

The World Anti-Doping Code

THE 2010 PROHIBITED LIST INTERNATIONAL STANDARD

The official text of the *Prohibited List* shall be maintained by WADA and shall be published in English and French. In the event of any conflict between the English and French versions, the English version shall prevail.

This List shall come into effect on 1 January 2010

THE 2010 PROHIBITED LIST WORLD ANTI-DOPING CODE

Valid 1 January 2010

All *Prohibited Substances* shall be considered as "Specified Substances" except Substances in classes S1, S2.1 to S2.5, S.4.4 and S6.a, and *Prohibited Methods* M1, M2 and M3.

SUBSTANCES AND METHODS PROHIBITED AT ALL TIMES (IN- AND OUT-OF-COMPETITION)

PROHIBITED SUBSTANCES

S1. ANABOLIC AGENTS

Anabolic agents are prohibited.

1. Anabolic Androgenic Steroids (AAS)

a. Exogenous* AAS, including:

1-androstendiol (5 α -androst-1-ene-3 β ,17 β -diol); **1-androstendione** (5 α -androst-1-ene-3,17-dione); **bolandiol** (19-norandrostenediol); **bolasterone**; **boldenone**; **boldione** (androsta-1,4-diene-3,17-dione); **calusterone**; **clostebol**; **danazol** (17 α -ethynyl-17 β -hydroxyandrost-4-eno[2,3-d]isoxazole); **dehydrochlormethyltestosterone** (4-chloro-17 β -hydroxy-17 α -methylandrosta-1,4-dien-3-one); **desoxymethyltestosterone** (17 α -methyl-5 α -androst-2-en-17 β -ol); **drostanolone**; **ethylestrenol** (19-nor-17 α -pregn-4-en-17-ol); **fluoxymesterone**; **formebolone**; **furazabol** (17 β -hydroxy-17 α -methyl-5 α -androstando[2,3-c]-furazan); **gestrinone**; **4-hydroxytestosterone** (4,17 β -dihydroxyandrost-4-en-3-one); **mestanolone**; **mesterolone**; **metenolone**; **methandienone** (17 β -hydroxy-17 α -methylandrosta-1,4-dien-3-one); **methandriol**; **methasterone** (2 α , 17 α -dimethyl-5 α -androstande-3-one-17 β -ol); **methyldienolone** (17 β -hydroxy-17 α -methylestra-4,9-dien-3-one); **methyl-1-testosterone** (17 β -hydroxy-17 α -methyl-5 α -androst-1-en-3-one); **methylnortestosterone** (17 β -hydroxy-17 α -methylestr-4-en-3-one); **methyltestosterone**; **metribolone** (methyltrienolone, 17 β -hydroxy-17 α -methylestra-4,9,11-trien-3-one); **mibolerone**; **nandrolone**; **19-norandrostenedione** (estr-4-ene-3,17-dione); **norboletone**; **norclostebol**; **norethandrolone**; **oxabolone**; **oxandrolone**; **oxymesterone**; **oxymetholone**; **prostanazol** (17 β -hydroxy-5 α -androstando[3,2-c] pyrazole); **quinbolone**;

stanozolol; stenbolone; 1-testosterone (17 β -hydroxy-5 α -androst-1-en-3-one); **tetrahydrogestrinone** (18 α -homo-pregna-4,9,11-trien-17 β -ol-3-one); **trenbolone** and other substances with a similar chemical structure or similar biological effect(s).

b. Endogenous** AAS when administered exogenously:

androstenediol (androst-5-ene-3 β ,17 β -diol); **androstenedione** (androst-4-ene-3,17-dione); **dihydrotestosterone** (17 β -hydroxy-5 α -androstan-3-one) ; **prasterone** (dehydroepiandrosterone, DHEA); **testosterone** and the following metabolites and isomers:

5 α -androstane-3 α ,17 α -diol; 5 α -androstane-3 α ,17 β -diol; 5 α -androstane-3 β ,17 α -diol; 5 α -androstane-3 β ,17 β -diol; androst-4-ene-3 α ,17 α -diol; androst-4-ene-3 α ,17 β -diol; androst-4-ene-3 β ,17 α -diol; androst-5-ene-3 α ,17 α -diol; androst-5-ene-3 α ,17 β -diol; androst-5-ene-3 β ,17 α -diol; 4-androstenediol (androst-4-ene-3 β ,17 β -diol); **5-androstenedione** (androst-5-ene-3,17-dione); **epi-dihydrotestosterone; epitestosterone; 3 α -hydroxy-5 α -androstan-17-one; 3 β -hydroxy-5 α -androstan-17-one; 19-norandrosterone; 19-noretiocholanolone.**

2. Other Anabolic Agents, including but not limited to:

Clenbuterol, selective androgen receptor modulators (SARMs), tibolone, zeranol, zilpaterol.

For purposes of this section:

* "exogenous" refers to a substance which is not ordinarily capable of being produced by the body naturally.

** "endogenous" refers to a substance which is capable of being produced by the body naturally.

S2. PEPTIDE HORMONES, GROWTH FACTORS AND RELATED SUBSTANCES

The following substances and their releasing factors are prohibited:

- 1. Erythropoiesis-Stimulating Agents [e.g. erythropoietin (EPO), darbepoetin (dEPO), methoxy polyethylene glycol-epoetin beta (CERA), hematide];**
- 2. Chorionic Gonadotrophin (CG) and Luteinizing Hormone (LH) in males;**
- 3. Insulins;**
- 4. Corticotrophins;**

5. **Growth Hormone (GH), Insulin-like Growth Factor-1 (IGF-1), Mechano Growth Factors (MGFs), Platelet-Derived Growth Factor (PDGF), Fibroblast Growth Factors (FGFs), Vascular-Endothelial Growth Factor (VEGF) and Hepatocyte Growth Factor (HGF)** as well as any other growth factor affecting muscle, tendon or ligament protein synthesis/degradation, vascularisation, energy utilization, regenerative capacity or fibre type switching;
6. **Platelet-derived preparations (e.g. Platelet Rich Plasma, “blood spinning”)** administered by intramuscular route. Other routes of administration require a declaration of *Use* in accordance with the International Standard for Therapeutic Use Exemptions.

and other substances with similar chemical structure or similar biological effect(s).

S3. BETA-2 AGONISTS

All beta-2 agonists (including both optical isomers where relevant) are prohibited except salbutamol (maximum 1600 micrograms over 24 hours) and salmeterol by inhalation which require a declaration of *Use* in accordance with the International Standard for Therapeutic Use Exemptions.

The presence of salbutamol in urine in excess of 1000 ng/mL is presumed not to be an intended therapeutic use of the substance and will be considered as an *Adverse Analytical Finding* unless the *Athlete* proves, through a controlled pharmacokinetic study, that the abnormal result was the consequence of the use of a therapeutic dose (maximum 1600 micrograms over 24 hours) of inhaled salbutamol.

S4. HORMONE ANTAGONISTS AND MODULATORS

The following classes are prohibited:

1. **Aromatase inhibitors** including, but not limited to: **aminoglutethimide, anastrozole, androsta-1,4,6-triene-3,17-dione (androstatrienedione), 4-androstene-3,6,17 trione (6-oxo), exemestane, formestane, letrozole, testolactone.**
2. **Selective estrogen receptor modulators (SERMs)** including, but not limited to: **raloxifene, tamoxifen, toremifene.**
3. **Other anti-estrogenic substances** including, but not limited to: **clomiphene, cyclofenil, fulvestrant.**

4. **Agents modifying myostatin function(s)** including but not limited to: **myostatin inhibitors.**

S5. DIURETICS AND OTHER MASKING AGENTS

Masking agents are prohibited. They include:

Diuretics, probenecid, plasma expanders (e.g. **glycerol**; intravenous administration of **albumin, dextran, hydroxyethyl starch** and **mannitol**) and other substances with similar biological effect(s).

Diuretics include:

Acetazolamide, amiloride, bumetanide, canrenone, chlorthalidone, etacrynic acid, furosemide, indapamide, metolazone, spironolactone, thiazides (e.g. **bendroflumethiazide, chlorothiazide, hydrochlorothiazide**), **triamterene**, and other substances with a similar chemical structure or similar biological effect(s) (except drosperinone, pamabrom and topical dorzolamide and brinzolamide, which are not prohibited).

A Therapeutic Use Exemption for diuretics and masking agents is not valid if an *Athlete's* urine contains such substance(s) in association with threshold or sub-threshold levels of an exogenous *Prohibited Substance(s)*.

PROHIBITED METHODS

M1. ENHANCEMENT OF OXYGEN TRANSFER

The following are prohibited:

1. Blood doping, including the use of autologous, homologous or heterologous blood or red blood cell products of any origin.
2. Artificially enhancing the uptake, transport or delivery of oxygen, including but not limited to perfluorochemicals, efaproxiral (RSR13) and modified haemoglobin products (e.g. haemoglobin-based blood substitutes, microencapsulated haemoglobin products), excluding supplemental oxygen.

M2. CHEMICAL AND PHYSICAL MANIPULATION

1. *Tampering*, or attempting to tamper, in order to alter the integrity and validity of *Samples* collected during *Doping Controls* is prohibited. These include but are not limited to catheterisation, urine substitution and/or adulteration (e.g. proteases).
2. Intravenous infusions are prohibited except for those legitimately received in the course of hospital admissions or clinical investigations.

M3. GENE DOPING

The following, with the potential to enhance athletic performance, are prohibited:

- 1- The transfer of cells or genetic elements (e.g. DNA, RNA);
- 2- The use of pharmacological or biological agents that alter gene expression.

Peroxisome Proliferator Activated Receptor δ (PPAR δ) agonists (e.g. GW 1516) and PPAR δ -AMP-activated protein kinase (AMPK) axis agonists (e.g. AICAR) are prohibited.

SUBSTANCES AND METHODS PROHIBITED IN-COMPETITION

**In addition to the categories S1 to S5 and M1 to M3 defined above,
the following categories are prohibited in competition:**

PROHIBITED SUBSTANCES

S6. STIMULANTS

All stimulants (including both optical isomers where relevant) are prohibited, except imidazole derivatives for topical use and those stimulants included in the 2010 Monitoring Program*.

Stimulants include:

a: Non-Specified Stimulants:

**Adrafinil; amfepramone; amiphenazole; amphetamine; amphetaminil;
benfluorex; benzphetamine; benzylpiperazine; bromantan; clobenzorex;
cocaine; cropropamide; crotetamide; dimethylamphetamine;
etilamphetamine; famprofazone; fencamine; fenetylline; fenfluramine;
fenproporex; furfenorex; mefenorex; mephentermine; mesocarb;
methamphetamine(*d*-); p-methylamphetamine;
methylenedioxyamphetamine; methylenedioxymethamphetamine;
methylhexaneamine (dimethylpentylamine); modafinil; norfenfluramine;
phendimetrazine; phenmetrazine; phentermine; 4-phenylpiracetam
(carphedon); prenylamine; prolintane.**

A stimulant not expressly listed in this section is a Specified Substance.

b: Specified Stimulants (examples):

Adrenaline; cathine***; ephedrine****; etamivan; etilefrine; fenbutrazate;
fencamfamin; heptaminol; isometheptene; levmetamphetamine;
meclofenoxate; methylephedrine****; methylphenidate; nikethamide;
norfenefrine; octopamine; oxilofrine; parahydroxyamphetamine;
pemoline; pentetrazol; phenpromethamine; propylhexedrine;
pseudoephedrine****; selegiline; sibutramine; strychnine;
tuaminoheptane** and other substances with a similar chemical structure or
similar biological effect(s).

* The following substances included in the 2010 Monitoring Program (bupropion, caffeine, phenylephrine, phenylpropanolamine, piperadol, synephrine) are not considered as *Prohibited Substances*.

** **Adrenaline** associated with local anaesthetic agents or by local administration (e.g. nasal, ophthalmologic) is not prohibited.

*** **Cathine** is prohibited when its concentration in urine is greater than 5 micrograms per milliliter.

**** Each of **ephedrine** and **methylephedrine** is prohibited when its concentration in urine is greater than 10 micrograms per milliliter.

***** **Pseudoephedrine** is prohibited when its concentration in urine is greater than 150 micrograms per milliliter.

S7. NARCOTICS

The following narcotics are prohibited:

Buprenorphine, dextromoramide, diamorphine (heroin), fentanyl and its derivatives, hydromorphone, methadone, morphine, oxycodone, oxymorphone, pentazocine, pethidine.

S8. CANNABINOIDS

Natural or synthetic Δ^9 -tetrahydrocannabinol (THC) and THC-like cannabinoids (e.g. hashish, marijuana, HU-210) are prohibited.

S9. GLUCOCORTICOSTEROIDS

All glucocorticosteroids are prohibited when administered by oral, intravenous, intramuscular or rectal routes.

In accordance with the International Standard for Therapeutic Use Exemptions, a declaration of *Use* must be completed by the *Athlete* for glucocorticosteroids administered by intraarticular, periarticular, peritendinous, epidural, intradermal and inhalation routes, except as noted below.

Topical preparations when used for auricular, buccal, dermatological (including iontophoresis/phonophoresis), gingival, nasal, ophthalmic and perianal disorders are not prohibited and require neither a Therapeutic Use Exemption nor a declaration of *Use*.

SUBSTANCES PROHIBITED IN PARTICULAR SPORTS

P1. ALCOHOL

Alcohol (ethanol) is prohibited *In-Competition* only, in the following sports. Detection will be conducted by analysis of breath and/or blood. The doping violation threshold (haematological values) is 0.10 g/L.

- Aeronautic (FAI)
- Archery (FITA)
- Automobile (FIA)
- Karate (WKF)
- Modern Pentathlon (UIPM) for disciplines involving shooting
- Motorcycling (FIM)
- Ninepin and Tenpin Bowling (FIQ)
- Powerboating (UIM)

P2. BETA-BLOCKERS

Unless otherwise specified, beta-blockers are prohibited *In-Competition* only, in the following sports.

- Aeronautic (FAI)
- Archery (FITA) (also prohibited *Out-of-Competition*)
- Automobile (FIA)
- Billiards and Snooker (WCBS)
- Bobsleigh (FIBT)
- Boules (CMSB)
- Bridge (FMB)
- Curling (WCF)
- Golf (IGF)
- Gymnastics (FIG)
- Motorcycling (FIM)
- Modern Pentathlon (UIPM) for disciplines involving shooting
- Ninepin and Tenpin Bowling (FIQ)
- Powerboating (UIM)
- Sailing (ISAF) for match race helms only
- Shooting (ISSF, IPC) (also prohibited *Out-of-Competition*)
- Skiing/Snowboarding (FIS) in ski jumping, freestyle aerials/halfpipe and snowboard halfpipe/big air
- Wrestling (FILA)

Beta-blockers include, but are not limited to, the following:

Acebutolol, alprenolol, atenolol, betaxolol, bisoprolol, bunolol, carteolol, carvedilol, celiprolol, esmolol, labetalol, levobunolol, metipranolol, metoprolol, nadolol, oxprenolol, pindolol, propranolol, sotalol, timolol.

2010 Prohibited List

Summary of Major Modifications

INTRODUCTORY PARAGRAPH

- The introductory sentence on the use of drugs limited to medically justified indications has been deleted.
- The reference to Specified Substances has been amended in accordance with changes introduced in section S2.

SUBSTANCES AND METHODS PROHIBITED AT ALL TIMES (IN- AND OUT-OF-COMPETITION)

S1: Anabolic Agents

- The International Nonproprietary Name (INN) for methyltrienolone has been included (metribolone)
- Comment S1.1b, including revisions, is addressed in another WADA document (Technical Document MRPL).

S2. Peptide Hormones, Growth Factors and Related Substances

- In order to better define the substances within this category, the title has been revised to "Peptide Hormones, Growth Factors and Related Substances".
- To reflect the growing number of new erythropoiesis-stimulating substances available, methoxy polyethylene glycol-epoetin beta (CERA) has been added as an example.
- The issue of growth factors enhancing certain functions was addressed in more detail. Additional examples of growth factors affecting muscle, tendon or ligament protein synthesis/degradation, vascularisation, energy utilization, regenerative capacity or fibre type switching [e.g. Platelet-derived Growth Factor (PDGF), Fibroblast Growth Factors (FGFs), Vascular-Endothelial Growth Factor (VEGF), Hepatocyte Growth Factor (HGF)] were included.
- The status of Platelet-derived preparations (e.g. Platelet Rich Plasma, "blood spinning") has been clarified.
- Comment S2 is addressed in another WADA document (Technical Document MRPL).

S3. Beta-2 Agonists

- The use of salbutamol and salmeterol by inhalation no longer requires a TUE but a declaration of *Use*.
- It is specified that the maximum dose for the controlled pharmacokinetic study cannot exceed the maximum therapeutic dose for inhaled salbutamol (1600 µg/day).

S4. Hormone antagonists and Modulators

- Two examples of aromatase inhibitors, androstene-3,6,17 trione (6-oxo) and androsta-1,4,6-triene-3,17-dione (androstatrienedione) have been added in view of their wide availability as components of nutritional supplements.

S5. Diuretics and Other masking Agents

- The status of glycerol (oral and intravenous) as a plasma expander was clarified and is now included as another example.
- The non-prohibited status of pamabrom was clarified because it is a weak diuretic largely available as a combined over-the-counter medication for pre-menstrual/menstrual symptoms.

PROHIBITED METHODS

M1. Enhancement of Oxygen Transfer

- Supplemental oxygen is no longer prohibited.

M2. Chemical and Physical Manipulation

- Proteases have been added as an example of sample adulteration.
- The status of intravenous infusions has been reviewed and now reads: "Intravenous infusions are prohibited except for those legitimately received in the course of hospital admissions or clinical investigations."

M3. Gene Doping

- For clarification purposes the gene doping definition was reworded and split into 2 points.

SUBSTANCES AND METHODS PROHIBITED IN-COMPETITION

S6. Stimulants

- Three stimulants, namely benfluorex, prenylamine, both known to metabolize to non-specified stimulants (amphetamine or norfenfluramine) as well as methylhexanamine, a non-therapeutic substance, were added to the closed list of non-specified stimulants.
- Until 2003, the stimulant pseudoephedrine had been prohibited in sports with a threshold of 25 µg/mL. Pseudoephedrine has been included in the Monitoring Program since 2004. Results from the Monitoring Program over the past 5 years have shown a sustained increase in urinary concentrations of pseudoephedrine. In addition, there is clear evidence of abuse in some sports and some regions which show clusters of samples with high pseudoephedrine concentrations many times in excess of concentrations normally found. Furthermore, the available literature demonstrates scientific proof of its performance enhancing effects at certain doses. Therefore, the List Committee has reintroduced pseudoephedrine as a specified stimulant in the 2010 Prohibited List at a urinary threshold of 150 µg/mL based on the results from controlled excretion studies as well as the literature. Given the wide availability of pseudoephedrine-containing medicines, WADA recommends that the reintroduction of pseudoephedrine is supported by active information/education campaign by all stakeholders.
- Although pseudoephedrine is now prohibited, it will remain in the Monitoring Program for urinary concentrations below 150 µg/mL.

S8. Cannabinoids

- It is clarified that synthetic cannabinoids are covered by this section.

SUBSTANCES PROHIBITED IN PARTICULAR SPORTS

P1. Alcohol and P2. Beta-blockers

- As the responsibility for testing in the sports of Boules and Archery has been transferred from the International Paralympic Committee (IPC) to the World Bowling Federation and the International Archery Federation (FITA), respectively, references to the IPC have been deleted.

Additional information in regards to the reintroduction of pseudoephedrine to the 2010 *Prohibited List*

The WADA List Committee has reintroduced pseudoephedrine (PSE) to the 2010 *Prohibited List* as a specified stimulant prohibited *In-Competition* at a urinary threshold of 150µg/mL. This decision was based on the results of controlled excretion studies as well as scientific literature [1-5].

Given the wide availability of PSE-containing medicines, WADA recommends that the reintroduction of PSE be supported by an active information/education campaign by all stakeholders.

In this regard, WADA recommends that the following information be communicated, as soon as possible, to *Athletes* and their support personnel:

- The established threshold levels may be reached (rarely, but possibly) by some individuals within 6-20 hours of intake of some long-lasting therapeutic formulations.
- **Advise athletes to stop taking PSE pills at least 24 hours before competition.** For therapeutic applications during the *In-Competition* period, consider the use of alternative permitted medications upon previous consultation with a physician, or apply for a Therapeutic Use Exemption (TUE) for the use of PSE for therapeutic purpose(s).
- The threshold level has been established based on the intake of therapeutic doses of PSE, defined as a maximum daily dose of 240mg PSE taken either as:
 - i) four (4) daily administrations (one every 4-6 hours) of a 60mg pill (or 2 x 30mg pills), or
 - ii) two (2) daily administrations (one every 12 hours) of a 120mg pill (extended release), or
 - iii) one (1) daily administration of a 240mg pill (extended release).
- In line with this dosing regimen, the intake, for example, of a single daily dose of 3 x 60mg pills constitutes a suprathreshold administration that may lead to an *Adverse Analytical Finding*.

References

- 1- Gill N.D. et al (1999). Br J Clin Pharmacol 50, 205-213.
- 2- Chester N. et al. (2003). Br J Clin Pharmacol 57 :1, 62-67
- 3- Hodges K. et al. (2006). Med & Science Sports & Exercise, 329-333
- 4- Strano-Rossi S et al. (2209). Ther Drug Monit 31: 520-526.
- 5- Deventer K. Et al. (2009). Drug Test Analysis 1, 209-213.