

## TO THE MEMBER ASSOCIATIONS OF FIFA

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Circular no. 1604

Zurich, 24 November 2017  
SG/awe

### **WADA 2018 LIST OF PROHIBITED SUBSTANCES AND METHODS**

Dear Sir or Madam,

Enclosed is the 2018 List of Prohibited Substances and Methods ("List") along with the 2018 Summary of Major Modifications and Explanatory Notes, as published by the World Anti-Doping Agency (WADA).

The List, which was approved by WADA's Executive Committee on 24 September 2017, will come into force on 1 January 2018.

The List designates what substances and methods are prohibited, both in and out of competition, and which substances are banned in particular sports.

Please share this information on all platforms. It is vital that all athletes and their entourage take the necessary time to consult the List and that they contact their respective anti-doping organisations (ADOs) if they have any doubts as to the status of a substance or method.

If you have any other questions in relation to this matter, please do not hesitate to contact [antidoping@fifa.org](mailto:antidoping@fifa.org).

Yours faithfully,  
FIFA

  
Fatma Samoura  
Secretary General

Enc.: - WADA 2018 List of Prohibited Substances and Methods  
- WADA 2018 Summary of Major Modifications and Explanatory Notes

cc: - FIFA Council  
- Confederations  
- FIFA Medical Committee  
- WADA



THE WORLD ANTI-DOPING CODE  
INTERNATIONAL  
STANDARD



# PROHIBITED LIST

JANUARY 2018



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 2018**

# SUBSTANCES & METHODS PROHIBITED AT ALL TIMES

(IN- AND OUT-OF-COMPETITION)

IN ACCORDANCE WITH ARTICLE 4.2.2 OF THE WORLD ANTI-DOPING CODE, ALL *PROHIBITED SUBSTANCES* SHALL BE CONSIDERED AS "*SPECIFIED SUBSTANCES*" EXCEPT SUBSTANCES IN CLASSES S1, S2, S4.4, S4.5, S6.A, AND *PROHIBITED METHODS* M1, M2 AND M3.

## PROHIBITED SUBSTANCES

### S0 NON-APPROVED SUBSTANCES

Any pharmacological substance which is not addressed by any of the subsequent sections of the *List* and with no current approval by any governmental regulatory health authority for human therapeutic use (e.g. drugs under pre-clinical or clinical development or discontinued, designer drugs, substances approved only for veterinary use) is prohibited at all times.

### S1 ANABOLIC AGENTS

Anabolic agents are prohibited.

#### 1. ANABOLIC ANDROGENIC STEROIDS (AAS)

##### a. Exogenous\* AAS, including:

**1-Androstenediol** (5 $\alpha$ -androst-1-ene-3 $\beta$ ,17 $\beta$ -diol);  
**1-Androstenedione** (5 $\alpha$ -androst-1-ene-3,17-dione);  
**1-Androsterone** (3 $\alpha$ -hydroxy-5 $\alpha$ -androst-1-ene-17-one);  
**1-Testosterone** (17 $\beta$ -hydroxy-5 $\alpha$ -androst-1-en-3-one);  
**4-Hydroxytestosterone** [4,17 $\beta$ -dihydroxyandrost-4-en-3-one];  
**Bolandiol** (estr-4-ene-3 $\beta$ ,17 $\beta$ -diol);  
**Bolasterone**;  
**Calusterone**;  
**Clostebol**;  
**Danazol** [[1,2]oxazolo[4',5':2,3]pregna-4-en-20-yn-17 $\alpha$ -ol];  
**Dehydrochlormethyltestosterone** [4-chloro-17 $\beta$ -hydroxy-17 $\alpha$ -methylandrosta-1,4-dien-3-one];  
**Desoxymethyltestosterone** (17 $\alpha$ -methyl-5 $\alpha$ -androst-2-en-17 $\beta$ -ol);  
**Drostanolone**;  
**Ethylestrenol** (19-norpregna-4-en-17 $\alpha$ -ol);  
**Fluoxymesterone**;  
**Formebolone**;  
**Furazabol** (17 $\alpha$ -methyl [1,2,5]oxadiazolo[3',4':2,3]-5 $\alpha$ -androstan-17 $\beta$ -ol);  
**Gestrinone**;

**Mestanolone**;  
**Mesterolone**;  
**Metandienone** (17 $\beta$ -hydroxy-17 $\alpha$ -methylandrosta-1,4-dien-3-one);  
**Metenolone**;  
**Methandriol**;  
**Methasterone** (17 $\beta$ -hydroxy-2 $\alpha$ ,17 $\alpha$ -dimethyl-5 $\alpha$ -androstan-3-one);  
**Methyldienolone** (17 $\beta$ -hydroxy-17 $\alpha$ -methylestra-4,9-dien-3-one);  
**Methyl-1-testosterone** (17 $\beta$ -hydroxy-17 $\alpha$ -methyl-5 $\alpha$ -androst-1-en-3-one);  
**Methylnortestosterone** (17 $\beta$ -hydroxy-17 $\alpha$ -methylestr-4-en-3-one);  
**Methyltestosterone**;  
**Metribolone** (methyltrienolone, 17 $\beta$ -hydroxy-17 $\alpha$ -methylestra-4,9,11-trien-3-one);  
**Mibolerone**;  
**Norboletone**;  
**Norclostebol**;  
**Norethandrolone**;  
**Oxabolone**;  
**Oxandrolone**;  
**Oxymesterone**;  
**Oxymetholone**;  
**Prostanozolol** (17 $\beta$ -[[tetrahydropyran-2-yl]oxy]-1'H-pyrazolo[3,4:2,3]-5 $\alpha$ -androstan-3-one);  
**Quinbolone**;  
**Stanozolol**;  
**Stenbolone**;  
**Tetrahydrogestrinone** (17-hydroxy-18 $\alpha$ -homo-19-nor-17 $\alpha$ -pregna-4,9,11-trien-3-one);  
**Trenbolone** (17 $\beta$ -hydroxyestr-4,9,11-trien-3-one);

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

## b. Endogenous\*\* AAS when administered exogenously:

**19-Nor**androstenediol (estr-4-ene-3,17-diol);  
19-Norandrostenedione (estr-4-ene-3,17-dione);  
**A**ndrostanolone (5 $\alpha$ -dihydrotestosterone, 17 $\beta$ -hydroxy-5 $\alpha$ -androstan-3-one);  
Androstenediol (androst-5-ene-3 $\beta$ ,17 $\beta$ -diol);  
Androstenedione (androst-4-ene-3,17-dione);  
**B**oldenone;  
Boldione (androsta-1,4-diene-3,17-dione);  
**N**androlone (19-nortestosterone);  
**P**rasterone (dehydroepiandrosterone, DHEA, 3 $\beta$ -hydroxyandrost-5-en-17-one);  
**T**estosterone;

and their metabolites and isomers, including but not limited to:

**3 $\beta$ -H**ydroxy-5 $\alpha$ -androstan-17-one;  
**5 $\alpha$ -A**ndrost-2-ene-17-one;  
5 $\alpha$ -Androstane-3 $\alpha$ ,17 $\alpha$ -diol;  
5 $\alpha$ -Androstane-3 $\alpha$ ,17 $\beta$ -diol;  
5 $\alpha$ -Androstane-3 $\beta$ ,17 $\alpha$ -diol;  
5 $\alpha$ -Androstane-3 $\beta$ ,17 $\beta$ -diol;  
**5 $\beta$ -A**ndrostane-3 $\alpha$ ,17 $\beta$ -diol;  
**7 $\alpha$ -H**ydroxy-DHEA;  
**7 $\beta$ -H**ydroxy-DHEA;  
**4-A**ndrostenediol (androst-4-ene-3 $\beta$ , 17 $\beta$ -diol);  
**5-A**ndrostenedione (androst-5-ene-3,17-dione);  
**7-K**eto-DHEA;  
**19-N**orandrosterone;  
19-Noretiocholanolone;  
**A**ndrost-4-ene-3 $\alpha$ ,17 $\alpha$ -diol;  
Androst-4-ene-3 $\alpha$ ,17 $\beta$ -diol;  
Androst-4-ene-3 $\beta$ ,17 $\alpha$ -diol;  
Androst-5-ene-3 $\alpha$ ,17 $\alpha$ -diol;  
Androst-5-ene-3 $\alpha$ ,17 $\beta$ -diol;  
Androst-5-ene-3 $\beta$ ,17 $\alpha$ -diol;  
Androsterone;  
**E**pi-dihydrotestosterone;  
Epitestosterone;  
Etiocholanolone.

## 2. OTHER ANABOLIC AGENTS

### Including, but not limited to:

Clenbuterol, selective androgen receptor modulators (SARMs, e.g. andarine, LGD-4033, ostarine and RAD140), tibolone, zeranol and zilpaterol.

### For purposes of this section:

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

\*\* "endogenous" refers to a substance which is ordinarily produced by the body naturally.

## S2 PEPTIDE HORMONES, GROWTH FACTORS, RELATED SUBSTANCES, AND MIMETICS

The following substances, and other substances with similar chemical structure or similar biological effect(s), are prohibited:

1. Erythropoietins (EPO) and agents affecting erythropoiesis, including, but not limited to:
  - 1.1 Erythropoietin-Receptor Agonists, e.g.
    - Darbepoetins (dEPO);
    - Erythropoietins (EPO);
    - EPO based constructs [EPO-Fc, methoxy polyethylene glycol-epoetin beta (CERA)];
    - EPO-mimetic agents and their constructs (e.g. CNTO-530, peginesatide).
  - 1.2 Hypoxia-inducible factor (HIF) activating agents, e.g.
    - Argon;
    - Cobalt;
    - Molidustat;
    - Roxadustat (FG-4592);
    - Xenon.
  - 1.3 GATA inhibitors, e.g.
    - K-11706.
  - 1.4 TGF-beta (TGF- $\beta$ ) inhibitors, e.g.
    - Luspatercept;
    - Sotatercept.

**1.5** Innate repair receptor agonists, e.g.

Asialo EPO;  
Carbamylated EPO (CEPO).

**2.** Peptide Hormones and Hormone Modulators,

**2.1** Chorionic Gonadotrophin (CG) and Luteinizing Hormone (LH) and their releasing factors, e.g. Buserelin, deslorelin, gonadorelin, goserelin, leuprorelin, nafarelin and triptorelin, in males;

**2.2** Corticotrophins and their releasing factors, e.g. Corticorelin;

**2.3** Growth Hormone (GH), its fragments and releasing factors, including, but not limited to:

Growth Hormone fragments, e.g. AOD-9604 and hGH 176-191;  
Growth Hormone Releasing Hormone (GHRH) and its analogues, e.g. CJC-1293, CJC-1295, sermorelin and tesamorelin;  
Growth Hormone Secretagogues (GHS), e.g. ghrelin and ghrelin mimetics, e.g. anamorelin, ipamorelin and tabimorelin;  
GH-Releasing Peptides (GHRPs), e.g. alexamorelin, GHRP-1, GHRP-2 (pralmorelin), GHRP-3, GHRP-4, GHRP-5, GHRP-6, and hexarelin.

**3.** Growth Factors and Growth Factor Modulators, including, but not limited to:

**F**ibroblast Growth Factors (FGFs);  
**H**epatocyte Growth Factor (HGF);  
**I**nsulin-like Growth Factor-1 (IGF-1) and its analogues;  
**M**echano Growth Factors (MGFs);  
**P**latelet-Derived Growth Factor (PDGF);  
**T**hymosin- $\beta$ 4 and its derivatives e.g. TB-500;  
**V**ascular-Endothelial Growth Factor (VEGF).

Additional growth factors or growth factor modulators affecting muscle, tendon or ligament protein synthesis/ degradation, vascularisation, energy utilization, regenerative capacity or fibre type switching.

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**S3 BETA-2 AGONISTS**

All selective and non-selective beta-2 agonists, including all optical isomers, are prohibited.

Including, but not limited to:

**F**enoterol;  
**F**ormoterol;  
**H**igenamine;  
**I**ndacaterol;  
**O**lodaterol;  
**P**rocaterol;  
**R**eproterol;  
**S**albutamol;  
**S**almeterol;  
**T**erbutaline;  
**T**ulobuterol;  
**V**ilanterol.

**Except:**

- Inhaled salbutamol: maximum 1600 micrograms over 24 hours in divided doses not to exceed 800 micrograms over 12 hours starting from any dose;
- Inhaled formoterol: maximum delivered dose of 54 micrograms over 24 hours;
- Inhaled salmeterol: maximum 200 micrograms over 24 hours.

The presence in urine of salbutamol in excess of 1000 ng/mL or formoterol in excess of 40 ng/mL is not consistent with therapeutic use of the substance and will be considered as an *Adverse Analytical Finding (AAF)* unless the *Athlete* proves, through a controlled pharmacokinetic study, that the abnormal result was the consequence of a therapeutic dose (by inhalation) up to the maximum dose indicated above.

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**S4 HORMONE AND METABOLIC MODULATORS**

The following hormone and metabolic modulators are prohibited:

**1.** Aromatase inhibitors including, but not limited to:

**4-A**ndrostene-3,6,17 trione (6-oxo);  
Aminoglutethimide;  
Anastrozole;  
Androsta-1,4,6-triene-3,17-dione (androstatrienedione);

Androsta-3,5-diene-7,17-dione (arimistane);

**E**xemestane;

**F**ormestane;

**L**etrozole;

**T**estolactone.

**2.** Selective estrogen receptor modulators (SERMs) including, but not limited to:

**R**aloxifene;

**T**amoxifen;

Toremifene.

**3.** Other anti-estrogenic substances including, but not limited to:

**C**lomifene;

Cyclofenil;

**F**ulvestrant.

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

**5.** Metabolic modulators:

**5.1** Activators of the AMP-activated protein kinase (AMPK), e.g. AICAR, SR9009; and Peroxisome Proliferator Activated Receptor  $\delta$  (PPAR $\delta$ ) agonists, e.g. 2-(2-methyl-4-((4-methyl-2-(4-(trifluoromethyl)phenyl)thiazol-5-yl)methylthio)phenoxy) acetic acid (GW1516, GW501516);

**5.2** Insulins and insulin-mimetics;

**5.3** Meldonium;

**5.4** Trimetazidine.

**Except:**

- Drospirenone; pamabrom; and ophthalmic use of carbonic anhydrase inhibitors (e.g. dorzolamide, brinzolamide);
- Local administration of felypressin in dental anaesthesia.

The detection in an *Athlete's Sample* at all times or *In-Competition*, as applicable, of any quantity of the following substances subject to threshold limits: formoterol, salbutamol, cathine, ephedrine, methylephedrine and pseudoephedrine, in conjunction with a diuretic or masking agent, will be considered as an *Adverse Analytical Finding (AAF)* unless the *Athlete* has an approved *Therapeutic Use Exemption (TUE)* for that substance in addition to the one granted for the diuretic or masking agent.

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## **S5** DIURETICS AND MASKING AGENTS

The following diuretics and masking agents are prohibited, as are other substances with a similar chemical structure or similar biological effect(s).

**Including, but not limited to:**

- Desmopressin; probenecid; plasma expanders, e.g. intravenous administration of albumin, dextran, hydroxyethyl starch and mannitol.
- Acetazolamide; amiloride; bumetanide; canrenone; chlortalidone; etacrynic acid; furosemide; indapamide; metolazone; spironolactone; thiazides, e.g. bendroflumethiazide, chlorothiazide and hydrochlorothiazide; triamterene and vaptans, e.g. tolvaptan.

## PROHIBITED METHODS

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### M1 MANIPULATION OF BLOOD AND BLOOD COMPONENTS

The following are prohibited:

1. The *Administration* or reintroduction of any quantity of autologous, allogenic (homologous) or heterologous blood, or red blood cell products of any origin into the circulatory system.
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 and microencapsulated haemoglobin products, excluding supplemental oxygen by inhalation.
3. Any form of intravascular manipulation of the blood or blood components by physical or chemical means.

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### M2 CHEMICAL AND PHYSICAL MANIPULATION

The following are prohibited:

1. *Tampering, or Attempting to Tamper*, to alter the integrity and validity of *Samples* collected during *Doping Control*.  
Including, but not limited to:  
Urine substitution and/or adulteration, e.g. proteases.
2. Intravenous infusions and/or injections of more than a total of 100 mL per 12 hour period except for those legitimately received in the course of hospital treatments, surgical procedures or clinical diagnostic investigations.

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### M3 GENE DOPING

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

1. The use of polymers of nucleic acids or nucleic acid analogues.
2. The use of gene editing agents designed to alter genome sequences and/or the transcriptional or epigenetic regulation of gene expression.
3. The use of normal or genetically modified cells.



# SUBSTANCES & METHODS PROHIBITED *IN-COMPETITION*

IN ADDITION TO THE CATEGORIES S0 TO S5 AND M1 TO M3 DEFINED ABOVE, THE FOLLOWING CATEGORIES ARE PROHIBITED *IN-COMPETITION*:

## PROHIBITED SUBSTANCES

### S6 STIMULANTS

All stimulants, including all optical isomers, e.g. *d-* and *l-* where relevant, are prohibited.

#### Stimulants include:

##### a: Non-Specified Stimulants:

**A**drafinil;  
Amfepramone;  
Amphetamine;  
Amfetaminil;  
Amiphenazole;  
**B**enfluorex;  
Benzylpiperazine;  
Bromantan;  
**C**lobenzorex;  
Cocaine;  
Cropropamide;  
Crotetamide;  
**F**encamine;  
Fenetyliline;  
Fenfluramine;  
Fenproporex;  
Fonturacetam [4-phenylpiracetam (carphedon)];  
Furfenorex;  
**L**isdexamfetamine;  
**M**efenorex;  
Mephentermine;  
Mesocarb;  
Metamphetamine(*d-*);  
*p*-methylamphetamine;  
Modafinil;  
**N**orfenfluramine;  
**P**hendimetrazine;  
Phentermine;  
Prenylamine;  
Prolintane.

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

##### b: Specified Stimulants.

Including, but not limited to:

**1,3-D**imethylbutylamine;  
**4-M**ethylhexan-2-amine (methylhexaneamine);  
**B**enzfetamine;  
**C**athine\*\*;  
Cathinone and its analogues, e.g. mephedrone, methedrone, and  $\alpha$  - pyrrolidinovalerophenone;  
**D**imethylamphetamine;  
**E**phedrine\*\*\*;  
Epinephrine\*\*\*\* (adrenaline);  
Etamivan;  
Etilamphetamine;  
Etilefrine;  
**F**amprofazone;  
Fenbutrazate;  
Fencamfamin;  
**H**eptaminol;  
Hydroxyamphetamine (parahydroxyamphetamine);  
**I**sometheptene;  
**L**evmetamphetamine;  
**M**eclofenoxate;  
Methylenedioxymethamphetamine;  
Methylephedrine\*\*\*;  
Methylphenidate;  
**N**ikethamide;  
Norfenefrine;  
**O**ctopamine;  
Oxilofrine (methylsynephrine);  
**P**emoline;  
Pentetrazol;  
Phenethylamine and its derivatives;  
Phenmetrazine;  
Phenpromethamine;  
Propylhexedrine;  
Pseudoephedrine\*\*\*\*\*;

Selegiline;  
Sibutramine;  
Strychnine;  
Tenamfetamine (methylenedioxyamphetamine);  
Tuaminoheptane;

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

**Except:**

- Clonidine;
- Imidazole derivatives for topical/ophthalmic use and those stimulants included in the 2018 Monitoring Program\*.

- \* Bupropion, caffeine, nicotine, phenylephrine, phenylpropanolamine, pipradrol, and synephrine: These substances are included in the 2018 Monitoring Program, and are not considered *Prohibited Substances*.
- \*\* Cathine: Prohibited when its concentration in urine is greater than 5 micrograms per milliliter.
- \*\*\* Ephedrine and methylephedrine: Prohibited when the concentration of either in urine is greater than 10 micrograms per milliliter.
- \*\*\*\* Epinephrine (adrenaline): Not prohibited in local administration, e.g. nasal, ophthalmologic, or co-administration with local anaesthetic agents.
- \*\*\*\*\* Pseudoephedrine: Prohibited when its concentration in urine is greater than 150 micrograms per milliliter.

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## S7 NARCOTICS

**The following narcotics are prohibited:**

Buprenorphine;  
Dextromoramide;  
Diamorphine (heroin);  
Fentanyl and its derivatives;  
Hydromorphone;  
Methadone;  
Morphine;  
Nicomorphine;  
Oxycodone;  
Oxymorphone;  
Pentazocine;  
Pethidine.

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## S8 CANNABINOIDS

**The following cannabinoids are prohibited:**

- Natural cannabinoids, e.g. cannabis, hashish and marijuana,
- Synthetic cannabinoids e.g.  $\Delta^9$ -tetrahydrocannabinol (THC) and other cannabimimetics.

**Except:**

- Cannabidiol.

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## S9 GLUCOCORTICOIDS

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

**Including but not limited to:**

Betamethasone;  
Budesonide;  
Cortisone;  
Deflazacort;  
Dexamethasone;  
Fluticasone;  
Hydrocortisone;  
Methylprednisolone;  
Prednisolone;  
Prednisone;  
Triamcinolone.

# SUBSTANCES PROHIBITED IN PARTICULAR SPORTS

## **P1** BETA-BLOCKERS

Beta-blockers are prohibited *In-Competition* only, in the following sports, and also prohibited *Out-of-Competition* where indicated.

- Archery (WA)\*
- Automobile (FIA)
- Billiards (all disciplines) (WCBS)
- Darts (WDF)
- Golf (IGF)
- Shooting (ISSF, IPC)\*
- Skiing/Snowboarding (FIS) in ski jumping, freestyle aerials/halfpipe and snowboard halfpipe/big air
- Underwater sports (CMAS) in constant-weight apnoea with or without fins, dynamic apnoea with and without fins, free immersion apnoea, Jump Blue apnoea, spearfishing, static apnoea, target shooting, and variable weight apnoea.

\*Also prohibited *Out-of-Competition*

Including, but not limited to:

<b>A</b> cebutolol;	<b>L</b> abetalol;
<b>A</b> lprenolol;	<b>L</b> evobunolol;
<b>A</b> tenolol;	<b>M</b> etipranolol;
<b>B</b> etaxolol;	<b>M</b> etoprolol;
<b>B</b> isoprolol;	<b>N</b> adolol;
<b>B</b> unolol;	<b>O</b> xprenolol;
<b>C</b> arteolol;	<b>P</b> indolol;
<b>C</b> arvedilol;	<b>P</b> ropranolol;
<b>C</b> eliprolol;	<b>S</b> otalol;
<b>E</b> smolol;	<b>T</b> imolol.

[www.wada-ama.org](http://www.wada-ama.org)



# SUMMARY OF MAJOR MODIFICATIONS AND EXPLANATORY NOTES

## 2018 PROHIBITED LIST

### Substances and methods prohibited at all times (In- and Out-of-Competition)

#### Prohibited Substances

##### S1 ANABOLIC AGENTS

- Dihydrotestosterone was renamed to its International Non-proprietary Name (INN) [androstanolone]. 1-androsterone (3 $\alpha$ -hydroxy-5 $\alpha$ -androst-1-ene-17-one) was added in S1.a as an example of exogenous anabolic steroid.
- LGD-4033 and RAD140 were added as further examples of SARMs.

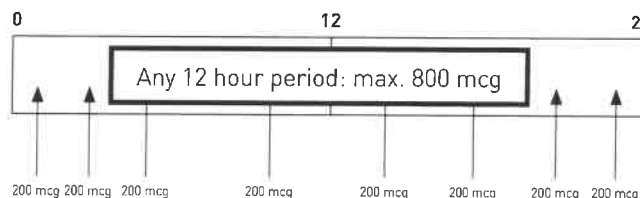
##### S2 PEPTIDE HORMONES, GROWTH FACTORS, RELATED SUBSTANCES AND MIMETICS

- For clarity and accuracy Section S2 was reorganized.
- ARA290 was removed as an example in this section because current literature suggests it does not meet inclusion criteria.
- Deslorelin, goserelin, nafarelin and triptorelin were added as examples of 2.1.
- Growth Hormone fragments were included in 2.3 with AOD-9604 and hGH 176-191 added as examples; CJC-1293 was added as example of GHRH and tabimorelin as a further example of GH secretagogue. GHRP-1, -3, -4, and -5 were added as examples of GHRP.
- Thymosin-  $\beta$ 4 and its derivatives, e. g. TB-500, were added as example of prohibited growth factors.
- Cobalt: It is re-iterated that vitamin B12, which contains cobalt, is not prohibited.

##### S3 BETA-2-AGONISTS

- Dosing parameters of salbutamol were revised to make it clear that divided doses of salbutamol may not exceed 800 micrograms over any 12 hours (see figure).

**Inhaled salbutamol – max. 1600 mcg over 24 hours  
But not to exceed 800 mcg over any 12 hours**



- Tulobuterol was added as an example.
- The statement on the urinary thresholds was improved.

##### S4 HORMONE AND METABOLIC MODULATORS

- Clomifene is now stated by its INN.
- In the absence of an INN, the IUPAC name of GW1516, 2-(2-methyl-4-((4-methyl-2-(4-(trifluoromethyl)phenyl)thiazol-5-yl)methylthio)phenoxy) acetic acid as well as an alternative name (GW501516) were included.
- SR9009, a Rev-Erb- $\alpha$  agonist, was added as an example of Activators of the AMP-activated protein kinase (AMPK).

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## S5 DIURETICS AND MASKING AGENTS

- In consideration of the information published in scientific articles since 2012 that particularly addresses the ability of glycerol to influence the athlete's plasma volume and parameters of the Athlete Biological Passport (ABP), the magnitude of glycerol-derived effects is regarded as minimal. Therefore, glycerol has been removed from the Prohibited List.

## Prohibited Methods

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### M2 CHEMICAL AND PHYSICAL MANIPULATION

- M2.2: the permitted volume and timing of intravenous infusions were changed from infusions of no more than 50 mL per 6-hour period to no more than a total of 100 mL per 12-hour period in order to allow greater flexibility for the safe administration of non-prohibited therapeutic substances, for example, iron.
- To reflect medical practice, "hospital admissions" has been changed to "hospital treatments" and "clinical investigations" has been clarified as "clinical diagnostic investigations".

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### M3 GENE DOPING

- The definition has been revised to include current and emerging gene manipulating technologies.

## Substances and Methods Prohibited In-Competition

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### S6 STIMULANTS

- 1,3-Dimethylbutylamine was added as an example. This substance can be found in some dietary supplements.

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## S8 CANNABINOIDS

- The category Cannabimimetics, e.g. "Spice, JWH-018, JWH-073, HU210" was changed to "synthetic cannabinoids, e.g.  $\Delta^9$ -tetrahydrocannabinol (THC) and other cannabimimetics". The synthetic cannabinoids are one of the main classes of novel psychoactive substances that have constantly emerging new drugs and changing availability. The previous list of examples continues to be prohibited, but are currently used less commonly. "Other cannabimimetics" replaced these examples.
- Cannabidiol is no longer prohibited. Synthetic cannabidiol is not a cannabimimetic; however, cannabidiol extracted from cannabis plants may also contain varying concentrations of THC, which remains a prohibited substance.

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## S9 GLUCOCORTICOIDS

- Examples of commonly used glucocorticoids were added for greater clarity.

## Substances Prohibited in Particular Sports

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### P1 ALCOHOL

- After careful consideration and extensive consultation, Alcohol was excluded from the Prohibited List. The intent of this change is not to compromise the integrity or safety of any sport where alcohol use is a concern, but rather to endorse a different means of enforcing bans on alcohol use in these sports. The four International Federations (IF) affected by this change have been alerted sufficiently in advance in order to amend their rules and to put in place protocols to test for alcohol use and appropriately sanction athletes who do not abide by the rules of their sport. Control of the process will allow IF more flexibility in applying rules or thresholds as they see fit. The National Anti-Doping Organizations are no longer obliged to conduct tests but may assist IF and National Federations where appropriate.

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### P2 BETA BLOCKERS

- For logical consistency, the category known as P2. Beta Blockers was renamed P1. Beta Blockers.

## MONITORING PROGRAM

The following were added to evaluate misuse in sport:

- 2-ethylsulfanyl-1H-benzimidazole (bemitil) *in-* and *out-of-competition*
- Hydrocodone *in-competition*.

Mitragynine and telmisartan were removed from the Monitoring Program because the required information on prevalence was obtained.

