

Anti-Doping Awareness in Sports

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Lecture -7

WADA - Prohibited in Competition Only

Good morning, friends, and welcome to the NPTEL Anti-Doping course. I am Prof. Dobson Dominic, and today we are going to look into the World Anti-Doping Agency's group of drugs prohibited in competition only. This is the second lecture. In lecture one, we looked into the complete list of banned drugs. In this lecture, we are going to look into substances prohibited only during that particular competition.

So, these are the broad outline overview of substances prohibited in competition during the competitions. What are the exceptions given? When exceptions are given for that particular drug or method, then the athlete definitely has to get a Therapeutic Use Exemption. We will look into that, and we will conclude with our recommendations.

Overview of competition-prohibited substances:

Substances which are banned only during competition periods. What are these categories? This category includes S6: stimulants, S7: narcotics, S8: cannabinoids, and S9: glucocorticoids. Stimulants are mainly seen in cough and cold medications, which commonly contain stimulants like sympathomimetic amines, especially Ephedrine. So, these are commonly obtained by athletes, especially in countries like India, where there is not adequate usage of proper medical prescriptions.

Even pharmacists, without a proper sports doctor's prescription, can give these medications, especially the cold medications or hay fever medications. That is why it is very important athletes seek a proper sports medicine doctor's advice before taking any medications. The importance of sports medicine doctors in managing medications in athletes is very important. So, if at all you have a state, national, or international athlete who has even a simple fever or a cough and cold, please don't immediately go to a pharmacist and get the medications, because we need to know which cough and cold medications don't have banned substances. These medications should be avoided by athletes and athlete support staff.

The next group of medications which are banned during competition are narcotics. Narcotics are prohibited in sports. Narcotics are derived from morphine and its chemical and pharmacological analogues. They are mainly pain-relieving drugs and they affect the central nervous system. What are the examples of narcotics? Morphine, fentanyl, oxycodone—these are drugs which are predominantly given during emergencies and especially during operative procedures. They are mainly given for masking pain. The problem with misusing narcotics is there is a potential for addiction and also a potential for overdoses. So, they are definitely prohibited in competition, especially morphine, fentanyl, and oxycodone. Narcotics are substances, as I said, that act on the central nervous system to reduce pain.

The use of narcotics gives the injured athlete a sense of cure and they can tend to ignore the pain, and that can subsequently lead to a potentially serious injury and risk further damage. So, if the athlete is suffering from a simple pain or a simple tissue injury like a muscle injury, and then he also has a tendency to misuse narcotics, then the potential to ignore the pain and continue with the game, and thereby landing with a serious injury is much more. Hence, narcotics are completely banned during competition.

The next group of drugs which are banned during competition are cannabinoids. What are cannabinoids? Cannabinoids are substances derived from cannabis plants, or they are also derived from synthetic equivalents. What are the examples of cannabinoids? Examples include hashish and marijuana. What is its mechanism of action? It acts by causing relaxation, and what happens is the athlete is so relaxed that he might lose the sense of coordination and balance, and thereby cannabinoids are prohibited in competitions. The specific substance abuse in this section, especially in 2025, WADA has included tetrahydrocannabinol also in the group of prohibited substances during competition because of legal and health concerns.

Prolonged use of cannabinoids may result in athletes losing motivation, decreased concentration, impaired memory and learning disabilities. Respiratory diseases such as lung cancer, throat cancer, and chronic bronchitis are also side effects of cannabinoids. The next group of drugs which are banned in competition are glucocorticoids. Glucocorticoids are mainly medically used as anti-inflammatory and immunosuppressive drugs. Inflammation is very common in athletes also due to increased exercise training. The common glucocorticoids which are misused are prednisone and dexamethasone. These reduce inflammation, but if misused over a period of time, the athlete's immune system is compromised, and his immunity is weakened. Hence, glucocorticoids are banned during competition. Glucocorticoids are taken through several routes—either through oral tablets, intramuscular injections, or local injections including periarticular, intraarticular (that is, inside the joint), or around the joint, peritendinous (around the tendon), and intratendinous (inside the tendon). So, there are several ways glucocorticoids are given, and glucocorticoids have a washout period ranging from 3

days for oral administration all the way to 10 days for intramuscular, intraarticular, or intratendinous injections. So, this is very important to note so that the testing agencies know when the glucocorticoids were administered. So remember, glucocorticoids are banned only during competitions. They might actually be indicated and can be given pre-competition or post-competition.

The next group of drugs which are banned particularly in certain sports—prohibited in particular sports—are beta-2 agonists. These are predominantly drugs which are given for asthmatic patients, chronic asthma patients, and uncontrolled asthma patients.

Even athletes suffer from asthma. The most famous athlete I can remember is the current Olympic 100-meter champion Noah Lyles. He is a known asthmatic patient. So, beta-2 agonists, if taken into the bloodstream, have anabolic effects or tissue-building properties. Hence, the World Anti-Doping Agency has prohibited the use of beta-2 agonists by athletes, particularly during sporting competition. So, during competition, beta-2 agonists are definitely banned and should not be used.

If at all there is a clear therapeutic indication, then the athlete definitely needs to apply for a Therapeutic Use Exemption (TUE) certificate. In certain conditions, beta-2 agonists are given exceptions even during competition. What are they? Inhaled salbutamol—maximum you can give is 1600 micrograms over 24 hours in divided doses, not to exceed 600 micrograms over 8 hours starting from any dose. This is very, very important. Any athlete who is suffering from bronchial asthma should seek proper sports medicine advice—sports medicine doctor's advice—so that they can titrate the dosage properly pre-competition, and even if the symptoms are persisting during the competition, the doctor can prescribe the dosage properly. The next is inhaled formoterol—maximum delivered dose is 54 micrograms over 24 hours. Inhaled salmeterol, very common—maximum is 200 micrograms over 24 hours. Inhaled vilanterol, which is recent—in 2024, WADA has given the maximum dosage up to 25 micrograms over 24 hours. So, this dosage cannot be exceeded.

Suppose vilanterol is given at more than 25 micrograms, then again that constitutes an anti-doping violation. So, if at all an athlete is going to take inhaled salbutamol or formoterol or salmeterol or vilanterol, a Therapeutic Use Exemption certificate is very mandatory, and that has to be kept in mind. So, these are the groups of drugs which are banned during competition. What are they? Stimulants, glucocorticoids, cannabinoids, and beta-2 agonists. Beta blockers are banned during particular sports. These are the references.

WADA's site has all these latest references. Thank you for listening, and Jai Hind.

