The fight against doping

By Birgir Gudjonsson, C. Harmon Brown

Introduction

The temptation to break rules, to cheat, in order to gain an advantage in competition has existed as long as humans have practiced sport. The abuse of drugs in an attempt to enhance performance has a long history and can be documented from Greek and Roman times through to the present. It goes without saying that all cheating is an attack on the integrity of sport and it is clear that the abuse of drugs can seriously compromise the health of the individual. For these reasons, the sports movement has always opposed doping and over the years it has developed various weapons to fight against those who threaten sport and themselves through its practice. The anti-doping arsenal includes legal measures to formally ban doping and set sanctions for offenders, a constantly updated list of prohibited substances and methods, procedures for doping control testing, and anti-doping education measures.

Athletics has been engaged in the fight against the dangers posed by doping since 1928, when the IAAF became the first international sport federation (IF) to formally ban doping in its rules. The IAAF’s unwavering commitment to eliminate doping since then has helped to shape the fight and made it a clear leader amongst the IFs and in the sports movement. Under President Lamine Diack, it has redoubled its efforts in the last eight years, regularly calling for tougher sanctions, employing the highest number of anti-doping staff of any IF (11 full-time members in the Medical and Anti-Doping Department) and devoting the largest budget for anti-doping activities of any IF (three million US dollars per year).

The purpose of this paper is to give an overview of the fight against doping, by summarising the history of efforts in this field and outlining the workings of the key elements of the fight with special reference to the efforts made by the IAAF.

Historical background

Although the IAAF began discussing the threat posed by doping and banned the
practice in the 1920s, the issue started to gain greater attention within the wider sports movement after World War II, when it became clear that the use of drugs by sportsmen and sportswomen was increasing and the measures for control were limited. In general, cheats use drugs, on the one hand, to increase strength, muscle hypertrophy and endurance during heavy training and, on the other hand, to enhance their performance in the competition itself.

The deaths of riders in cycling events in 1960 and 1967, which were traced to doping, aroused strong reactions and the demand was made that sports authorities intervene. The Council of Europe first defined doping in 1963 as “the use of substances or methods that could have the effect of unnaturally influencing the physical and/or mental condition of a contestant before or during competition and thus improve his/her sports performance”. In 1964, the International Olympic Committee (IOC) established a Medical Commission, which set out the first list of Prohibited Substances. The IOC banned the practice of doping in 1968 and the first tests for stimulants were performed at the Winter Olympics that year. In 1969, the IAAF conducted its first doping control tests, analysis of urine samples collected from athletes. Other sports also initiated anti-doping controls at their competitions. In the following years, the science of the fight against doping progressed. Steroids became detectable in 1974, although to begin with the methods were crude and insensitive. The first tests were conducted at that year’s European Athletics Championships in Rome. Later, the testing of blood samples for evidence of blood doping was introduced.

The IAAF was the first IF to introduce out-of-competition (OOC) testing. This is considered the most effective form of doping control as it is more likely to detect the abuse of drugs during the training period, which is the common practice. Further, athletes often avoid detection by discontinuing drugs prior to a competition if testing is done only in connection with competitions. The IAAF currently conducts more OOC tests than any other IF (nearly double the nearest sport in 2006/07).

The organisation of the fight against doping was also progressing. The IAAF’s anti-doping sub-commission was established in 1976. National Olympic committees (NOCs), national sport confederations and government authorities began establishing national anti-doping organisations (NADOs) in individual countries and joining multinational anti-doping organisations (ADOs). Many of these have strengthened anti-doping measures on their own. For example, the national sports confederations of the Nordic countries signed a convention and began regular doping control tests in 1982, focusing on OOC testing. Athletes who were found to have violated anti-doping regulations were ruled ineligible in all sports disciplines of the confederation in question and, moreover, in the countries of all the signatory confederations. Some NOCs banned sanctioned athletes from participation in all future Olympic Games. Some countries have even recognised that whilst the problem is manifest in sport, it has dimensions that include public health, medical science, education and society as a whole and that governments have a shared responsibility for the fight. They have therefore taken the action of making doping a criminal offence and punishable as such.

In 1998, several highly publicised doping incidents occurred in different parts of the world and many governments declared their dissatisfaction with the situation. As a result, the IOC called a conference in Lausanne in early 1999, which included the participation of IFs including the IAAF, NOCs, government authorities and athletes. The declaration that emerged from the conference called for more stringent anti-doping measures and the decision was made to establish the World Anti-Doping
Agency (WADA), with the participation of the IOC, IFs and governments. The purpose was to harmonise and strengthen the anti-doping actions taken by sports, including an expansion of systematic out-of-competition controls.

At the 2003 WADA Conference in Copenhagen, the World Anti-Doping Code was formally approved. When it came into effect in 2004, the code replaced the IOC’s anti-doping rules with stricter aims, regulations and control procedures. It has since been revised and new provisions will come into force on January 1, 2009.

Parallel to the work in the sports movement to create the code, the United Nations Education, Scientific and Cultural Organisation (UNESCO) developed the International Convention Against Doping in Sport, which came into force in 2007. The aim of the convention is to support the efforts of sports organisations and ensure the effectiveness of the World Anti-Doping Code by creating a framework in international law for governments to harmonise their anti-doping measures on the national and international level. UNESCO and the sports movement are currently working to encourage all governments to sign up to the convention.

The World Anti-Doping Code

The aim of the World Anti-Doping Code is to standardise the rules and regulations governing anti-doping measures across all sports. Parts of the text are to be incorporated verbatim in the respective regulations of the NADOs, ADOs and IFs but other parts of the code allow for flexibility. The IAAF and most IFs have accepted the code as the basis for their fight against doping and adapted their anti-doping regulations to conform with the code.

In accordance with the code, IFs must require their national member federations to abide by certain rules and to specify that athletes and support personnel are also bound by the same rules. Members, in turn, must guarantee that national level doping controls comply with the regulations and procedures of their respective IFs.

In the code, anti-doping rule violations are defined as:

- a) the presence of a banned substance or metabolite in an athlete’s body;
- b) the use of prohibited substances or methods;
- c) the refusal or failure to submit to doping control or to undergo an anti-doping test;
- d) three (3) missed out-of-competition tests during a specific period of time (each IF to decide on the length of the period);
- e) tampering with any part of the doping process;
- f) possession of a prohibited substance or method, without a Therapeutic Use Exemption (TUE);
- g) trafficking in a prohibited substance or method;
- h) the administration of a prohibited substance or method or assisting in an anti-doping rule violation;
- i) competing, or attempting to compete, whilst suspended or ineligible.

Under the code, the standards of proof of doping are the burden of the respective antidoping authority or other prosecuting authority, which must establish that an anti-doping rule violation has occurred. The proof is a positive sample analysis by a WADA-accredited laboratory.

List of prohibited substances and methods

The original list of prohibited substances consisted of just 46 words on less than half a page, but it has now expanded to 11 pages and covers 15 categories of banned substances and methods (see box on page 15). WADA is responsible for continual
review and harmonisation of the list. Drugs are placed on the prohibited list if they are considered to:

a) enhance sports ability;
b) be dangerous;
c) be contrary to the spirit of sportsmanship;
d) mask the intake of prohibited drugs.

Therapeutic Use Exemptions

Athletes with a medical condition that requires the use of a medication included on the prohibited list can apply to the appropriate authority for permission for its use, i.e. to obtain a Therapeutic Use (TUE). TUEs are granted only in cases of clear “need” such as:

a) if the athlete would otherwise experience impairment to his/her health;
b) the use would not give the athlete a competitive advantage;
c) there is no reasonable alternative.

An application for a TUE has to include relevant documentation of the condition. A commission reviews the applications. Each TUE is valid for a specified time period and may be cancelled at any time. Retroactive TUEs are only granted where emergency treatment was necessary or in exceptional circumstances.

TUE applications for use of injectible cortico-steroids are most commonly sought while requests for use of an inhaled Beta-2 agonist for exercise-induced asthma are also very common. The IOC and many IFs, including the IAAF, require the proof of provocation tests for international athletes.

Doping control procedures

The procedures for doping controls are set out in procedural guidelines by the IFs. The key points are as follows:

In-Competition controls

In individual sports such as athletics, swimming and skiing, the choice of athletes to be controlled at a competition is made on the basis of final position in the event and/or a random selection, but this can be done by any method. In team sports, the selection of individual team members is at random. In athletics, a control is required on any athlete who breaks a record. When a running, race walking or combined events record is broken the control will include analysis for rh-EPO.

Sample collection takes place in the Doping Control Station. The station consists of a waiting room, a working room and WCs (men and women). Only authorised persons are allowed in the station.

A chaperone or Doping Control Officer (DCO) seeks the selected athlete at the conclusion of his/her event. After the athlete’s identity has been confirmed, he/she is informed:

a) which type of sample he/she is required to provide;
b) of his/her right to an assistant;
c) that he/she must remain within sight of the chaperone/DCO and report to the Doping Control Station within 60 minutes.

The athlete is then required to sign an appropriate form to accept the notification. If the athlete does not report to the Doping Control Station within the designated time, he/she will be declared absent from the control and considered to have refused. If the athlete cannot be contacted, it is reported to the respective authority.

In the Doping Control Station the athlete required to give a urine sample is given a choice of sample collection vessels. When he/she is ready, the athlete and a DCO of the same gender go to the WC. The athlete is required to disrobe as necessary. The DCO must witness the sample leaving the athlete’s body.

Athletes must provide at least 75ml of urine. For an EPO test, 100ml is required. The athlete must pour the urine into bottles for A and B samples and seal the bottles himself/her-
A small amount is retained to measure the specific gravity, which the DCO tests; 1,010 or higher is recommended. If the volume is insufficient or the specific gravity is too low, the collecting procedure is repeated. The athlete has fulfilled his/her duty to submit to doping control only after having delivered the required volume of acceptable urine, irrespective of the time it takes to do so.

In cases where a blood sample is required, the collection procedure is explained to the athlete who is asked to sign a consent form. If he/she refuses, it is regarded as refusal to submit to doping control. The sample is taken by a qualified person from a vein in the athlete’s arm.

In the cases of both urine and blood samples, detailed information is recorded on a Doping Control Form, which is devised to produce copies for the relevant authorities, the athlete and the laboratory. The laboratory copy reveals no information about the athlete’s identity.

Out-of-Competition controls

For OOC controls, the anti-doping authority establishes a pool of athletes who are subject to control. Usually the pool includes the top performers in the sport or sports covered. Each athlete in the pool is required to inform the authority of his/her whereabouts and notify of any changes. Selection of athletes to be controlled may be random or certain athletes may be targeted.

The task of finding the athlete and collecting the sample may be assigned to the respective antidoping authority or professional testing agency. In most cases, the registered athletes are subject to no-advance-notice controls. Using the whereabouts information provided by the athlete, the DCO locates the athlete and then finds an appropriate location for the sample collection, which is carried out in a manner similar to that used for in-competition controls. If an athlete cannot be located three times within a certain period of time or fails to provide the information, he/she is presumed to have committed a doping violation. Exceptionally, the DCO may contact the athlete and arrange a meeting time and location for the control. This is known as an Advance Notice Control.

Transportation and analysis

Transportation of the samples collected in both in-competition and OOC controls for analysis must be by an authorised system. The chain of custody throughout the entire process is recorded. Only analyses carried out at the 31 WADA-accredited laboratories are accepted as valid under the World Anti-Doping Code.

Results management

Notification and hearing

If the analysis of an A sample reveals the presence of a prohibited substance, the athlete is informed. The case is reviewed to determine if there is a TUE or any departure from the required process. If not, a provisional suspension is imposed.

The athlete may acknowledge that a violation has occurred or he/she ask may for analysis of the B sample while either he/she or his/her representative is present, but remains provisionally suspended. If the B sample is also positive, the athlete must bear the costs for the analysis. The name of the athlete is kept confidential until the B sample analysis has been concluded or waived by the athlete.

The athlete has the right to a hearing before a tribunal at the national level. However, he/she must request the hearing in writing, otherwise it is assumed that he/she accepts the decision that a violation has occurred. At the hearing, the athlete has the right to legal council and an interpreter. He/she may call witnesses.

In his/her defence, an athlete may challenge the procedures, the chain of custody or the laboratory results. He/she may also maintain there had been exceptional circum-
stances that might lead to exoneration or reduced sanctions. However, the excuses that the substance was given by another person without the athlete’s knowledge or that the substance was taken by mistake are not accepted.

Following the hearing, the tribunal evaluates the evidence and decides if the athlete has committed a doping violation.

The athlete can appeal judgement to the Court of Arbitration for Sport (CAS). Likewise, both the national federation and the IF have the right to appeal if the athlete is acquitted in spite of convincing evidence.

Sanctions
When a violation has been found to have occurred based on evidence from an in-competition control, disqualification of the athlete is automatic from the time of the event in question. All competitive results from the date the sample was provided will be annulled, with the resulting consequences for the individual and the team (unless fairness in team sports requires otherwise). In athletics, if the athlete is part of a relay team, the team is disqualified. In some IFs, the disqualification may also be retroactive.

If a violation has occurred, individuals are sanctioned with ineligibility, as follows:

a) If use of a prohibited substance or method was established, or in case of refusal or tampering:
   i) first: for two years,
   ii) second: for life.

b) For three missed out-of-competition controls
   i) first: one year,
   ii) second and subsequent: two years.

c) For unintentional ingestion of a specified substance not intended to enhance performance:
   i) first: public warning and disqualification from the event up to a maximum of one year,
   ii) second: two years,
   iii) third: life.

d) For trafficking or administration of a prohibited substance or method:
   i) ineligibility for life.

The commencement of the ineligibility period starts on the date of the hearing decision, but the period of suspension shall be credited against the total period. During ineligibility the athlete or support personnel may not participate in competition and financial support is withheld.

In some IFs, the athlete must undergo several OOC controls during the period of ineligibility in order to return to competition.

Anti-doping education
Aims and target groups
Education in anti-doping is often overlooked in favour of doping controls, but in reality it should be considered just as important. In a world where sportsmen and sportswomen can be banned for lengthy periods (up to life bans), it is vital that at the very least they are aware of their rights and responsibilities. With this information as a basis, the second aim of anti-doping education is to bring about a change in the culture of sport.

There are a number of different types of education messages that can be used, and the choice of method or message largely depends on the target group. Target groups will vary between sport and between countries and while no particular method is best, the IAAF has identified the key groups it tries to reach:

a) elite athletes;

b) junior/youth athletes (training to be elite);

c) athlete support personnel such as coaches, doctors, parents etc.

It is important to note that, just as with doping controls, the budgets for education are limited and organisations must share responsibility. Arguably an IF such as the IAAF should be concentrating on the elite end of the sport while making products and
information available so that others can do the education at national and local levels.

Information provision

It may be easiest to look at anti-doping education in terms of two key approaches – information provision, and behavioural change. Of the two, it is safe to say that information provision is the easiest and most practiced. The principle is that sportsmen and sportswomen who are subject to doping control (or who may be in the future) need to know the rules, they need to know what they are and are not allowed to take, and, most importantly, they need to know their rights and responsibilities. To meet these needs, many NADOs, ADOs and IFs have produced printed materials (posters, pamphlets, books, etc.), created websites and conducted face to face or group briefings of elite performers.

The IAAF for its part has a wide range of products that seek to achieve this aim of information provision. The central hub for this information is the anti-doping section of the IAAF website (www.iaaf.org). However, most products are also available in hard copy and can be ordered through the website. The IAAF Athletes Guide, for example, contains all the basic information needed by the athlete in a single booklet with an easy to read format. Products such as the updated Prohibited Substances List and various athlete advisory notes can also be found on the website.

Behavioural change

Whereas information provision may be easy and relatively cheap, “behavioural change” or real education is much harder to achieve. Detection of doping through testing will never eradicate cheating from sport, therefore changing attitudes and behaviours to create and strengthen the anti-doping culture is the only way that this goal will ever be met. While most of this work needs to be done on a national level, through schools, and national development programmes, IFs still have a role to play.

The IAAF seeks to address this area by attempting to reach potential elite athletes while they are still juniors and youths, when they are still forming their views towards doping. It has also found that speaking directly with athletes is much more effective than sending them printed material and hoping that they will read it, which they don’t always do. By using IAAF Ambassadors (former athletes who have achieved success at the highest international level of competition), it attempts to show younger athletes that they can succeed without doping.

The IAAF Outreach Programme is the best example of this approach at work. IAAF staff and Ambassadors visit the major competitions of the year (including junior and youth events) where they try to create an open environment in which athletes can ask questions one on one with their heroes. The programme debuted at the 2005 World Athletics Championships in Helsinki with significant help from WADA. Since then, it has been present at most major IAAF competitions, including the 2006 World Junior Championships in Beijing and the 2007 World Youth Championships in Ostrava. Importantly, the programme has also visited events such as the African Championships, where sprinting great Frankie Fredericks (NAM) and other IAAF Ambassadors were able to speak with the competing athletes. It is estimated that over 10,000 athletes have been part of the process in the two and a half years it has been running.

Challenges

Just as with doping control, there are a large number of challenges in anti-doping education. Not least of these is the huge number of different languages spoken by sportsmen and sportswomen around the world. It is clear that education is most effective when it reaches people in their own language, however the practicalities of this are difficult. The IAAF therefore relies heavily on its Member Federations for translation and assistance with education efforts.
Another key challenge is the difference in technological capabilities of some countries. In an age where the internet continues to grow, it is easy to rely on electronic means for education and information provision - but international administrators must realise that a large proportion of the target groups may have little or no access to the internet and ensure that this does not mean these groups miss out on the vital information. Again, IFs like the IAAF must rely on the Member Federations to help disseminate much of the education material.

Conclusion

The fight against doping is a necessary and integral part of modern sport. Much work has been done by IFs and other sport organisations, governments and others to try to control and eradicate the threat posed by the practice.

Certainly the most important step in the continuation of the fight is for all involved to admit that there is a minority in sport who still decide they will dope themselves, cheat their competitors and risk their own health. With this, the tasks are clear: identify how to best use the resources available to chase them down, remove them from competition and at the same time develop a culture in which young people understand that you do not need to dope to succeed at the highest level.

For their part, there are aspects of the fight that IFs cannot fully control. For example, they are obliged to adopt the largely effective rules and sanctions dictated by WADA through the World Anti-Doping Code, even if, like the IAAF, they may wish for stronger sanctions. They can only implement doping control tests that are available to them at the time. If there are substances that are undetectable or hard to test for, it is imperative that the science catches up with the cheats. WADA has an ongoing research programme that funds projects focussed on devising new and improved laboratory methods for the detection of previously undetectable substances and methods. But this is an area where IFs can do little to assist other than give support where possible. Finally, IF’s can only provide a certain amount of support to their national federations and other agencies, which really are in the forefront of efforts to change the perceptions and attitudes of large numbers of sportsmen and sportswomen.

The IAAF has been a leader in the fight against doping since 1928 with a number of “firsts”, “largest” and “mosts”: the first IF to formally ban doping, the first IF to introduce OOC controls, the largest anti-doping budget, the most anti-doping staff. With its history of innovation, the significant resources it has devoted, the knowledgeable experts in its Medical and Anti-Doping Department, and the full support of its leadership, the IAAF is clearly committed to the cause of anti-doping and will continue the fight as a leader amongst the IFs.

Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOC</td>
<td>The International Olympic Committee</td>
</tr>
<tr>
<td>IF</td>
<td>International Sports Federation</td>
</tr>
<tr>
<td>IAAF</td>
<td>International Association of Athletics Federations</td>
</tr>
<tr>
<td>ADO</td>
<td>Anti-Doping Organisation</td>
</tr>
<tr>
<td>NADO</td>
<td>National Anti-Doping Organisation</td>
</tr>
<tr>
<td>NOC</td>
<td>National Olympic Committee</td>
</tr>
<tr>
<td>WADA</td>
<td>World Anti-Doping Agency</td>
</tr>
<tr>
<td>TUE</td>
<td>Therapeutic Use Exemption</td>
</tr>
<tr>
<td>OOC</td>
<td>Out-of-competition controls</td>
</tr>
<tr>
<td>DCO</td>
<td>Doping Control Officer</td>
</tr>
<tr>
<td>CAS</td>
<td>Court of Arbitration for Sport</td>
</tr>
</tbody>
</table>

Please send all correspondence to: Birgir Gudjonsson, MD bgHAV@simnet.is
**Abstract of the 2008 Prohibited List**

**Substances and methods prohibited at all times (in- and out-of-competition)**

**Prohibited substances**

**S1. Anabolic agents**
1. Anabolic Androgenic Steroids (AAS)
   a. Exogenous, i.e. a substance not ordinarily produced by the body
   b. Endogenous, i.e. a substance that can be produced by the body
      When a T/E ratio is greater than four (4) to one (1), investigation is necessary to determine if it is of exogenous origin, or due to physiological or pathological condition.
2. Other Anabolic Agents

**S2. Hormones and related substances**
1. Erythropoietin (EPO)
2. Growth hormone (hGH), insulin-like growth factors (e.g. IGF-1), mechano-growth factors (MGFs)
3. Gonadotrophins (LH, hCG), prohibited in males only
4. Insulin
5. Corticotrophins
   When the concentration of a substance exceeds normal values, investigation is necessary to determine if it is from endogenous production or of exogenous origin.

**S3. Beta-2 agonists**
All beta-2 agonists are prohibited, but formoterol, salbutamol, salmeterol and terbutaline can be administered by inhalation if a TUE has been granted.

**S4. Hormone antagonists and modulators**
1. Aromatase inhibitors
2. Selective estrogen receptor modulators
3. Other anti-estrogenic
4. Agents modifying myostatin function(s)

**S5. Diuretics and other masking agent**

**Prohibited methods**

**M1. Enhancement of oxygen transfer**
1. Blood doping

**M2. Chemical and physical manipulation**
1. Tampering, such as catheterisation and urine substitution
2. Intravenous infusions are prohibited, except in an acute medical situation.

**M3. Gene doping**

**Substances and methods prohibited in-competition**

In addition the following categories are prohibited:

**Prohibited substances**

**S6. Stimulants**
N.B.: Caffeine, and pseudoephedrine are not prohibited.

**S7. Narcotics**
N.B.: Codeine is not prohibited.

**S8. Cannabinoids**

**S9. Glucocorticosteroids**
Can be administered orally, rectally, intravenously or intramuscularly only with TUE.

**Substances prohibited in particular sports**

**P1. Alcohol**
Prohibited in-competition, in many sports

**P2. Beta-Blockers**
Prohibited in-competition, in a few sports

**Specified substances**
Which may be susceptible to unintentional anti-doping rule violations because of their general availability, may result in a reduced sanction if the use was not intended to enhance sport performance.

The detailed Prohibited List can be seen on the websites of WADA, IOC and most IFs.