinary athletes (in particular, the famous “*pot belge*”, a cocktail of drugs and narcotics including heroin, cocaine and amphetamines) have come to light. Unfortunately, amateurs are the most at risk. Not having access to sophisticated substances — such as erythropoietin (EPO), growth hormones, reticulated haemoglobin and perfluorocarbon — they resort to “poor man’s doping”. The extent of the phenomenon and the ravages it has caused among non-professionals pose a public health problem that is beyond the scope of the sports authorities alone and, clearly, beyond their resources to solve.

### **2.3. DOPING CONTROL LABORATORIES**

Doping control laboratories, public or private, are involved in the fight against doping in various countries. Their situation might vary in a number of ways. They might be funded by the state, by an association, or they might have their own revenues. The scope of their activities and the human and other resources made available to them by their governing authorities vary considerably. Some are accredited by the IOC (see list in Appendix 2). In many regions of the world (Africa and Latin America, many Asian and European countries), there are no laboratories able to pursue the fight against doping.

#### **Current gaps**

Doping controls are usually carried out during events. Recently, out-of-competition tests have also been requested by sports authorities (national and international) and public authorities (judicial authorities or overseeing ministries), in some countries and for some disciplines. These unannounced tests, which increase considerably the number of analyses carried out by the laboratories, seem to be the most effective way of countering scientific and systematic doping. Their application nevertheless demands an appropriate legal framework.

The tests carried out by the laboratories are, of course, limited to the detection of doping substances in an athlete’s system. They are principally based on urine analysis. Currently, blood tests only enable verification of the level of haematocrit or haemoglobin (assessed only for some disciplines). If these levels are too high, the athlete is required to take time off competition — for medical reasons, not for doping.

Blood analyses based on more specific parameters (direct or indirect) could well reveal forms of doping that cannot be detected in urine. Nevertheless, these new techniques (blood tests, even hair tests), unlike urine tests, represent an invasion of privacy for those who have to undergo them, and their implementation would require certain legal and ethical facilities.

Nevertheless, testing athletes in itself does nothing to stop organised trafficking or deter suppliers. Indeed, the results of the analyses are generally kept within sporting circles and are unusable by the courts, largely because many laboratories have no

accreditation awarded by an organisation recognised by their legislative organs (e.g. EN 45001 accreditation in Europe).

### **Need for cooperation and coordination**

The rapid evolution of doping techniques, the organisation of trafficking in substances and the financial resources available in these circles demand that laboratories constantly re-evaluate their working methods and means. This ongoing “continuous education” would not be possible without various types of synergies. Increasingly frequent and close cooperation between laboratories and the police, legal and financial authorities is essential. The laboratories should also expand their contacts with other sectors involved in the fight against fraud, in order to take advantage of their information and resources. Close collaboration among the laboratories themselves would enable them to keep up to date and exchange new techniques. Closer ties with the pharmaceutical industry and those involved in basic research are also vital if they are to be able to anticipate new tendencies and forms of doping by means of a sort of scientific “vigil”. The instrumentation and measurements industry would also be able to give them the benefit of recent progress in their domain.

### **2.4. TOWARDS AN INTERNATIONAL ASSUMPTION OF RESPONSIBILITIES**

The events that clouded the Tour de France and the bringing to light by the law of doping with narcotics in amateur sport illustrate the role played by police, judicial and customs authorities in this area. The spread of doping among non-professionals — which affects an increasingly young population — is beyond the capacities of the sports authorities alone to counteract. However, the monitoring that such authorities can carry out in their domain and the information they can collect are a valuable help in combating the supply chains. Collaboration between sports leaders on the one hand, and organisations involved in countering crime and trafficking on the other, nevertheless means setting up credible structures.

The discussions that were held during the three preparatory seminars for the HARDOP project — which go in the same direction as talks held at national level and by the IOC — revealed an urgent need to create a **central organisation responsible for the fight against doping**. This organisation should be provided with a **reference laboratory** to collaborate with the national and international bodies concerned (justice, police, customs, EUROPOL, INTERPOL, ICT, UN, etc.). The effectiveness of such cooperation will depend upon the structure and credibility of the organisation and its laboratory<sup>2</sup>.

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<sup>2</sup> Some of the tasks of this laboratory are described in the following pages.

## **3. RESEARCH PRIORITIES IN THE FIGHT AGAINST DOPING**

### **3.1. MEDICAL RESEARCH**

It emerged from discussions that the technological progress being made in the fight against doping, in particular the increased sensitivity of tests, raised new questions. For example, what does the presence of minute quantities of substances in a sample mean? The limits of medical, clinical and toxicological knowledge sometimes make it impossible to reach a clear answer, and are an obstacle to obtaining a reliable interpretation of the results of analysis. Some questions regarding the effect of doping substances on the body, and therefore on the health of athletes, remain unanswered.

#### **3.1.1. Effects of doping on health**

Unbridled use of doping substances, found particularly in certain sports, goes hand in hand with adverse effects on the health of athletes. The consequences on the human organism of several of these, taken in large doses, are still unknown, as is the damage that they could cause in the medium and long term. Scientific studies are essential in order better to identify the effects of these substances, particularly those that have appeared recently and are likely to affect hormonal balance.

#### **3.1.2. “Normal” hormonal profiles**

New techniques of performing determinations of doping substances have led to a drastic improvement in the ability to detect them in urine. A pressing question is that of the natural presence of some of these in the system, in the form of ultra-traces, as illustrated by the debate on endogenous production of nandrolone (in men and women), which could itself be linked with the intensive practice of a sport or prolonged exertion.

New techniques for measuring doping substances and their metabolites could help to give us a better understanding of the presence of these very small quantities in some people. They could also help us to draw a distinction between the means of administering “sensitive” products, and therefore enable us in some cases to distinguish between therapeutic administration and doping. Indeed, several doping substances can, in massive doses (i.e. non-therapeutic doses), change in a specific and characteristic way the biochemical, hormonal or enzymatic profile of an athlete; some of these changes could be detectable in urine or blood. A better understanding of these interactions could therefore enable substances to be indirectly detected.

#### **3.1.3. Medical and health education on doping**

Better medical understanding of doping substances and their effects on the human body should lead to better training for doctors and better information for athletes and their entourage. These education and information strategies should be harmonised and generalised.

### **3.2. FRAUD DETECTION RESEARCH**

Before harmonisation can be achieved in the fight against doping it will be necessary to have an infallible system for fraud detection. The reliability of results, traceability of information and impartiality of procedures are all essential to the credibility of the anti-doping initiative. No athlete can be found guilty of doping on the basis of results that

are open to doubt. But conversely, analytical results delivered according to validated methods, in a strict framework of quality control, should not be susceptible to questioning by either party.

Only systematic research into new detection techniques, in parallel with the necessary technological and scientific “vigil”, will enable fraud detection methods to gain ground over the defrauders.

These actions need a coherent approach. From a financial point of view the potential progress, the projects to be financed and the results of research should be systematically evaluated with a view to assessing the effective advantages brought to the fight against doping. Thus, research will avoid leading laboratories into unrealistic expenditure that might, in addition, be liable to put efforts at harmonisation in jeopardy. It is important, therefore, that all research and development work is systematically integrated into an analytical detection strategy. Structures and tools for controlling the quality of these methods should be developed. Any developments will be pursued in the framework of quality systems such as the accreditation of laboratories according to standards EN 45000 or ISO 17025 (currently in preparation), recognised by national and international authorities.

Moreover, no research into new methods should be undertaken without the appropriate quality control.

### **3.2.1. Sample-taking**

It is important for the sample-taking phase to be carried out according to a strict protocol, ensuring the confidentiality and traceability of the sample and the sample-taker. Methods and protocol implementation should be subject to an audit in the context of granting accreditation to the sample-takers. The receptacles and other utensils employed in sample-taking should be in conformity with reliability criteria set down in the standards defined by the competent authorities. Such standards will enable those responsible for sample-taking to have a choice of the best suppliers.

### **3.2.2. Development of new methods**

Doping means the almost constant updating of methods for tracking new products. It is essential that existing detection techniques are adapted to enable the laboratories to improve their performance and to incorporate new equipment and sample-processing technologies into their protocols. This progress should increase both the rapidity and the number of analyses, without affecting the level of reliability. Control of reliability also implies establishing minimum performance levels to be reached by these methods.

There will also be a need to set out performance standards, in order to be able to provide a technical framework that is both flexible — thus leaving room for technological progress — and rigorous, on the basis of strict metrological performance criteria (reproducibility, accuracy, sensitivity, detection limits, resolution of chromatographic separation systems, rate of extract recovery, etc.). These performance criteria will be subject to checking in the context of laboratory accreditation.

Certified reference materials (CRM) and reference substances (RS) must be developed and produced in order to permit accurate validation of laboratory methods and in order to be able to implement adequate internal quality control. As the list of doping substances is long, there will consequently be a large number of CRMs and RSs to produce. The production and certification of many of these materials and substances will not be easy, and will require prior feasibility studies.

### ***New measurement methods***

One of the research priorities is to develop methods with unquestionable traceability and measurable analytical performance. The most difficult substances to quantify are those that are naturally present in the human body (growth hormones, EPO, etc.) and those with a short molecular half-life. The development of methods capable of detecting them and quality control tools for their implementation are needed urgently. The most convenient strategy would be to develop rapid screening methods in parallel with more exhaustive confirmation methods which can be carried out with tools that are currently available in laboratories (high resolution mass spectrometry). This approach, if it is to be effective, requires close consultation among all the laboratories concerned, and with the various actors in the fight against doping and against the associated trafficking.

### ***Reference materials — urine certified for the presence of doping substances***

Priority for development and production, with the benefit of the research support allocated by the European Union, could be given to the following products (in order of importance):

- Artificial testosterone and epitestosterone
- EPO, ACTH, hGH, hCG
- Anabolic steroids
- Narcotic analgesics
- Stimulants
- Diuretics
- Beta-blockers

The production of urine with a certified level of prohibited substances will only be possible after the necessary authorisation has been obtained (from the ethics committees of the countries concerned).

Depending on the development of anti-doping controls, and particularly the type of samples available to the controllers, the appropriate materials (blood, serum, hair, cells, etc.) can be developed. Only laboratories that have been accredited and authorised by a competent body would have access to the CRMs, in order to guarantee their availability and to limit the operating costs of the body responsible for managing stocks. This body could be the reference laboratory mentioned above.

### ***Reference substances***

Priority should be given to producing the reference substances necessary for methods using marked molecules ( $^{13}\text{C}$  or D) during quantity determination by isotopic dilution. Prior to their production, an inventory should be taken of certified products already provided by certain laboratories and accessible to laboratories accredited by the IOC (if substances are already available from the pharmaceutical industry it would mean a smaller investment). This concerns all prohibited substances (current and future) that feature on the IOC list. As for CRMs, access to reference substances should be limited and be under the responsibility of the reference laboratory.

A database including the essential analytical characteristics of these substances (elementary analysis, physical and chemical properties, molecular weight, UV and IR spectrum, mass spectrum,  $^1\text{H}$  NMR,  $^{13}\text{C}$  NMR), should be created in parallel with the substance bank itself. This database should be available for remote consultation by authorised persons.

### ***New measuring instruments***

Many technologies that have been developed in instrument manufacturers' laboratories are available. For the most part, they rely on mass spectrometry (MS), in conjunction with alternative forms of chromatography (liquid phase chromatography, rapid gas phase chromatography, etc.). Alternative methods for the differential detection of endogenous substances as opposed to substances produced by genetic engineering also exist.

The developments that lie ahead will require the adaptation of laboratory equipment and the development and validation of adequate methods — in other words, development of technologies that are faster, more reliable and less costly, particularly with a view to increasing the number of out-of-competition tests. This evolution should additionally be designed so that laboratories can adapt as quickly as possible to the developments.

The alternative methods that must be developed as a priority must nevertheless represent a technological leap (detection of new molecules undetectable by MS) or have a substantial advantage in terms of cost or the reliability of measurements.

Here too, it is necessary to have a body that is capable of implementing a technological "vigil", in order to be able to predict possible developments and facilitate the access of accredited laboratories to the new methods and instruments.

## **3.3. REFERENCE LABORATORY(IES) AND ORGANISATION — STRUCTURAL DEVELOPMENTS AND EDUCATION**

The functions and responsibilities of a reference laboratory and organisation were analysed over the course of the three seminars. Beyond the specifically technical aspects mentioned above, the experts emphasised the responsibility that should be given to this central organisation in terms of the resolution of structural problems. Its tasks should in no manner replace the activities already assumed by other bodies; they should be complementary.

These tasks will involve, above all, coordinating national and international activities and activities between sports federations, and making available to the actors involved all information on the provisions existing in certain countries or in certain federations.

Help in harmonising out-of-competition tests, with a view to making them possible in all countries within a framework that respects national legislation, will moreover be an essential aim of this central organisation. Avoiding duplication, optimising existing means and serving as an interface between sports bodies and the non-sports world (industry, justice, police, etc.) are the key activities not being carried out at the present time.

The central organisation and its laboratory would have a role to play in the transfer of knowledge and specific training of personnel in the new laboratories. It could have important responsibilities in the more general area of training and information on doping and its effects on health, and in the fight against this form of cheating.

### **3.3.1. Structuring anti-doping activities**

#### ***Equality of opportunities and treatment***

Many national governments, sports federations and the IOC have been fighting doping for several years. As we have already pointed out, national provisions for the problem vary: few countries have specific legislation in this domain and the existing laws are different and with varying applications. The same applies to the sports

federations. A structured implementation of the fight against doping would provide a greater degree of equity among athletes of all countries and in all disciplines. The key is to avoid “à la carte anti-doping initiatives”.

No harmonisation is possible without collaboration between national structures and the sports movement. This cooperation should allow for clarification and unification of the rules to which competing athletes are subject. It will facilitate the free movement of individuals and the organisation of major sports events. This harmonisation will only be possible if the means of fighting the problem are equally distributed among countries and continents. The second principle is to eradicate “doping paradises”.

The central organisation and its reference laboratory should thus collect the information necessary to facilitate harmonisation across countries and across federations.

### ***Assistance in setting up new laboratories***

This organisation would also be responsible for assisting in the creation of anti-doping laboratories on those continents and in those major countries that do not have such structures (while bearing in mind that, in some countries, mobile bodies could make up for the lack of permanent structures for major sports events).

In a more general way, only a specialised body can provide real assistance in the creation of a new laboratory. Such assistance would enable candidates to benefit from innovations in accreditation and quality control. Assistance should also include education and training programmes for the technical and management personnel of the laboratories.

### ***Internal and external quality control for laboratories***

Accreditation of anti-doping laboratories under the ISO 17025 standard means the implementation of an appropriate quality system. In addition to the provisions of ISO 17025 there are specific demands of an ethical nature, connected with the types of analysis carried out and the possible consequences of their results.

The task of developing and proposing to candidate laboratories common rules that will guarantee harmonisation of their work lies with a single body. Securing observance of the rules means using internal quality control tools in order to ensure the traceability of standardisation and the validation of measurement methods.

Moreover, a common system for external quality control, including in-depth audits of facilities and personnel, along with interlaboratory tests, must be put in place. It will be up to the central organisation to ensure that inspection is identical from one auditor to another and that its technical validity, its independence, and consequently its credibility, remain constant, regardless of time and place. The auditors must therefore be given initial training and regular refresher courses, particularly in the event that standards or specific rules change, and, even more, when new tasks are introduced (new measurement methods, new substances).

The reference laboratory must also implement and organise frequent interlaboratory tests, based on the most reliable reference materials, whose results will contribute to the decision as to whether or not to grant or renew accreditations. The evaluation of laboratories' performance must follow the recommendations of international standards or guidelines (ISO/REMCO-IUPAC guidelines). The granting or renewal of accreditation must also take into account the speed with which the laboratories deliver their results, for controls carried out both in and out of competition. *Indeed, it is unacceptable for an athlete who has undergone a test to have to wait several weeks, even several months, for the results of the analysis.*

### ***Adaptation of accreditation to changes in international standards and information for laboratories***

International accreditation standards evolve in line with the progress of knowledge. Thus, from the publication of ISO Guide 25 — the first reference on accreditation — to the implementation, in OECD countries, of the principles of good laboratory practice (GLP), a great deal of distance has been covered in recent years. The appearance of the EN 45000 and EN 29000 standards brought with them many new demands. ISO 9000 then quickly replaced the European standard EN 29000 by providing major improvements. Similarly, ISO 17025 will render the current EN 45000 standards obsolete once it has been ratified by the states.

Other needs might appear tomorrow. In order to ensure that the accreditation of anti-doping laboratories remains in step with these changes, a central organisation should enable them to respond to the new demands and to incorporate them into their expertise and activities. The transparency of the system, its recognition by judicial authorities and the “comparability” of laboratories depend on this.

### ***Accreditation of sample-takers and mobile units***

The reference body also needs to define the specific harmonised rules for accreditation and inspection of mobile doping control units, should these be needed. A specific accreditation for sample-takers should be in effect, in order to ensure that this link in the chain provides the same quality as that of the laboratories. Once they have this accreditation, sample-takers could perform tests in several sports disciplines.

In the same way, the implementation of interdisciplinary, even international, sample-takers' networks, which could accompany these mobile units, should be looked into.

Finally, it will be necessary to set up appropriate (i.e. mobile) training centres for sample-takers.

### ***Networks of doping control laboratories***

Doping control laboratories already have contact structures. The IOC has set up an Internet site for them and organises meetings for their heads. This collaboration nevertheless remains sporadic and is not translated into knowledge transfer (methods used, control and quality techniques, exchange of technical materials and information, etc.).

In other areas, such as food control and fraud prevention (medicinal residues in meat or pesticides in vegetables, etc.), structured networks of laboratories have been set up by the European Commission. These networks encourage the possibility of exchanges (development of methods, gains in performance, etc.) and the circulation of information (technical progress, products available on the market, cases of fraud, possible supply channels, etc.), alongside classical professional information.

Such a structure, which relies on the organisation of work by sector around a reference laboratory, could be an inspiration to the anti-doping laboratories to coordinate their activities better. A better-organised anti-doping initiative, based on the creation of structured networks around a reference laboratory, would reap the benefits of the discussions and proposals inspired by this kind of example.

### ***Implementation of a scientific, technical and legal vigil***

In parallel with the network of laboratories, a structure for maintaining a scientific and technological “lookout” should be set up quickly. This structure, within the reference body or outside of it, should be able to detect a long way ahead — at a basic research

level — any scientific advances (particularly in the pharmacological area) or discoveries that could possibly have an application in terms of doping: primary or secondary effects of new substances, discoveries about the operating mechanisms of the human body, etc. Collaboration with the pharmaceutical industry is essential in order to identify all levels of research, in a climate of trust such that, from the final clinical trials phase, or in parallel with the registration of a new drug, the authorities responsible for anti-doping are alerted of the potential risks attached to illicit use of the substance concerned.

Only collaboration with judicial bodies and their laboratories can reveal the arrival on the market of hard drugs, narcotics or medicines from illicit sources. Synergies with the international bodies responsible for monitoring trafficking (INTERPOL, EUROPOL, UNDCP, European Monitoring Centre for Drugs, etc.) are therefore essential at this level.

### ***Procedures for the adoption and validation of new methods***

In order to ensure the credibility of analyses carried out by anti-doping laboratories, particularly vis-à-vis the disciplinary authorities responsible for handing down sanctions, and civil courts, any results must be obtained by means of a validated method. Such methods must follow a strict and clearly defined standard made available to the judicial agents. The validation standards should include analytical performance criteria, in particular insofar as reproducibility, trueness, sensitivity and traceability are concerned. They should also focus on setting up a flexible methodological framework so as to allow for the introduction of new laboratory technologies, without affecting the validity and reliability of the results.

Minimum analytical performance criteria should be established. In this respect, these validation standards should also describe the manner in which the analyst should proceed to demonstrate that these performance levels, established through interlaboratory tests, have been reached and, in particular, which reference samples must be used.

This approach implies the development and production of certified reference materials and pure substances, as mentioned above.

The validation methods and the standard describing them should be developed in a reference laboratory or an accredited laboratory. They will be made available to all anti-doping laboratories.

The validation of laboratory methods and a demonstration that minimum performance standards have been met must be part of the accreditation audit procedure. Methods should be regularly revalidated within the laboratory, and in any case every time modifications are made in terms of implementation or instruments used. Statistical control systems for the methods (e.g. control diagrams) must also be part of the laboratories' internal quality control procedure.

### **3.3.2. ESSENTIAL COLLABORATION**

Doping is not a concern only of high-level athletes. It affects amateurs and people who practise sport as a leisure activity. Fighting the problem effectively clearly means putting a stop to the trafficking that feeds it. It is therefore essential to develop cooperation between the sports world, on the one hand, and the judicial, police and customs authorities, on the other.

The transfer of information between these two spheres cannot take place without total and reciprocal trust in terms of how such information will be used. The sports

authorities must, in this respect, have a credible structure (such as the reference laboratory or central body already mentioned). If these conditions are in place, positive collaboration could be undertaken with the following parties:

- the police service, both national and local, with a view to combating trafficking (above all for amateur sport) and out-of-competition testing (sample-taking);
- national criminal justice and customs services, with a view to stopping trafficking and investigation during competitions;
- laboratories involved in combating fraud in the agricultural and food sector (supply channels for hormones and other medicines intended for livestock and horses);
- UN/UNDCP for monitoring trafficking of natural and synthetic narcotics, and for the implementation of a substance bank;
- International police and justice organisations (INTERPOL, ICT) or European equivalents (European Monitoring Centre for Drugs in Lisbon, EUROPOL, etc.) with a view to preventing and punishing trafficking, and also harmonising actions to educate young athletes and their entourage.

### **3.3.3. EDUCATION AND TRAINING**

#### ***The actors in sport and their entourage***

The lack of knowledge about doping in sport in the sectors involved (potential risks, medicines that are allowed and those that are not, legislation, etc.) has been underlined at various IOC / European Commission working sessions. High-level athletes seem to be badly informed, or badly advised — an argument that could, incidentally, serve as an excuse for athletes and their entourage, who are sometimes deceived by unscrupulous people who have much to gain by dealing. The immediate entourage of athletes should be aware of which medications are tolerated, and training methods that help to avoid accidents and the consequent use of prohibited substances. The sports world as a whole must be aware of the risks athletes are taking by doping, and their obligations towards the testers. It is essential, therefore, to develop a two-pronged initiative based on information and training about doping in sport.

As far as information is concerned, it is important that campaigns are launched to a broad audience, particularly young people. These awareness-promoting actions involve the media, particularly sports journalists, who should be given rigorous information that is sufficiently clear to be used in the press. This problem could also be part of their training. Information is also conveyed through the school system, and teachers should be prepared to dispense it.

In terms of training, doctors are on the front line and, contrary to popular belief, they often have a very sketchy understanding of the relationship between therapy and doping, particularly in terms of knowing which treatments are permitted and which are not.

These various educational activities are the responsibility of national governments, through their national or regional education systems. Some countries have already taken steps in this direction, and their initiatives could inspire more. Coordination and information exchange in this area too would help to optimise investments and efforts. Collaboration between public authorities (national and international) and sports bodies would enable the implementation of international awareness-raising campaigns.

Finally, information and training coordination activities should be appropriate for all sports and be led at international level by an independent body.

### ***The actors in the fight against doping***

Harmonisation is also an essential rule when it comes to training. The training of laboratory personnel and sample-takers should be the responsibility of the same central organisation. A basic teaching programme should be designed, in collaboration with universities, particularly medicine and pharmacy faculties, along with training centres for analytical laboratory technicians. However, there should be a constant “recycling” process, set up with professional organisations and the network of anti-doping laboratories. In order to be able to reach all countries and all the organisations concerned it might prove necessary, in addition to distributing the appropriate educational tools, to set up a mobile centre to carry out certain types of training, such as training for analysts and sample-takers.

At the laboratory level, new training possibilities will be vital when it comes to applying the ISO 17025 (accreditation) and ISO 9001 (certification of laboratories responsible for activities other than analysis) quality systems. This programme should include various different aspects: updating in line with changes to the quality standards; communication methods (including results); information management; technical standards (new methods, biotechnology, etc.). Such training would be intended initially for laboratories that apply for accreditation from countries or continents considered a priority.

Judges involved in doping in sport should be able to take advantage of a specific programme designed to enable them to understand the results delivered by the laboratories and to evaluate the guarantees connected with the production of these results (in particular, the advantages and limitations of laboratory accreditation systems).

## 4. CONCLUSIONS AND RECOMMENDATION FOR THE EC RESEARCH PROGRAMMES

All the aspects of the doping problem were analysed over the course of the three seminars organised by the Commission and the IOC. Although many of the recommendations and strategy changes proposed by the participants are outside the framework of community action and research per se, the participants identified in their conclusions vast research needs, in which the European Union can play an important role. The results of these consultations also highlighted major structural gaps in the anti-doping initiative. The creation of an anti-doping agency and a reference laboratory should help to fill these lacunae.

### 4.1. PRIORITIES IN ANTI-DOPING RESEARCH IN THE FIFTH FRAMEWORK PROGRAMME OF THE EUROPEAN UNION

The European Union's fifth framework programme for research, technological development and demonstration, adopted by the Council and the European Parliament on 22<sup>nd</sup> December 1998 (decision no. 182/1999/CE, JO L 26/1 of 01/02/1999) allows to the fight against doping and the effects of doping on health can be addressed in two of its thematic programmes: "Quality of life and management of living resources" (<http://www.cordis.lu/life>) and "Competitive and sustainable growth" (<http://www.cordis.lu/growth>). The available budgets are nonetheless limited, and will therefore not be able to encompass all the options outlined in the present document.

Various research topics identified during the seminars are in line with certain priorities identified in both programmes, particularly in their general activities or infrastructure support activities.

#### ***Quality of life and management of living resources*** (<http://www.cordis.lu/life>)

The research proposals for this thematic programme, particularly activities of a general nature (public health and health services) include the general context of fighting against the effects of drugs, in particular for the following themes:

- Research into the blood profiles (biochemical, enzymatic, hormonal) of the effects of doping substances, with a view to using them in anti-doping initiatives;
- Research into the medium- and long-term health risks of using doping substances;
- Information and training for doctors and the paramedical professions;
- Information and awareness-raising for young people about the risks connected with doping.

#### ***Competitive and sustainable growth*** (<http://www.cordis.lu/growth>)

The anti-doping projects within this programme come under the generic activities "Measurements and testing", and support to research infrastructures (<http://www.cordis.lu/growth>). They are implemented according to the calls for expressions of interest procedure, and their dedicated calls (with the exception of R&D projects on new measuring instruments). In order to optimise available resources, the topics adopted will be, as a priority, those outlined in the present report.

Similarly, research proposals submitted for the dedicated calls which will result from calls for expressions of interest should be sure to follow the general recommendations

in terms of openness towards other sectors, public authorities and organisations active in combating trafficking.

Cooperation efforts (including with non-Community bodies) and pooling of resources will add value to the proposals.

**Generic activity — measurement and testing** (<http://www.cordis.lu/growth>)

- Sampling strategies and quality control of procedures.
- Identification of samples and sample protection systems (minimum performance standards).
- Methods of detecting doping substances that are not accessible today, and quality control tools for them.
- Methods of detection in samples other than blood, after demonstration of their significance and their medical and biochemical reliability.
- Analytical database of doping substances on the official list.
- Development and production of CRM in urine, with a priority on:
  - Artificial testosterone and epitestosterone
  - EPO, ACTH, hGH, hCG
  - Anabolic steroids
  - Narcotic analgesics
  - Stimulants
  - Diuretics
  - Beta-blockers
- Production and certification of pure substances, with priority given to:
  - With isotopically marked substances*
    - Artificial testosterone and epitestosterone
    - EPO, ACTH, hGH, hCG
  - Non-marked substances*
    - Anabolic steroids
    - Narcotic analgesics
    - Stimulants
    - Diuretics
    - Beta-blockers
- Performance standards for quantification methods (principle and implementation).
- New measuring instruments to enable the tracking of substances that are not currently accessible.
- Measuring instruments compatible with mobile structures.

**Support for research infrastructures**

- Structured networks of anti-doping laboratories and other bodies concerned by the trafficking of products.
- Preparation of laboratories for ISO 9001 and ISO 17025 accreditation.
- Structures for primary and continuing training for sample-takers.
- Structures for primary and continuing training for accreditation auditors.
- Continuing training structure for management personnel of anti-doping laboratories.
- Training programme for anti-doping technicians.
- Training and coordination structures for organising out-of-competition tests.
- Training and knowledge transfer structures for doctors, judges and members of other professions connected with sport.

- Development and organisation of a quality system for mobile sampling and control units.
- External quality control systems (interlaboratory tests) compatible with the traceability requirements of ISO 17025.
- Bank of reference substances and materials.

Without wishing to pre-empt any new needs that might emerge in an area as fast-moving as doping in sport, it is possible to note that anti-doping activities, along with the knowledge necessary for a better understanding of its effects on the human body and the health of athletes, have great similarities with some of the objectives identified in the fifth framework programme. The aim of the HARDOP project was to identify the priorities among the plethora of problems to be resolved. The work carried out in this context was the result of a meeting of different areas of expertise: actors in the sports world, authorities responsible for anti-doping initiatives, scientists and industrialists. Through a scientific approach, all of these parties can help to provide solutions to these questions; questions which, over and above the world of professional athletes, are of interest to amateur athletes, young people, and society as a whole. From this point of view, the essential tasks mentioned in these pages, which could be carried out under the aegis of the European Union, are perfectly in line with the objectives of the fifth framework programme: **to encourage research that will help to resolve the major challenges of society which European citizens face.**

#### **4.2. THE ANTI-DOPING AGENCY**

The HARDOP project supports the fundamental principles of the organisation coordinating anti-doping activities, currently called the “Agency” (see above).

The idea of this central coordination organisation, proposed in 1998 by the IOC following a particularly high-profile series of events, was taken up in February 1999 during the World Conference on Doping in Sport in Lausanne (see, in the appendix, the Lausanne Declaration on Doping in Sport).

Under the impetus of the IOC, the project is taking concrete form as a foundation: the World Anti-doping Agency. This new organisation could be created in partnership with a number of intergovernmental bodies (European Union, Council of Europe, Arab Sports Confederation, Supreme Council for Sport in Africa) and international organisations (WHO, UNDCP, Interpol).

One of the primary missions of this foundation could be the harmonisation and unification of standards and procedures for doping controls, particularly in the scientific and technical domains of analysis. Various subjects identified during the discussions of the HARDOP project seminars echo some of the foundation’s priorities.

The reference body (called “reference laboratory” in this report) could be placed under the authority of this Agency. It would be responsible for various technical tasks, as outlined above.

## **APPENDICES**

## APPENDIX 1

### PROHIBITED CLASSES OF SUBSTANCES AND PROHIBITED METHODS 31 January 1999

Doping contravenes the ethics of both sport and medical science. Doping consists of:

- · 1/ the administration of substances belonging to prohibited classes of pharmacological agents, and/or
- · 2/ the use of various prohibited methods.

#### I. PROHIBITED CLASSES OF SUBSTANCES

- A. Stimulants
- B. Narcotics
- C. Anabolic agents
- D. Diuretics
- E. Peptide hormones, mimetics and analogues

#### II. PROHIBITED METHODS

- A. Blood doping
- B. Pharmacological, chemical and physical manipulation

#### III. CLASSES OF DRUGS SUBJECT TO CERTAIN RESTRICTIONS

- A. Alcohol
- B. Cannabinoids
- C. Local anaesthetics
- D. Corticosteroids
- E. Beta-blockers

#### I. PROHIBITED CLASSES OF SUBSTANCES

Prohibited substances fall into the following classes of substances:

- A. Stimulants
- B. Narcotics
- C. Anabolic agents
- D. Diuretics
- E. Peptide hormones, mimetics and analogues

All substances belonging to the prohibited classes cannot be used even if they are not listed as examples. For this reason, the term “**and related substances**” is introduced.

This term describes drugs that are related to the class by their pharmacological action and/or chemical structure.

### A. Stimulants

Prohibited substances in class (A) include the following examples:

**amineptine, amiphenazole, amphetamines, bromantan, caffeine\*, carphedon, cocaine, ephedrines\*\*, fencamfamin, mesocarb, pentetrazol, pipradrol, salbutamol\*\*\*, salmeterol\*\*\*, terbutaline\*\*\*, ... and related substances.**

\* For caffeine the definition of a positive is a concentration in urine greater than 12 micrograms per millilitre.

\*\* For ephedrine, cathine and methylephedrine, the definition of a positive is a concentration in urine greater than 5 micrograms per millilitre. For phenylpropanolamine and pseudoephedrine, the definition of a positive is a concentration in urine greater than 10 micrograms per millilitre. If more than one of these substances are present below their respective thresholds, the concentrations should be added. If the sum is greater than 10 micrograms per millilitre, the sample shall be considered positive.

\*\*\* Permitted by inhaler only to prevent and/or treat asthma and exercise-induced asthma. Written notification of asthma and/or exercise-induced asthma by a respiratory or team physician is necessary to the relevant medical authority.

NOTE: All imidazole preparations are acceptable for topical use, e.g. oxymetazoline. Vasoconstrictors (e.g. adrenaline) may be administered with local anaesthetic agents. Topical preparations (e.g. nasal, ophthalmological) of phenylephrine are permitted.

### B. Narcotics

Prohibited substances in class (B) include the following examples:

**buprenorphine, dextromoramide, diamorphine (heroin), methadone, morphine, pentazocine, pethidine, ... and related substances.**

NOTE: codeine, dextromethorphan, dextropropoxyphene, dihydrocodeine, diphenoxylate, ethylmorphine, pholcodine, propoxyphene and tramadol are permitted.

### C. Anabolic agents

Prohibited substances in class (C) include the following examples:

1. Anabolic androgenic steroids

**a/ clostebol, fluoxymesterone, metandienone, metenolone, nandrolone, 19-norandrostenediol, 19-norandrostenedione, oxandrolone, stanozolol, ... and related substances.**

**b/ androstenediol, androstenedione, dehydroepiandrosterone (DHEA), dihydrotestosterone, testosterone\*, ... and related substances.**

Evidence obtained from metabolic profiles and/or isotopic ratio measurements may be used to draw definitive conclusions.

\* The presence of a testosterone (T) to epitestosterone (E) ratio greater than six (6) to one (1) in the urine of a competitor constitutes an offence unless there is evidence that this ratio is due to a physiological or pathological condition, e.g. low epitestosterone excretion, androgen producing tumour, enzyme deficiencies.

In the case of T/E greater than 6, it is mandatory that the relevant medical authority conducts an investigation before the sample is declared positive. A full report will be written and will include a review of previous tests, subsequent tests and any results of endocrine investigations. In the event that previous tests are not available, the athlete should be tested unannounced at least once per month for three months. The results of these investigations should be included in the report. Failure to cooperate in the investigations will result in declaring the sample positive.

## 2. Beta-2 agonists

When administered orally or by injection

**bambuterol, clenbuterol, fenoterol, formoterol, reproterol, salbutamol\*, terbutaline\*, ... and related substances.**

\* Permitted by inhalation as described in Article (I.A.).

## D. Diuretics

Prohibited substances in class (D) include the following examples:

**acetazolamide, bumetanide, chlortalidone, etacrynic acid, furosemide, hydrochlorothiazide, mannitol\*, mersalyl, spironolactone, triamterene, ... and related substances.**

\* Prohibited by intravenous injection.

## E. Peptide hormones, mimetics and analogues

Prohibited substances in class (E) include the following examples and their analogues and mimetics:

1. **Chorionic gonadotrophin** (hCG);
2. **Pituitary and synthetic gonadotrophins** (LH);
3. **Corticotrophins** (ACTH, tetracosactide);
4. **Growth hormone** (hGH);
5. **Insulin-like Growth Factor** (IGF-1)

and all the respective releasing factors and their analogues;

6. **Erythropoietin** (EPO).

7. **Insulin**

permitted only to treat insulin-dependent diabetes. Written notification of insulin-dependent diabetes by an endocrinologist or team physician is necessary.

The presence of an abnormal concentration of an endogenous hormone or its diagnostic marker(s) in the urine of a competitor constitutes an offence unless it has been conclusively documented to be solely due to a physiological or pathological condition.

## II. PROHIBITED METHODS

The following procedures are prohibited:

### Blood doping

Blood doping is the administration of **blood, red blood cells, artificial oxygen carriers, and related blood products** to an athlete.

### Pharmacological, chemical and physical manipulation

Pharmacological, chemical and physical manipulation is the use of substances and of methods which alter, attempt to alter, or may reasonably be expected to alter the integrity and validity of samples used in doping controls. These include, without limitation, the administration of diuretics, catheterisation, sample substitution and or tampering, inhibition of renal excretion such as by **probenecid** and related compounds, and alterations of testosterone and epitestosterone measurements such as **epitestosterone\*** or **bromantan** administration.

\* An epitestosterone concentration in the urine greater than 200 nanograms per millilitre will be investigated by studies as in Article (I.C.1. b.) for testosterone.

The success or failure of the use of a prohibited substance or method is not material. It is sufficient that the said substance or procedure was used or attempted for the infraction to be considered as consummated.

### III. CLASSES OF DRUGS SUBJECT TO CERTAIN RESTRICTIONS

#### A. Alcohol

Where the rules of a responsible authority so provide, tests will be conducted for ethanol.

#### B. Cannabinoids

Where the rules of a responsible authority so provide, tests will be conducted for cannabinoids (e.g. marijuana, hashish). At the Olympic Games, tests will be conducted for cannabinoids. A concentration in urine of 11-nor-delta 9-tetrahydrocannabinol-9-carboxylic acid (carboxy-THC) greater than 15 nanograms per millilitre is prohibited.

#### C. Local anaesthetics

Injectable local anaesthetics are permitted under the following conditions:

- a) bupivacaine, lidocaine, mepivacaine, procaine, etc. can be used but not cocaine. Vasoconstrictor agents (e.g. adrenaline) may be used in conjunction with local anaesthetics;
- b) only local or intra-articular injections may be administered;
- c) only when medically justified.

Where the rules of a responsible authority so provide, notification of administration may be necessary.

#### D. Corticosteroids

The systemic use of corticosteroids is prohibited.

Anal, aural, dermatological, inhalational, nasal and ophthalmological (but not rectal) administration is permitted. Intra-articular and local injections of corticosteroids are permitted. Where the rules of a responsible authority so provide, notification of administration may be necessary.

#### E. Beta-blockers

Some examples of beta-blockers are:

**acebutolol, alprenolol, atenolol, labetalol, metoprolol, nadolol, oxprenolol, propranolol, sotalol, ... and related substances.**

Where the rules of an International Sports Federation so provide, tests will be conducted for beta-blockers.

**SUMMARY OF IOC REGULATIONS FOR DRUGS WHICH NEED THE WRITTEN NOTIFICATION OF A PHYSICIAN**

<b>SUBSTANCES</b>	<b>PROHIBITED</b>	<b>PERMITTED WITH NOTIFICATION</b>	<b>PERMITTED WITHOUT NOTIFICATION</b>
<b>Selected beta-agonists*</b>	- <i>Oral</i> - <i>Systemic injections</i>	- <i>Inhalational</i>	
<b>Corticosteroids</b>	- <i>Oral</i> - <i>Systemic injections</i> - <i>Rectal</i>		- <i>anal, aural, dermatological, inhalational, nasal, ophthalmological</i>  - <i>local and intra-articular injections***</i>
<b>Local anaesthetics**</b>	- <i>Systemic injections</i>		- <i>local and intra-articular injections***</i>

\* Salbutamol, salmeterol, terbutaline; all other beta-agonists are prohibited.

\*\* Except cocaine, which is prohibited.

\*\*\* Where the rules of the responsible authority so provide, notification may be necessary.

## SUMMARY OF URINARY CONCENTRATIONS ABOVE WHICH IOC ACCREDITED LABORATORIES MUST REPORT FINDINGS FOR SPECIFIC SUBSTANCES

Caffeine	> 12 micrograms / millilitre
Carboxy-THC	> 15 nanograms / millilitre
Cathine	> 5 micrograms / millilitre
Ephedrine	> 5 micrograms / millilitre
Epitestosterone	> 200 nanograms / millilitre
Methylephedrine	> 5 micrograms / millilitre
Morphine	> 1 microgram / millilitre
Phenylpropanolamine	> 10 micrograms / millilitre
Pseudoephedrine	> 10 micrograms / millilitre
T/E ratio	> 6

### LIST OF EXAMPLES OF PROHIBITED SUBSTANCES

#### CAUTION:

This is not an exhaustive list of prohibited substances. Many substances that do not appear on this list are considered prohibited under the term "and related substances".

All athletes are strongly advised only to take medicines which are prescribed by a medical doctor and to ensure that they contain only drugs that are not prohibited by the IOC Medical Commission or the responsible authorities.

Whenever an athlete is required to undergo a doping control all medications and drugs taken or administered in the previous seven days should be declared on the doping control official record

#### STIMULANTS:

**amineptine, amfepramone, amiphenazole, amphetamine, bambuterol, bromantan, caffeine, carphedon, cathine, cocaine, cropropamide, crotethamide, ephedrine, etamivan, etilamphetamine, etilefrine, fencamfamin, fenetylline, fenfluramine, formoterol, heptaminol, mefenorex, mephentermine, mesocarb, methamphetamine, methoxyphenamine, methylenedioxyamphetamine, methylephedrine, methylphenidate, nikethamide, norfenfluramine, parahydroxyamphetamine, pemoline, pentetrazol, phendimetrazine, phentermine, phenylephrine, phenylpropanolamine, pholedrine, pipradrol, prolintane, propylhexedrine, pseudoephedrine, reproterol, salbutamol, salmeterol, selegiline, strychnine, terbutaline.**

#### NARCOTICS:

**buprenorphine, dextromoramide, diamorphine (heroin), hydrocodone, methadone, morphine, pentazocine, pethidine.**

**ANABOLIC AGENTS:**

**androstenediol, androstenedione, bambuterol, boldenone, clenbuterol, clostebol, danazol, dehydrochlormethyltestosterone, dehydroepiandrosterone (DHEA), dihydrotestosterone, drostanolone, fenoterol, fluoxymesterone, formebolone, formoterol, gestrinone, mesterolone, metandienone, metenolone, methandriol, methyltestosterone, mibolerone, nandrolone, 19-norandrostenediol, 19-norandrostenedione, norethandrolone, oxandrolone, oxymesterone, oxymetholone, reproterol, salbutamol, salmeterol, stanozolol, terbutaline, testosterone, trenbolone.**

**DIURETICS:**

**acetazolamide, bendroflumethiazide, bumetanide, canrenone, chlortalidone, ethacrynic acid, furosemide, hydrochlorothiazide, indapamide, mannitol, mersalyl, spironolactone, triamterene.**

**MASKING AGENTS:**

**bromantan, diuretics (see above), epitestosterone, probenecid.**

**PEPTIDE HORMONES, MIMETICS AND ANALOGUES:**

**ACTH, erythropoietin (EPO), hCG, hGH, insulin, LH.**

**BETA BLOCKERS:**

**acebutolol, alprenolol, atenolol, betaxolol, bisoprolol, bunolol, labetalol, metoprolol, nadolol, oxprenolol, propranolol, sotalol.**

**APPENDIX 2**

**LABORATOIRES POUR LES ANALYSES DE CONTROLE DE DOPAGE  
ACCREDITES PAR LE COMITE INTERNATIONAL OLYMPIQUE**

**LABORATORIES FOR DOPING CONTROL ANALYSES ACCREDITED  
BY THE INTERNATIONAL OLYMPIC COMMITTEE**

juin 1999  
June 1999

<b>SITUATION LOCATION</b>	<b>CHEF DU LABORATOIRE HEAD OF THE LABORATORY</b>	<b>ADRESSES ADDRESSES</b>
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\* **PHASE I:** Le laboratoire est temporairement suspendu pour les contrôles internationaux. Au niveau national (échantillons provenant du pays dans lequel le laboratoire est situé), le laboratoire peut effectuer des analyses mais les échantillons A déclarés positifs doivent faire l'objet d'une seconde analyse pour confirmation par un autre laboratoire accrédité par le C.I.O. L'échantillon B correspondant sera également analysé dans le laboratoire accrédité par le C.I.O. qui a confirmé le résultat de l'analyse de l'échantillon A.

\* **PHASE I:** *The laboratory is temporarily suspended from international testing.*

*At the national level (samples originating from the country in which the laboratory is located), the laboratory may perform screening procedures but analytically positive A-samples must be confirmed by another IOC accredited laboratory. The corresponding B-sample will also be analysed in the IOC accredited laboratory which has provided confirmation of the A-sample.*

\* **PHASE II:** Le laboratoire est temporairement suspendu pour la confirmation du résultat positif des échantillons A et l'analyse des échantillons B. La confirmation de l'échantillon A et l'analyse de l'échantillon B seront effectuées dans un autre laboratoire accrédité par le C.I.O..

\* **PHASE II:** *The laboratory is temporarily suspended from confirmation of analytically positive A samples and analysing B samples. Confirmation of the A sample and analysis of the B sample will be performed in another IOC accredited laboratory.*

## APPENDIX 3

### QUESTIONNAIRE DISTRIBUTED FOR THE FIRST MEETING ON THE ORGANISATION OF ANTI-DOPING CONTROL

In order to achieve a universally homogeneous organisation, the world of sport has to follow IOC rules concerning normative and operational aspects.

In the fight against doping also, measures and methods should be harmonised.

So, the organisation of anti-doping control should be homogeneously anchored on a national level, with a single international coordination body (IOC).

The Medical Commission of the IOC has set up a common project supported by the European Commission (Standard Measurement and Testing research programme), to identify research and development activities to achieve this harmonisation objective.

As a first step of this project, it is foreseen to investigate the anti-doping control activities, ongoing and planned, at national level.

For these reasons we believe it useful to send a questionnaire to all national organisations. The questions will be extrapolated from the "Database on Anti-doping initiatives" of the Anti-doping convention of the Council of Europe.

The outcome of the inquiry will be collated by the Committee in charge of the IOC / EC project and will be discussed in a workshop which will take place in Brussels.

With this first initiative we hope to broaden our knowledge on the subject and to be able to achieve the goals set by the European Commission and IOC project.

### CONTROL STRATEGY

Herewith you will find the questions the project committee has prepared. These answers will be worked out and sent to the different participating countries.

#### **1. National anti-doping policy**

- Does your country have a national anti-doping policy?
- Which organisation is in charge of developing and applying this policy?
- What is the role of the National Olympic Committee in the fight against doping?
- What kind of relations exist between the National Olympic Committee and the Governmental Sport Authorities?

## **2. National anti-doping organisations**

- Which organisations are in charge of coordinating and setting up anti-doping programmes?
- Who is the responsible person in this organisation?
- What is the name, address, telephone and fax number of this organisation?
- Who is the organisation's main financier?
- On what is the organisation's authority based?
- To whom does the organisation answer?
- Which organisation does the planning and makes up the list of specific anti-doping control tests?
- Are there tests carried out before departure of athletes to big events (e.g. Olympic Games)?
- Are sanctions applied in these circumstances if positive results are found?

## **3. Anti-doping legislation**

- Availability of substances. Does your country have a law forbidding the possession of:
  - a. Anabolic steroids
  - b. Erythropoietin
  - c. Growth hormone
- Are there specific laws against drug abuse by athletes?
- Are new laws or administrative measures planned in your country in the next 12 months?
- Must sports organisations have efficient anti-doping regulations in order to obtain subsidies?
- Is there a specific national law against doping in sport?
- Is there a national anti-doping commission or similar commission?
- Is there collaboration with health authorities in order to:
  - indicate which pharmaceutical products contain substances forbidden in sport?
  - information on alternative medications?
- Are there laws or restrictions on importing anabolic steroids or hormones?

## **4. National control programmes**

- Does your country have a national control programme?
- How many controls were carried out on your national athletes in 1997 in your country and abroad (and in the context of which national control programme)?
  - a. by international federations: during competitions; out-of-competition
  - b. in the context of a national programme: international and national contests; outside of national or international competitions.
- Total number of controls carried out in your country in 1997.

## **5. National control programmes outside competition**

- Does your country systematically control individual athletes outside competition?
- How is this system organised?
- What selection procedure is being followed?

- What are the target drugs for out-of-competition testing?

## **6. National control programmes (classes of substances to be analysed)**

- **Types of substances:**
  - f. stimulants
  - g. narcotics
  - h. anabolics
  - i. diuretics
  - j. peptide hormones or others
  - k. others ?
- **Doping methods:**
  - a. Blood doping
  - b. Pharmacological, chemical or physical manipulation
- **Partially restricted substances:**
  - a. Alcohol
  - b. Marijuana
  - c. Local anaesthetics
  - d. Corticosteroids
  - e. Betablockers
  - f. Others ?
- Is there an official list of Prohibited Substances different than the one set up by the IOC?

## **7. Doping control operators**

- Does your national anti-doping organisation have available doping control operators who can collect samples from competitors?
- Who controls the doping control operators?
  1. National sport organisations
  2. The medical profession
  3. Others (please specify)
- Is there an education programme for these operators?
- Is there a register of doping control operators?
- If so, how many doping control operators are registered?
- Do doping control operators have to be medically qualified?
- Do doping control operators have to be independent from the sport organisation to be monitored?
- What material is used for the controls?

## **8. Analysis of samples**

- Is there a doping control laboratory in your country, or more than one?
- Please provide some information on this laboratory
  1. Manager of the laboratory
  2. Name of the laboratory
  3. Address
  4. Telephone number

5. Fax number

6. E-mail

- Is this laboratory accredited by the IOC?
- Is this laboratory a candidate to be accredited?
- Is the laboratory accredited by another official organisation? (if so, please state the organisation)
- In case there is no laboratory in your country, where are samples analysed?
- Who finances the analysis of samples in your country?
  1. The government
  2. A sport organisation, national anti-doping sport organisation or federation
  3. National sport federations
  4. Others (please specify)
- How many anti-doping laboratories are there in your country?
- If there is more than one laboratory, what is the policy for distributing the samples between the existing laboratories?
- Annual budget for the tasks of the laboratory
  - If available, specify in terms of staff expenses, consumables, equipment investments, overheads

## **9. Evaluation of results**

- Is there a Medical Commission on a national level to evaluate laboratory results?
- Are there Medical Commissions on a national federation level to evaluate laboratory results?
- Are longitudinal or endocrinic studies for the follow-up of testosterone or similar cases systematically carried out?
- If so, who decides to initiate these studies?

## **10. Education and information programmes on doping**

- Who were the target groups for education and information in 1997?
  1. High level athletes
  2. Young athletes
  3. Amateur athletes
  4. Coaches
  5. Administrators, operators
  6. Medical staff
  7. Pharmacists
  8. Teachers
  9. Students
  10. Media, journalists
  11. Others, please specify
- Is there a permanent information service available for athletes, coaches or physicians?

## **11. Research**

- To your knowledge, is research involving doping in sport being carried out in your country?

- What type of research?
  1. Analytical methods (e.g. laboratory research on substance detection techniques)
  2. Social/psychological research (e.g. tests on the attitude of athletes)
  3. Psychological effects of prohibited substances (e.g. effects of prohibited substances on health)
  4. Research on evaluation (e.g. the efficiency of anti-doping activities)
  5. Other types of research, please specify.
- Please state the references for important achievements on anti-doping research in your country.
- Who finances the research programmes for anti-doping related issues in your country?
- Approximate quantitative estimate of the extent of financing for research in doping-related issues. Should this research be carried out at international level?

## **12. Percentage of positive samples**

- The number of positive samples in 1997 in your country and the percentage of positive samples during the same year.
- Which organisation applies the sanctions?
- Percentage of sanctions applied as compared to the results of positive samples containing forbidden substances as reported by the laboratory
  - Are there negative results because of medical justification?
  - Are there negative results because of longitudinal studies for follow-up?
- Is there an Appeal Committee for re-studying sanctioned cases?
- Which kind of sanctions are applied in your country on positive athletes and approximate percentage of cases for each one:
  - No sanction (...%)
  - Warning (...%)
  - Up to 6 months (...%)
  - Up to 2 years (...%)
  - Up to 4 years (...%)

## **13. Forms used for samples?**

## **14. Any other information you would like to communicate?**

## APPENDIX 4

### QUESTIONNAIRE DISTRIBUTED TO ATHLETES

Doping			
Global context			
General opinion. What is doping?  for users	fraud cheating crime	yes yes yes	no no no
for suppliers	fraud cheating crime	yes yes yes	no no no
What is the extent of doping in the various sports?  Professional level	Major Minor	yes yes	no no
Amateur level	Major Minor	yes yes	no no
What effect does doping have on results?	Significant  Marginal	yes  yes	no  no
What do athletes think of the involvement of police forces in doping cases?	Good  Unwelcome  Necessary	yes  yes  yes	no  no  no
Collaboration between sports authorities and civil justice: should it be made systematic?		yes	no

In the event of proven doping (test results) should the first step be to inform:	the civil justice system?	yes	no
	sports authorities?	yes	no
In the event of trafficking, should the first step be to inform:	the civil justice system?	yes	no
	sports authorities?	yes	no
Do you trust your entourage to look after you and advise you?	Doctor	yes	no
	Physiotherapist	yes	no
	Coach	yes	no
Would you like to have access to an independent and anonymous body that could give you information if you had any doubts?	yes	no	
<b>Doping controls</b>			
Are out-of-competition tests	Pointless?	yes	no
	Necessary?	yes	no
	Desirable?	yes	no
Who should be in charge of testing?	IFs	yes	no
	IOC	yes	no
	National authorities	yes	no
	Police	yes	no
Should sample-takers be independent of the organisation prescribing the tests?	yes	no	

What types of sample should be taken? Blood Urine Other (please specify)	yes yes	no no
Should witnesses be present during sample taking?	yes	no
Do you think the tests are technically reliable?	yes	no
Do you think they could be improved?	yes	no
Should B-sample analysis be carried out systematically in another laboratory?  in another country?	yes yes	no no
Should the laboratories be recognised (accredited) under a non-sports-related recognition system?	yes	no
How would you like to receive results?  Time limit (in days)		
Would you (professionals) be ready to contribute to the cost of any B-sample analysis you requested?	yes	no
<b>Confidentiality</b>		
Should the distribution of results be limited?	yes	no
Should it be possible for results to be published in the press?	yes	no
If distribution was limited, to whom should results be sent? Doctor Coach Federation Disciplinary authority	yes yes yes yes	no no no no

<b>Training and information for sports doctors, coaches and sports journalists</b>		
<p>What kind of information would you like to have on anti-doping initiatives?</p> <p>New technologies</p> <p>Procedures</p> <p>Interpretation of results</p> <p>Sanctions</p>	<p>yes</p> <p>yes</p> <p>yes</p> <p>yes</p>	<p>no</p> <p>no</p> <p>no</p> <p>no</p>
<p>Do you think that technical and scientific training (specialised courses) on the effects of doping and ways of combating doping would be useful?</p>	<p>yes</p>	<p>no</p>
<p>What kind of information on doping substances would you like to have?</p> <p>Origins</p> <p>Effects</p> <p>Detection methods</p>	<p>yes</p> <p>yes</p> <p>yes</p>	<p>no</p> <p>no</p> <p>no</p>
<p>How would you like to receive this information?</p> <p>fact sheet</p> <p>personally addressed</p> <p>through your doctor</p> <p>through your coach</p> <p>through your federation</p> <p>through a special Internet site</p>	<p>yes</p> <p>yes</p> <p>yes</p> <p>yes</p> <p>yes</p> <p>yes</p>	<p>no</p> <p>no</p> <p>no</p> <p>no</p> <p>no</p> <p>no</p>

## APPENDIX 5

### LAUSANNE DECLARATION

#### ON DOPING IN SPORT

**Adopted by the World Conference on Doping in Sport**

**4 February 1999, Lausanne, Switzerland.**

**Considering** that doping practices contravene sport and medical ethics, and that they constitute violations of the rules established by the Olympic Movement, and concerned by the threat that doping poses to the health of athletes and youth in general;

**Recognizing** that the fight against doping in sport is the concern of all: the Olympic Movement and other sports organizations, governments, inter-governmental and non-governmental organizations, sportsmen and sportswomen throughout the world, and their entourage;

**The World Conference on Doping in Sport, with the participation of representatives of governments, of inter-governmental and non-governmental organizations, of the International Olympic Committee (IOC), the International sports Federations (IFs), the National Olympic Committees (NOCs), and of the athletes, declares:**

#### **1. Education, prevention and athletes' rights**

The Olympic oath shall be extended to coaches and other officials, and shall include the respect of integrity, ethics and fair play in sport. Educational and preventive campaigns will be intensified, focusing principally on youth, and athletes and their entourage. Complete transparency shall be assured in all activities to fight doping, except for preserving the confidentiality necessary to protect the fundamental rights of athletes. Partnership with the media shall be sought in anti-doping campaigns.

#### **2. Olympic Movement Anti-Doping Code**

The Olympic Movement Anti-Doping Code is accepted as the basis for the fight against doping, which is defined as the use of an artifice, whether substance or method, potentially dangerous to athletes' health and/or capable of enhancing their performances, or the presence in the athlete's body of a substance, or the ascertainment of the use of a method on the list annexed to the Olympic Movement Anti-Doping Code.

The Olympic Movement Anti-Doping Code applies to all athletes, coaches, instructors, officials, and to all medical and paramedical staff working with athletes or treating athletes participating in or training for sports competitions organized within the framework of the Olympic Movement.

### **3. Sanctions**

The sanctions which apply to doping violations will be imposed in the framework of controls both during and out of competition.

In accordance with the wishes of the athletes, the NOCs and a large majority of the IFs, the minimum required sanction for major doping substances or prohibited methods shall be a suspension of the athlete from all competition for a period of two years, for a first offence. However, based on specific, exceptional circumstances to be evaluated in the first instance by the competent IF bodies, there may be a provision for a possible modification of the two-year sanction. Additional sanctions or measures may be applied. More severe sanctions shall apply to coaches and officials guilty of violations of the Olympic Movement Anti-Doping Code.

### **4. International Anti-Doping Agency**

An independent International Anti-Doping Agency shall be established so as to be fully operational for the Games of the XXVII Olympiad in Sydney in 2000. This institution will have as its mandate, notably, to coordinate the various programmes necessary to realize the objectives that shall be defined jointly by all the parties concerned. Among these programmes, consideration should be given in particular to expanding out-of-competition testing, coordinating research, promoting preventive and educational actions and harmonizing scientific and technical standards and procedures for analyses and equipment. A working group representing the Olympic Movement, including the athletes, as well as the governments and inter-governmental organizations concerned, will meet, on the initiative of the IOC, within three months, to define the structure, mission and financing of the Agency. The Olympic Movement commits to allocate a capital of US \$25 million to the Agency.

### **5. Responsibilities of the IOC, the IFs, the NOCs and the CAS**

The IOC, the IFs and the NOCs will maintain their respective competence and responsibility to apply doping rules in accordance with their own procedures, and in cooperation with the International Anti-Doping Agency. Consequently, decisions handed down in the first instance will be under the exclusive responsibility of the IFs, the NOCs or, during the Olympic Games, the IOC. With regard to last instance appeals, the IOC, the IFs and the NOCs recognize the authority of the Court of Arbitration for Sport (CAS), after their own procedures have been exhausted.

In order to protect athletes and their rights in the area of disciplinary procedure, the general principles of law, such as the right to a hearing, the right to legal assistance, and the right to present evidence and call witnesses, will be confirmed and incorporated into all applicable procedures.

## **6. Collaboration between the Olympic Movement and public authorities**

The collaboration in the fight against doping between sports organizations and public authorities shall be reinforced according to the responsibilities of each party. Together, they will also take action in the areas of education, scientific research, social and health measures to protect athletes, and coordination of legislation relative to doping.

Done in Lausanne (Switzerland), 4 February 1999

## APPENDIX 6

### Participants at the meeting of 27–29 November 1998, Brussels

1/ Australia	Mr Simon Rofe	NOC legal representative
2/ Austria	Mr Hans Holdhaus	Director, Austrian Institute for Medicine and Sports Science
3/ Belgium	Prof Xavier Sturbois	Vice-President, Belgian NOC
4/ China	Mr Shi Kangcheng Mr Li Guoping	NOC Anti-doping commission interpreter
5/ Council of Europe	excused	
6/ Denmark	Mr Finn Mikkelsen	Member NOC doping control commission
7/ Finland	Mr Jouko Purontakanen Dr Tapio Kallio	Sec. Gen, Finnish NOC Finnish anti-doping commission
8/ France	Dr Maurice Vrillac Mr Pierre Guichard	President, NOC Medical Commission NOC, Prevention in Doping
9/ Germany	Mr Jurgen Barth Dr Muller-Platz	Managing Director, Joint Anti- doping Convention: NOC and German Sports Confederation Head of doping analytic department
10/ Great Britain	Dr Peter Thomas Mrs Michelle Verroken	Medical Commission NOC Sports Council
11/ Greece	Dr Kostas Georgakopoulos Mr Athanassios Pragalos	Director, IOC accredited laboratory in Athens NOC member
12/ Holland	Represented by Mr Hans Holdhaus from Austria	
13/ Ireland	Dr Joseph Cumiskey Mr Martin Burke	NOC Chief Medical Officer NOC administration
14/ Israel	Mrs Yael Arad	NOC of Israel

	Mr Muly Epstein	NOC of Israel
15/ Italy	Dr Mariano Ravazzolo Mrs Domenica Turi	NOC of Italy, co-ordinator for anti-doping activities NOC of Italy
16/ Luxembourg	Dr Ernest Weicherding	President, Sports Medicine Society of Luxembourg
17/ Norway	Mr Arne Myhrvold Mr Rune Andersen	President, Norwegian Olympic Committee and Confederation of Sports Head of Ethics, Sports Medicine and Anti-Doping
18/ Portugal	Mr José Vicente Moura Dr Luis Horta	NOC President Sports Medicine Centre, Director
19/ Russia	Mr Gennady Aleshin Mr Anatoly Kolesov Mr Nikolai Lents	Vice-President, Russian Olympic Committee Chef de Mission, Sydney 2000 Working Group Olympic attaché, Sydney 2000
20/ Spain	Dr Esteban Gorostiaga	NOC of Spain
21/ Sweden	Mr Stefan Lindeberg Mrs Anne-Katrin Olsson	Vice-President, NOC Executive Board Swedish Doping Commission
22/ USA	Dr Wade Exum Ms Joan Price	United States Olympic Committee, Drug Control Administration, Director United States Olympic Committee, Drug Control Administration
European Commission	Mr E. Maier Mr A. Boenke Mr R. Gois Mr J. Andreu Mr B. Hansen (excused)	DG XII-C Measurement and Testing DG XII-C Measurement and Testing DG XII-C DG X-C Sport DG XII E Life sciences
IOC	Prince A. de Merode Dr P. Schamasch	



Rainer Stephany

Director, Laboratory of Residue Analysis, National Institute of Public Health & Environment Protection, the Netherlands

### **Equipment**

C. Hennion

Biospace Instruments, Paris, France

Steve Brookes

Europa Scientific Ltd, UK

Jordi Fabregas i Bosch

Hewlett Packard, Barcelona, Spain

Stevan Horning

Finnigan, Cologne, Germany

Chris J. Porter

Micromass, Manchester, UK (excused)

### **Pharmaceutical industry:**

Wayne Dickerson

Parke-Davis, USA

Gary McLuskeys

Parke-Davis, USA

Ernst Gassmann

Novartis Farma, Switzerland (excused)

Harald Becker

Janssen-Cilag, Switzerland (excused)

### **Police**

Christian Collombel, Biologiste et Doyen de la Faculté de Pharmacie de Lyon (replacing A. Lamotte)

Lieutenant-Colonel Charles De Winter, Directeur Programme Drogues, Bureau Central de Recherche, Gendarmerie Bruxelles

### **UNDCP**

Ms Sommail Sackda (FRA), United Nations Office for Drug Control and Crime Prevention, Scientific Section, Vienna

### **Certified reference materials**

G. Siest (excused)

### **Accreditation**

R. Dybkaer, Copenhagen Hospital Corporation, department of Standardization in Laboratory Medicine

### **Other Experts**

Hans Maurer, Institute of Pharmacology and Toxicology, University of Saarland, Hamburg, Germany

Rafael de la Torre, quality assessment and method validation (IMIM, Spain)

### **Federazione Medico Sportiva Italiana**

Michele Maffei

Anna Maria Piermattei

## APPENDIX 8

### Participants at the meeting in Toulouse

7–9 May 1999

#### **IOC**

Prince Alexandre de Merode  
Dr Patrick Schamasch

#### **European Commission DG XII C**

Jack Metthey  
Eddie Maier  
Raymond Gois

#### **Athletes**

Israel - Yael Arad  
Belgium - Jean Michel Saive (excused)  
Belgium - Philippe de Wulf (excused)  
Belgium - Robert Van de Walle (excused)  
USA - Edwin Moses (excused)  
France - David Douillet (excused)  
France - Philippe Riboud (excused)  
Italy - Mrs Manuela Di Centa (excused)  
UK - Dr Roland Baar (excused)  
Ukraine - Sergei Bubka (excused)

#### **Coaches**

Belgium - G. Gonzales

#### **Sports Doctors**

Great Britain - Dr Peter Thomas  
Norway - Dr Inggard Lereim  
Great Britain - Prof Fabio Pigozzi  
France - Dr Maurice Vrillac  
Belgium - Dr Renno Roelandt

#### **Physiotherapists**

France - Laurent Viquerat

#### **Journalists**

Belgium - Mr D. Buysse  
Belgium - Mr J. Duriau (excused)  
France - Mr J.M. Bellot (excused)  
France - Mr J.P. Bricout (excused)

European Commission

**EUR 19076** - Harmonisation of methods and measures in the fight against doping in sport

Prince A. de Merode & Dr P. Schamasch

*Luxembourg: Office for Official Publications of the European Communities  
1999 - 71 pages - 21.0x29.7 cm*

*BCR information series*

*ISBN 92-828-7878-3*

## **ABSTRACT**

The HARDOP project, under the joint authorities of the International Olympic Committee and the European Union, took place in 1998 and 1999. Its main objective was to identify the research needs necessary to fight the phenomenon of doping in sport. In order to have a global understanding of the issue, all the actors involved — representatives of sports bodies, athletes, laboratory heads, doctors, journalists, etc. — were consulted. The organisation of three discussion seminars and the preparation of targeted questionnaires made it possible to identify, both on a structural and a scientific level, the priorities for international cooperation in this area.

The lack of collaboration between the various spheres involved and the absence of harmonisation (legislation, attitude of sport authorities, laboratory control techniques, etc.) in fact represents the main challenge confronting those who want to eradicate doping in sport. Collaboration and harmonisation will not succeed without the creation of a central body, responsible at international level for the fight against doping, and an attached reference laboratory.

This central organisation should play an important role in terms of research, in an area where increasingly sophisticated doping substances require new detection techniques. This body, acting as an interface between specialised laboratories and an organ for accreditation, responsible for proposing a set of common rules (reference materials and certified substances, tests, quality controls, etc.), would be a key element in the harmonisation of procedures and criteria — without which the control of doping substances will always remain somewhat haphazard.

From a research point of view, this central body will also help to reinforce the climate of scientific and technical vigilance that will, at a basic research level, and in collaboration with industry, enable pre-emption of the worrying “advances” in substances used.

This body will also be a recognised interlocutor vis-à-vis other sectors involved in the problem of doping — such as public authorities (particularly with a view to harmonisation and legislation), the justice system, police and customs authorities, and sports federations — and will encourage cooperation between these various parties. It will also act as a driving force for improving training (including that of physicians) and the distribution of information — two areas that today are sadly lacking, particularly insofar as they affect athletes, the media and education.

The issue of doping in sport, which is a reflection of a much broader social problem, is one of the priorities of the European Union’s fifth framework programme. The priorities highlighted by

the participants in the project relate to medical research (effects of doping on health, new techniques for measuring doping substances, training and information) and scientific fraud detection (measuring instruments and methods, reference materials and substances). These types of research are relevant to the two thematic programmes “Quality of life and management of living resources” and “Competitive and sustainable growth”. European research projects, supported by the EU, could therefore spearhead the fight against doping in sport and, beyond this, the worrying phenomenon of which it is merely a reflection.