

## Review article

# Drug doping in sports: an overview and recommendations for the Maltese context

Janet Mifsud, David Attard, Lucienne Attard

## Abstract

The use of legal and illicit medical substances is widespread in international sport and becoming more complex. Serious concern exists about the use of illicit substances, as listed in the list of the World Anti Doping Agency (WADA) of prohibited substances. This phenomenon is also present among Maltese athletes and positive doping cases have been reported in the media among local sportspersons from varying disciplines.

In this paper, a review of the current international conventions with respect to drug doping in sport will be given together with an overview of the prohibited substances. The Maltese situation will also be assessed. Limited local data indicate that this is an underground phenomenon which has existed and persisted over the years. The testing programs, with some exceptions, have to date been very poor and most sporting disciplines are not tested regularly. Recommendations will be made in order to readdress the lacuna in data available, as well as the knowledge and education of this subject among local sportspersons, coaches and sports officials, and various health care professionals. In addition, a call is made for Malta to implement the WADA Code as soon as possible, and sign and ratify the UNESCO and Council of Europe conventions, while ensuring that adequate resources are made available for their enforcement.

## Keywords

Doping, sports, WADA

**Janet Mifsud\*** BPharm (Hons) PhD (QUB)  
Department of Clinical Pharmacology and Therapeutics,  
University of Malta, Msida, Malta  
Medical Commission, Malta Football Association  
Email: [janet.mifsud@um.edu.mt](mailto:janet.mifsud@um.edu.mt)

**David Attard** MD DSEM  
Medical Commission, Malta Football Association

**Lucienne Attard** MD, MSc(SEM)(Bath)  
Medical and Antidoping Commissions, Malta Olympic Committee.  
Lecturer, Institute for Physical Education & Sport,  
University of Malta

\*corresponding author

## Introduction

There is a multitude of television channels wholly dedicated to sports with keen enthusiasm whenever a major international sporting event looms, be it football, athletics, swimming, tennis, waterpolo, or Formula One racing. This denotes a keen and large interest among the numerous supporters, including those in Malta, as well as a business acumen which taps into this enthusiasm. Participating athletes from all disciplines are keen to make sure that they are at the peak of their physical prowess for the competition, with technical and medical staff scrutinizing their every move, including their diet. Medications they require for any medical ailments are also analysed in order to ensure that none of these players bring themselves or their team to disrepute with any positive doping results.

Yet, the legal and illegal use of medical substances is widespread in international sport and is growing in its complexity. Statistics from WADA show that 1.72% of all analysed samples in 2004 were positive for prohibited substances, 2.13% in 2005, 1.96% in 2006, 1.97% in 2007, 1.84% in 2008, 2.02% in 2009.<sup>1</sup> While the focus in the media is mostly on prohibited substances such as anabolic steroids, growth hormone, erythropoietin and blood doping, there is some unease about the use of prescribed substances, such as  $\beta$ 2-agonists, non-steroidal anti-inflammatory drugs (NSAIDs), corticosteroids, nutritional supplements as well as recreational drug use, and only little is known about the magnitude of their current use. Published studies following the use of medication during the 2002 and 2006 World Cups have found that a total of 1,384 substances were reported (1.8 substances/player/match); 4450 (42.9%) of these were medicinal and 5934 (57.1%) were nutritional supplements. The medications prescribed most frequently were NSAIDs ( $n=2092$ ; 20.1%).<sup>2</sup>

Doping control testing programs in Malta, with some exceptions, have to date been very limited and most sporting disciplines are not tested regularly, mostly due to budgetary constraints. Recent cases have been reported, even in international media, with respect to positive doping tests of Maltese athletes in waterpolo, rugby<sup>4</sup> and also in football.<sup>5</sup> What is interesting is that this list is not always related to performance-enhancing substances and, for example in the positive cases reported by the Malta Football Association; the majority of cases were related to recreational drug use.<sup>5</sup>

Thus, while the majority of Maltese athletes are amateurs and statistics may not be available, hearsay among local gym

users and local sports facilities, and the limited data available from certain sports indicate that this is a phenomenon which exists, albeit a great deal of it is underground, with anecdotal reports of abuse of amphetamines and anabolic steroids.

Several athletes also make use of medication, which is not on the prohibited list, in order to enhance performance. A study carried out a few years ago indicated that, for example, scuba divers in Malta routinely use long acting antihistamines in order to enhance their breathing while diving.<sup>6</sup> It is to be pointed out that is not a competitive sport, not subject to doping controls and antihistamines are not prohibited.

In this paper, an overview of the history of drug testing in sports, is given. There is also an overview of the limited local data available, following tests carried out among athletes participating in local competitions. Recommendations will be made in order to highlight this hidden problem and readdress the large lacunae in the knowledge of this subject among local sportspersons, and their trainers, coaches and sports officials.

## History

The use of substances to enhance performance in sports is a long standing phenomenon and dates back to the Ancient Greek Olympics. In the nineteenth century, strychnine, caffeine, cocaine, and alcohol were often used by cyclists and other endurance athletes.<sup>7</sup> In 1928, the International Amateur Athletics Federation, IAAF, became the first International Sport Federation to ban the use of stimulating substances, however no laboratory tests were available at the time to enforce this ban. It was only the death (on live TV) of cyclist Tom Simpson, during the Tour de France, following the use of amphetamines, which catalysed the situation and in 1966, the first doping tests were introduced for international cycling and football (see Photo Figure 1). In 1967, the International Olympic Committee drew up its first list of prohibited substances, and drug tests were first introduced at the 1968 Olympic Games in Mexico. Drug testing became available for a wider range of substances, including anabolic steroids, in the 1970s.<sup>8</sup>

In the late twentieth century, there was an increasing awareness internationally of the need to intensify efforts to fight doping in sports. On the 19<sup>th</sup> September of 1989, the Council of Europe Anti-Doping Convention was published, which Malta signed on the 8<sup>th</sup> September of 1994<sup>9</sup>. In December 1999, the European Commission adopted a Communication on the Community support plan to combat doping in sport, where it was recognized that the nature of doping has changed, partly due to the fact that today sport is overcommercialized.<sup>10</sup> Over 130 governments also individually ratified the UNESCO International Convention against Doping in Sport, which was adopted in 2005.<sup>11</sup> Although presently the UNESCO and Council of Europe websites, indicate that these conventions have not been ratified by the Government of Malta, it is envisaged that this will be done once the legal notice implementing the WADA Code in the Sports Act (which is presently being vetted), is published.<sup>13</sup>

In 1999, a need for an independent monitoring body was

felt and the World Anti-Doping Agency (WADA) was set up, which has taken over responsibility for international doping control from the International Olympic Committee. In 2004, the World Anti-Doping Code<sup>14</sup> was implemented, harmonizing the rules and regulations governing anti-doping across all sports and all countries for the first time. This Code contains, among other things, reference to the lists of prohibited substances and prohibited methods which is updated on an annual basis. The intention is that the Code will encourage harmonisation and co-ordination, and make national and international antidoping programmes more effective in terms of detection, dissuasion and prevention, disciplinary procedures and sanctioning.<sup>15</sup> More than 600 sports International Federations have adopted the Code to date. In 2008, the Malta Sports Council (KMS) was asked by WADA to formally accept the Anti-Doping Code. Although a recent report commissioned by the Belgian Presidency of the EU states that 'Malta, Poland and Slovakia have no existing laws and regulations relating to trade and distribution of doping products', KMS, which is the Malta's National Anti-Doping Organisation (NADO), has in fact forwarded Malta's proposed Anti-Doping rules to WADA, and these were in fact declared compliant in April 2010.<sup>17</sup>

## What is on the WADA list of prohibited substances?

This World Anti-Doping Code, which is published and updated on a regular basis, includes a list of substances and methods which are prohibited in sport.<sup>14</sup> What makes this list interesting is that the majority of the substances listed are drugs

**Figure 1:** England footballer, Jackie Charlton (centre) holding a urine collection container during a doping test in the 1966 World Cup (Photo courtesy of Prof Geoff Tucker, second from left, then a PhD student at King's College, London).



**Table 1: Aims of Anti-Doping Commission, Maltese Olympic Committee<sup>29</sup>**

1. To educate the athletes (in close collaboration with the Medical Commission) about nutrition, supplements and drugs which can be made use of inadvertently; banned drugs and drug testing procedures.
2. To monitor and implement In and Out of Competition drug testing for MOC athletes (until KMS takes over the function).
3. To form a Technical Group to discuss positive tests and problems of a specialised nature.
4. To make recommendations about any positive tests to the Executive Board or Disciplinary Body.
5. Close collaboration with the Medical Commission is essential as there will be overlap of responsibilities in certain areas.

which can be prescribed for legitimate therapeutic reasons. In addition, while the parent drug is listed, the list includes also the metabolites of these compounds and it is these which are usually detected. In addition, in recognition of the fact that some prohibited substances may be necessary for legitimate medical treatment, the code permits athletes and their physicians to apply for a Therapeutic Use Exemption (TUE) in certain instances.

As can be expected this extensive list includes anabolic agents such as danazol, testosterone, stanozolol and related substances. Selective androgen receptor modulators (SARMs), peptide hormones, growth factors and related substances e.g. erythropoiesis-stimulating agents are also listed.

All  $\beta_2$  agonists are prohibited since they are considered to be stimulants. As an exception, however, inhaled salmeterol and salbutamol (up to a maximum dose of 1600 micrograms over 24 hours) are permitted, but must be declared at the time of testing. To use any other inhaled  $\beta_2$  agonist, an athlete must have a medical file in place and require a TUE. Glucocorticosteroids are prohibited only when administered orally, rectally, or by intravenous or intramuscular injection and therefore require a TUE when used by these routes.

Hormone antagonists and modulators such as aromatase inhibitors, selective oestrogen receptor modulators (SERMs, e.g. tamoxifen, raloxifene and toremifene), other anti-oestrogenic substances (e.g. clomiphene and fulvestrant) and myostatin modifying agents are also prohibited. The list also contains substances such as diuretics and other masking agents e.g. probenecid, tamoxifen and plasma expanders which may be used to camouflage the use of other substances.

Stimulants, including their related substances and both their optical isomers are prohibited in competition (e.g. modafinil an, sibutramine:(this was found in weight loss preparations until recently), amphetamine, and pseudoephedrine (urinary concentrations 150 mcg/ml). Thus, and this is something most

athletes do not realise, several common cold remedies which contain pseudoephedrine and ephedrine (more than 10 mcg/ml in urine as a nasal decongestant are also suspect, and should be used only after advice.

Other stimulants such as bupropion, caffeine, phenylephrine and phenylpropanolamine are not prohibited and are instead monitored in-competition by WADA in order to detect patterns of misuse in sport as part of its 2010 Monitoring Program.

Even though they are considered to have more of a sedative rather than stimulant effect cannabinoids and most opioid narcotics are also prohibited e.g. buprenorphine, morphine, diamorphine, methadone, oxycodone, pethidine, fentanyl and its derivatives. This is due to the fact that the use of such compounds may impair the athlete's judgment in the field and can lead to self injury or the injury of fellow athletes. However codeine, dextromethorphan, diphenoxylate, pholcodine and tramadol are permitted. The codeine/morphine ratio is monitored by WADA in order to detect patterns of misuse in sport as part of its Monitoring Program.

It is to be noted that in addition certain substances are prohibited in specific sports e.g. alcohol is prohibited in-competition in automobile and motorcycling, and  $\beta$ -blockers are prohibited both in- and out- of competition in archery and shooting.

## Doping results in Maltese sports

Although most sports held in Malta is at an amateur level, local sports organisations affiliated to the major sports organisations in Malta such as the Malta Sports Council (KMS), the Maltese Olympic Committee (MOC), and Malta Football Association (MFA), have to abide by the respective regulations in order to be able to participate in international competitions and to have access to funding. These organisations all have their respective medical commissions which consider doping cases. MOC has a specific Anti-Doping Commission (see Table 1) and also a Medical Commission which organises seminars and talks to affiliated athletes on supplements, doping control procedures and prohibited substances. The MFA has a Doping Control charter (see Table 2), and a Medical Committee which practically only deals with doping cases and has also organised lectures in this regard.<sup>18</sup> The samples collected are analysed at overseas WADA accredited laboratories. No research has been carried out to date on the incidence of positive tests obtained from these tests on Maltese athletes, nor on the use of prohibited substances among local athletes.

Football is the only sporting body in Malta that has a systematic anti-doping program, covered by a charter which is in line with FIFA & UEFA regulations. This program dates back several years, over which, a large number of players were randomly tested. This anti-doping programme in Maltese football has been carried out by the MFA and this includes all aspects such as testing, education, and sanctioning. Doping tests are randomly held following selected football matches among all Divisions, two footballers from each team are

selected at random, and urine samples collected and sent to a WADA accredited laboratory in Dresden, Germany for analysis. Unfortunately, there have been cases where positive results have been reported back to MFA and disciplinary proceedings carried out.<sup>18</sup>

Following investigations it has been found that in some instances doping may have been deliberate, but there have been cases where the athlete had taken over-counter medication, without being aware that it contained substances on the prohibited list. In fact, few local footballers realize that most of the drugs on the WADA prohibited list are drugs used for legitimate clinical conditions.

Approximately 48 samples per year are collected by the Malta Football Association, mainly among the amateur and semiprofessional leagues. Tests were suspended for a while in 2009 pending an ongoing case regarding a FIFA objection to

some sanctions, so the latest whole year data are for 2008, when five professional and two amateur players were sanctioned. In the last ten years, twelve professionals and fourteen amateurs were sanctioned. None of the samples are collected out-of-competition. The majority of substances involved in the sanctioned cases in 2008 have been related to use of 'social' drug, namely cannabis and cocaine. Other drugs such as nandrolone, androstenedione, pseudo-ephedrine, ephedrine, clenbuterol, metamphetamine, stanozolol an, glucocorticosteroids have also been identified.<sup>19</sup>

For the past eight years, the Maltese Olympic Committee has been carrying out doping control tests on elite level athletes who are members of its Centre of Excellence or who are eligible to represent Malta in Games of Small States of Europe (GSSE), Olympic Games, Commonwealth Games, Mediterranean Games, Youth Olympic Games, Youth Commonwealth Games and

**Table 2:** *The Doping Charter of the Malta Football Association*<sup>20</sup>

### **The M.F.A. Statement of Policy**

The Association believes in the principles of natural fitness and fair play in all aspects of association football. The Association condemns the use of doping or doping methods by participants to enhance performance as being contrary to these fundamental principles.

The fundamental aims of the Association's Charter are:

- to uphold and preserve the ethics of sport;
- to safeguard the physical health and mental integrity of football players;
- to ensure that all competitors have an equal chance; and
- to ensure that the results of matches in the competitions organised by the Association are a fair reflection of the strength of the contenders.

Thus no recognised football body, club, official, player, referee, trainer, coach, manager, physiotherapist, doctor or any other person subject to the jurisdiction of the Association should engage in, facilitate or instigate doping or doping methods.

Therefore any player participating in association football may at any time be subject to a doping test. If a test for drugs is found to be positive, subject to the rules established in this Charter, the player, his Club and/or his team and other persons subject to the jurisdiction of the Association who were knowingly involved in assisting or inciting such practices and/or in the evasion of the provisions of this Charter contrary to the provisions of this Charter will be liable to severe disciplinary action as established in the relevant provisions of this Charter.

The Association may in its discretion report a case of doping which comes to its knowledge to the Commissioner of Police for any criminal action which he may deem fit to take. In so doing, the Association shall provide the Commissioner of Police with all the evidence it may have in its possession. Furthermore, the M.F.A. shall report to F.I.F.A. each and every case of a player who tests positive for a prohibited substance or prohibited method whilst giving it all the relevant details.

In order that the M.F.A. may carry out properly all its rights and duties as specified in this Charter, every person registered as a player of the Malta Football Association and any other person subject to the jurisdiction of the Association is deemed for all intents and purposes of Maltese law, particularly the Data Protection Act (Chapter 440 of the Laws of Malta), to have waived his right to confidentiality in his personal and private affairs as he may be entitled to under Maltese law and exempts the Association, its officers, officials, Council Members, members of M.F.A. Committees and any other person in the employ of the Association and/or who carries out a function on behalf of the Association, including the officials and the members of the Management Committee of Member Clubs and any other person performing a function on behalf of Member Clubs in accordance with the provisions of this Charter, from any liability whatsoever in the proper exercise by them of the rights and duties under the provisions of this Charter. Furthermore, any player and any other person concerned, unconditionally gives the Association the right to keep and store any information obtained from a doping test and/or any other information related to any exemption given under this Charter in any manner in which it may deem fit and proper and authorises the Association to share any such information with the Commissioner of Police and F.I.F.A. and to divulge publicly the results of any doping test or any investigation carried out under the provisions of this Charter.

Friendship Games. Two positive tests were reported in the past 8 years involving anabolic steroids and tamoxifen. The MOC also carries out doping control tests on behalf of member National Federations during national or international competitions held locally.<sup>20</sup>

The MOC Anti-Doping and Medical Commissions hold regular lectures for athletes and coaches on doping control procedures and prohibited substances, and also organised the first Doping Control Officers Training course held in Malta.

Doping control tests have also been carried out by the Aquatic Sports Association since 2005. During summer 2010, 16 tests were performed and none were found to be positive.

It is not possible to obtain data comparing the number of tests which were found to be positive among local athletes with those of other countries, since drug doping tests in Malta are still sporadic and not carried out regularly. In addition WADA positive tests results are compiled per sport and not per country.<sup>14</sup>

## Conclusions

The WADA list of prohibited substances is updated on an annual basis.<sup>1</sup> Despite the fact that, to date, drug doping tests carried out on a local level is still sporadic, the number of positive cases indicates that it is essential that local stakeholders are educated about what the WADA list includes and which medications should not be taken, as well as the medicines that require prior notification. A substance enquiry search, the Global DRO search, has been set up which can be accessed for easy reference<sup>21</sup>

WADA and FIFA's anti-doping strategy relies on education and prevention. They acknowledge their responsibility to protect players from harm and ensure equal chances for all competitors by stringent doping control regulations, data collection of positive samples, support of research, and collaboration with other organisations.<sup>22</sup> WADA have changed their strategy and now FIFA are seriously considering following suit by introducing the concept of a biological passport – yet the pick-up rate has to date been very low.<sup>23</sup>

## Recommendations

In order to ensure that the lacunae highlighted with respect to doping in Maltese Sports are addressed, several recommendations should be followed. It is to be noted that every country which complies with the WADA code is expected to identify a National Anti-Doping Organisation (NADO) which is responsible for organising a sports-wide programme for anti-doping. In Malta, the Maltese Sports Council (KMS) is the registered NADO, responsible for the implementation of the WADA Code in Maltese Sport.<sup>24</sup> The legal text is presently being worked upon for approval by Cabinet, following which the Anti-Doping Code will be added to the Sports Act in the Maltese Legislature.

Education is essential to counteract this phenomenon, yet in order to be able to successfully implement educational strategy, the size of the problem must be measured. Irrespective of the fact that most of our sporting activity is amateur and without any medical cover whatsoever, studies need to be carried out in order to gather data on players' use of permitted supplements and illicit substances, whether they sought advice, and if so from whom; their experience and attitudes towards drug testing. This study should also consider athletes' views on the extent of the use of banned performance enhancing and recreational drugs; and their personal knowledge of athletes who used such drugs.

In addition, the limited number of tests undertaken, mostly due to budgetary restrictions, has led to several athletes taking a nonchalant attitude in this regard. A study in UK showed that one third of players had not been tested for drugs within the preceding two years, and 60% felt that they were unlikely to be tested in the next year and many are thus likely to take risks.<sup>25</sup> There is also little accountability from the part of local administrators in various sports. They will not answer to incompetence in this field as they hardly have any knowledge of such matters.

In addition, health care professionals should be trained in this regard. There is just a one hour lecture on drug doping in sport given to undergraduate medical and pharmacy students at the University of Malta. A study published in France indicated that 77% of all GPs considered themselves to be poorly prepared to participate in the prevention of drug doping in sports.<sup>26</sup> The International Pharmaceutical Federation (FIP) published a document on role of the pharmacist in the fight against doping in sport in 2005.<sup>27</sup>

This overview has highlighted the urgent need in Malta for collaborative education of the athletes, medical officers, coaches and managers. Inadvertent doping is a particular concern for amateur associations who perhaps are not as geared towards education of their members in anti-doping. The plethora of OTCs available that contain banned ingredients is a therapeutic minefield and the risk of inadvertent exposure is considerable, not to mention the danger to reputation of both player and association.

It is the aim of this paper to initiate a debate on the prescription and indications for medication in all spheres of Maltese sport and to ensure that all stakeholders are aware of the consequences of drug doping in sport. There is an urgent need to ensure that this knowledge is widely disseminated among the Maltese public in general. It is also essential that Malta ratifies and implements the relevant convention as soon as possible since it is still the only EU country which has not done so to date.<sup>28</sup>

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### Forthcoming event

Faculty of Medicine and Surgery, University of Malta  
in conjunction with the  
Golden Helix Institute of Biomedical Research, Athens, Greece

# 5th Golden Helix Pharmacogenomics Day Conference

Saturday, 3 December, 2011

Mikiel Anton Vassalli Conference Centre, Gateway Building, Hall E, University of Malta

Further information will shortly be available at <http://www.um.edu.mt/ms>