

Summary of Major Modifications and Explanatory Notes

2023 Prohibited List

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

PROHIBITED SUBSTANCES

S1. Anabolic Agents

- Androst-4-ene-3,11,17-trione (11-ketoandrostenedione, adrenosterone) is now listed as an example. In the body, it is converted to 11-ketotestosterone and both are androgens already prohibited as metabolites of androstenedione and testosterone, respectively.
- The substance 17 α -methylepithiostanol (commonly referred to as epistane) is the 17-methylated analog to thiodrol (Shionogi, Japan) and converts *in vivo* to the prohibited anabolic agent desoxymethyltestosterone. Hence, per definition, 17 α -methylepithiostanol is also prohibited under S1. In order to unequivocally document the prohibited status of 17 α -methylepithiostanol, the substance was added as an additional example.
- Ractopamine, a beta-adrenergic agonist approved in some countries as a growth promoter for animals, was added to the list of examples under S1.2.
- S-23 and YK-11 were listed as examples of SARMs in S1.2.

S4. Hormone and Metabolic Modulators

- S4.3 was updated to include antibodies of precursors of myostatin and as example, apitegromab was added.
- The numbering was reformatted for clarity but there was no change in classification.

S5. Diuretics and Masking Agents

- The introductory language of the section was revised to harmonize with other sections of the List.
- Torasemide is added as an example of a diuretic and is already named in a *WADA Technical Document* (TD MRPL) and a *WADA Technical Letter* (TL24).
- It was clarified that a *Therapeutic Use Exemption* is not required for topical ophthalmic administration of a carbonic anhydrase inhibitor (e.g. dorzolamide, brinzolamine) or for local administration of felypressin in dental anesthesia in conjunction with a threshold substance.

PROHIBITED METHODS

M1. Manipulation of Blood and Blood Components

- Voxelotor was added as an example, as it alters the ability of hemoglobin to release oxygen in the body, thereby enhancing arterial oxygen saturation. As a side effect, it increases serum erythropoietin, which has been shown to result in higher hemoglobin concentration in healthy individuals.

SUBSTANCES AND METHODS PROHIBITED IN-COMPETITION

PROHIBITED SUBSTANCES

S6. Stimulants

- 1,3-dimethylamylamine and 1,3 DMAA were added as alternative common names for 4-methylhexan-2-amine, while 1,4-dimethylamylamine and 1,4-DMAA were included as synonyms of 5-methylhexan-2-amine.
- Solriamfetol was included in S6b due to its activity as a dopamine and norepinephrine reuptake inhibitor resulting in increases in brain levels of these neurotransmitters and consequent stimulant behavioral effects in preclinical species and in humans.
- Tetryzoline was added as an imidazoline derivative under Exceptions. In addition, it is clarified that otic administration of imidazoline derivatives is not prohibited.

S7. Narcotics

- Tramadol has been on the *WADA* Monitoring Program for some years. Monitoring data has indicated significant *Use* in sports including cycling, rugby and football. Tramadol abuse, with its dose-dependent risks of physical dependence, opiate addiction and overdoses in the general population, is of concern and has led to it being a controlled drug in many countries. Research studies funded by *WADA*¹ have confirmed the potential for tramadol to enhance physical performance in sports. Consequently, as proposed in the draft 2023 *Prohibited List* circulated for consultation to stakeholders in May 2022, *WADA*'s Executive Committee approved, at its 23 September 2022 meeting, prohibiting tramadol during the *In-Competition* period. However, in order to thoroughly and widely communicate the rule changes and to allow sufficient time for information and education, the Executive Committee decided to introduce the prohibition of tramadol and the implementation of the new rule on 1 January 2024. A one-year delay in implementation will allow *Athletes* and medical personnel to better prepare for the change, Laboratories to update their procedures, and sports authorities to develop educational tools.

S9. Glucocorticoids

- It was clarified that otic administration of glucocorticoids is not prohibited.

¹ a) Holgado D, Zandonai T, Zabala M, Hopker J, Perakakis P, Luque-Casado A, Ciria L, Guerra-Hernandez E, Sanabria D. Tramadol effects on physical performance and sustained attention during a 20-min indoor cycling time-trial: A randomised controlled trial. *J Sci Med Sport*. 2018 Jul;21(7):654-660.

b) Mauger L, Thomas T, Smith S, Fennell C. (2022). Is tramadol a performance enhancing drug? A randomised controlled trial. British Association of Sport and Exercise Medicine Conference, 26-27 May 2022, Brighton, UK.
https://basem.co.uk/wp-content/uploads/2022/08/Mauger_BASEM-Abstract.pdf
<https://www.wada-ama.org/en/resources/funded-scientific-research/tramadol-performance-enhancing-drug>

SUBSTANCES PROHIBITED IN PARTICULAR SPORTS

P1. Beta-Blockers

- At the request of the World Mini-Golf Federation (WMF), it was agreed to include mini-golf as a sport where beta-blockers are prohibited. The skills required for mini-golf are similar to others found in sports disciplines where beta-blockers are prohibited.
- At the request of the World Under Water Federation (CMAS) beta-blockers will be prohibited *Out-of-competition* as well as *In-competition* in all subdisciplines of freediving, spearfishing and target shooting.

MONITORING PROGRAM

- Dermorphin and its analogs were added to detect patterns of use in sport *In-competition*.
- GnRH analogs in females under 18 years were added to detect patterns of use in sport *In- and Out-of-competition*.
- Hypoxen (polyhydroxyphenylene thiosulfonate sodium) was added to evaluate misuse in sport *In- and Out-of-competition*.

* For further information on previous modifications and clarifications, please consult the *Prohibited List* Frequently Asked Questions at <https://www.wada-ama.org/en/prohibited-list#faq-anchor>.