

Overview of Doping



Doping: Sporting world's worst kept secret

ATHLETES WHO LOST THEIR OLYMPIC MEDALS

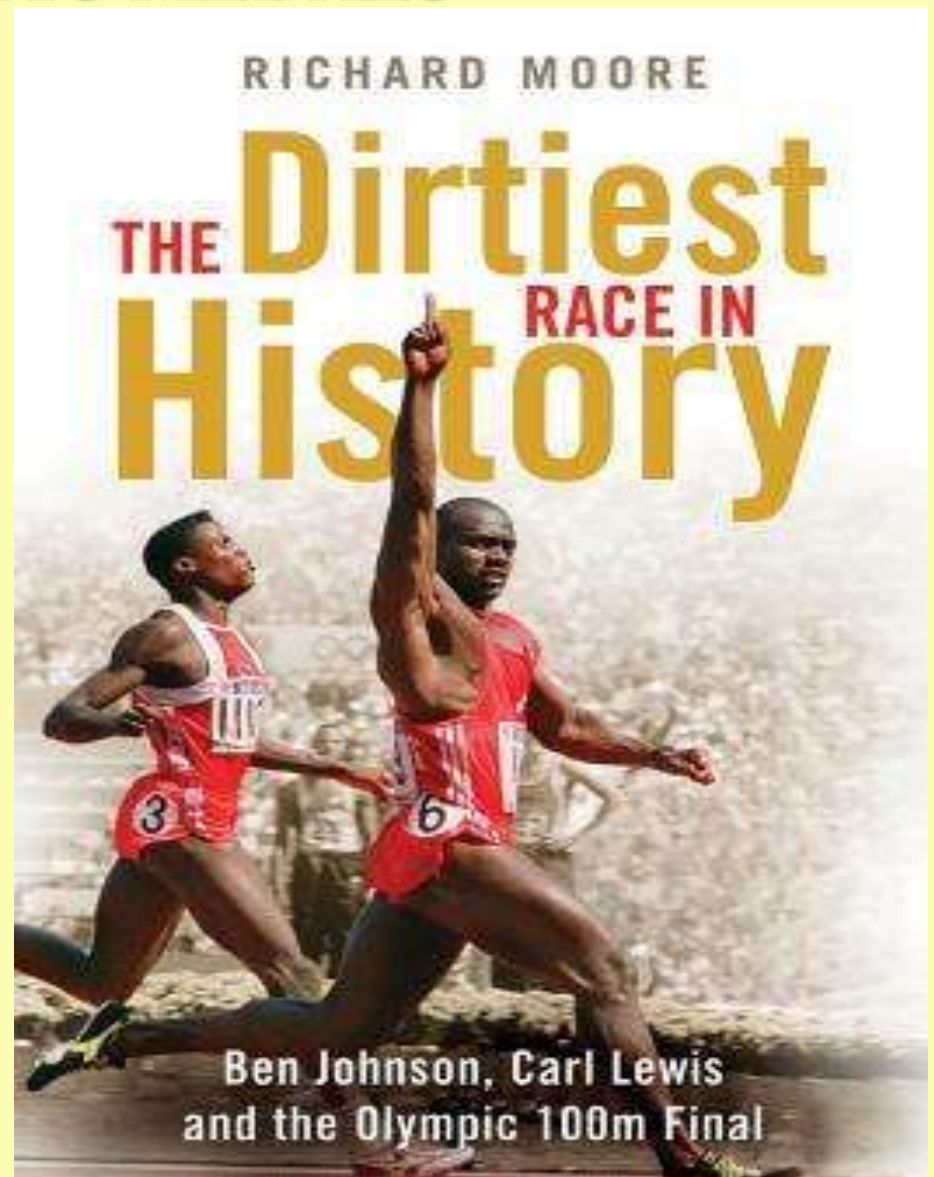
Canadian Sprinter

**1988- Seoul Olympics
Ben Johnson (6) beating
Carl Lewis**

**Tested positive for
Stanazolol**

He later admitted having
used steroids when he ran
his 1987 world record

Charlie Francis, his coach,
told to the Dublin inquiry
that Johnson had been using
steroids since 1981



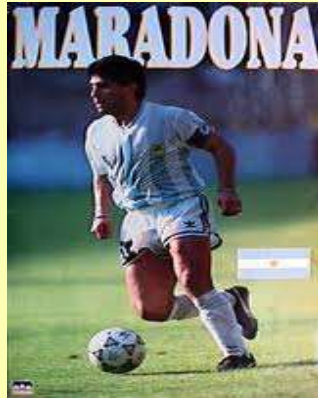
Flo-Jo

**Florence Griffith Joyner
also known as Flo-Jo
American Athlete held
the world record in
100 m 10.49 secs and
200 m 21.34 secs. In 1988
Seol Olympics.**

**Both records still stand.
She died in 1998 at the age
of 38**

**Caught for taking anabolic
steroids**





**1994 – Football World Cup:
Diego Maradona banned for Ephedrine.
also tested positive for Cocaine later**



2006 – Marion Jones -EPO:

Used Designer Steroids [Tetrahydrogestrinone](#)
(THG) –during 2000 Sydney Olympics (5 Medals,
3 Gold and 2 Bronze).

Also implicated in the BALCO scandal
with partner Tim Montgomery

Later imprisoned for 6 months for lying to court



Doping in **Cycling**

2010 –Alberto Contador

Winner of Tour de France
tested positive for Clenbuterol
and was suspended



Lance Armstrong **7 times tour de France title** **2012 - Life ban**



2006 – Floyd Landis

Winner of Tour de France
tested positive for
Testosterone
and was banned

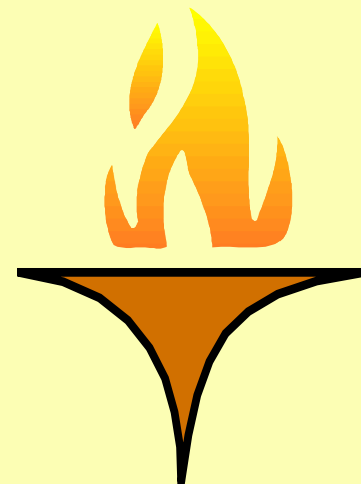
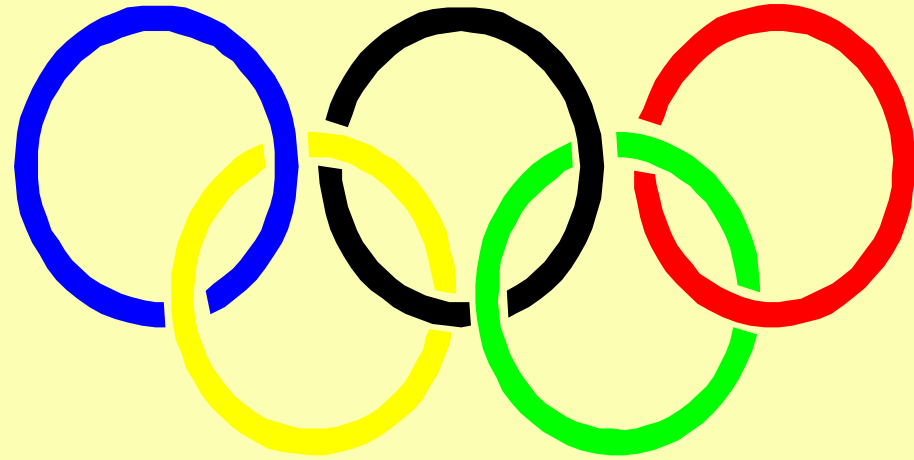


Doping in Indian Sports

- ◆ In October 2013, the BCCI banned Delhi pacer Pradeep Sangwan for 18 months after he was found guilty of consuming a banned steroid.
- ◆ Wrestler Narsingh Yadav and shot putter Inderjeet Singh caught in doping for use of anabolic steroids just before 2016 Rio Olympics.
- ◆ Recently, Prithvi Shah, cricketer was banned for 8 months by BCCI for taking Terbutaline, a Beta Agonist.

*It is not
important that
you have won or
lost but how you
have played the
Game*

- Olympic motto



World Anti-Doping Program

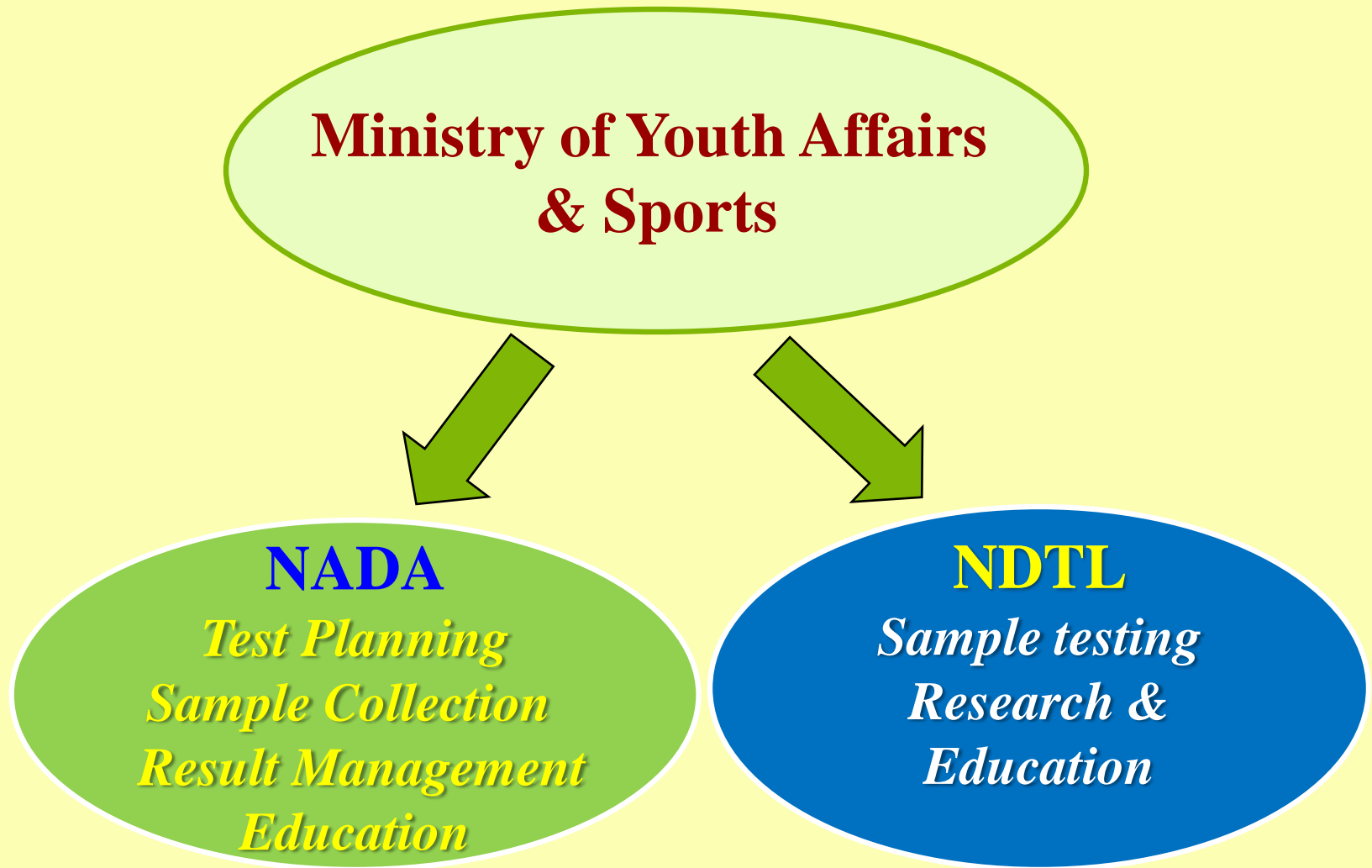
WORLD ANTI-DOPING CODE



INTERNATIONAL STANDARDS

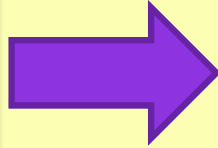


Anti Doping Programme in India



Doping?

DOPING



**Use of Prohibited Substances
and/or Methods**

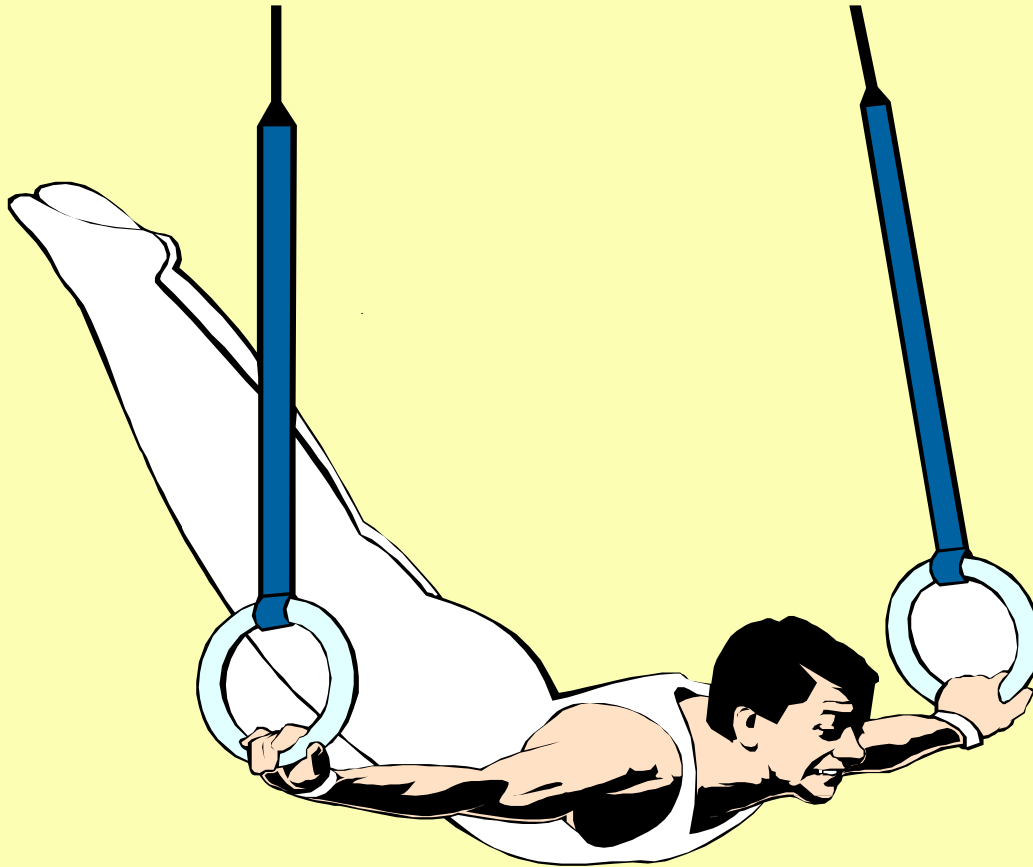


Performance Enhancement



**Doping is defined as “occurrence of one or more
of **Anti Doping Rule Violations**”**

Principle of Strict Liability



**Athletes are
responsible
for what
goes into
his/her
body**

The dual character of drugs/doping substances



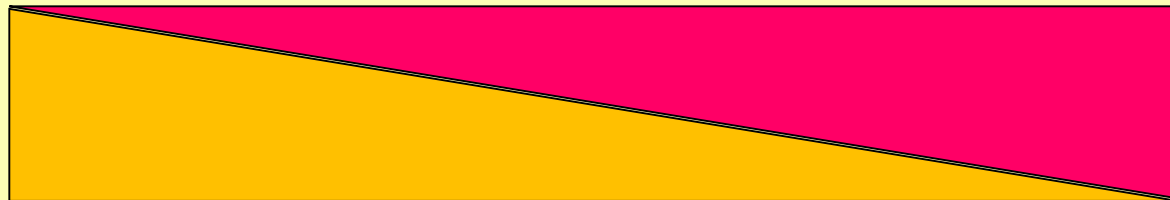
Medical purpose



Drug Abuse in Sports

Therapeutically

Hazardous



Pharmacological

suprapharmacological/ overdose

The health side effects of abuse can

- be short – termed
- be reversible/irreversible
- result in late damages

What is Drug ?

- A chemical substance that interacts in the body to alter its biochemical system.
- It is designed for medical and therapeutic purpose for the benefit of society.



Intent of Drug Testing

- ◆ To eliminate any competitive advantage that might result from Ergogenic aids.
- ◆ Protecting other athletes from injury by drug abusing athletes.
- ◆ Fair competition.



Who Does Drug Testing ?

Anti Doping Laboratory duly accredited by World Anti Doping Agency (WADA)

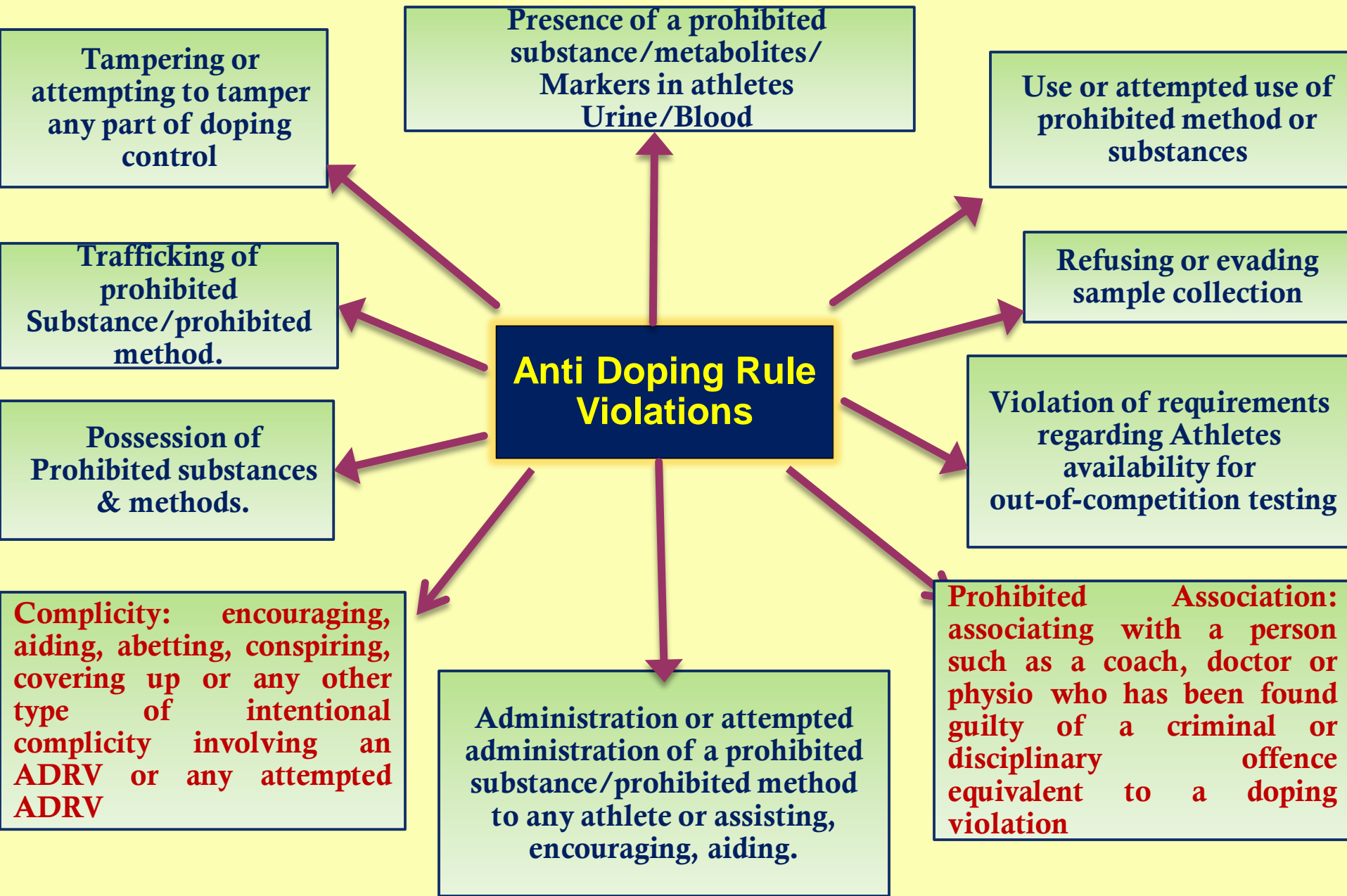
The task of the anti-doping laboratory is to engage in drug of abuse testing in athletes employing sophisticated analytical technologies.

The laboratory should keep on updating its methods to improve the detection limit to catch the cheats.

Blood doping

Blood doping is done to temporarily increase blood volume and increase the number of blood cells containing hemoglobin, thus overloading the blood with hemoglobin, which increases the oxygen-carrying capacity of blood and leads to an increased endurance performance.

Anti Doping Rule Violations





WADA Prohibited List 2020

Single List World Wide

Revised every year by WADA

Prohibited List 2020

- **Prohibited at All Times:** Substances and methods with potential to enhance performance in future competitions or have masking potential
- **Prohibited in-competition only:** Substances considered to have a relative short-lived effect, useful during/around competition time
- **Prohibited in Particular Sports:** substances only useful for doping in very few sports, and would negatively affect performance in all others (e.g. beta-blockers)



Prohibited List 2020

Prohibited Substances at all times (In- and Out-of-competition)

S0. Non-approved Substances

S1. Anabolic Agents

S2. Peptide Hormones, Growth Factors, Related Substances & Mimetic

S3. Beta-2 Agonists

S4. Hormone and Metabolic Modulators

S5. Diuretics and other Masking Agents

Prohibited Methods at all times (In- and Out-of-competition)

M1. Manipulation of Blood and Blood Components

M2. Chemical and Physical Manipulation

M3. Gene Doping



Prohibited List 2020

Prohibited Substances - In-competition

S6. Stimulants

S7. Narcotics

S8. Cannabinoids

S9. Glucocorticosteroids

Substances Prohibited in Particular Sports

P1. Beta-blockers

S0. NON-APPROVED SUBSTANCES

- Any Pharmacological Substance which is not addressed by any of the Subsequent Section of the List and with No Current Approval of any Governmental Regulatory Health Authority for Human Therapeutic Use (eg. Drugs Under Preclinical/Clinical/Discontinued/Veterinary drugs) is Prohibited all times.

S1 ANABOLIC AGENTS

A. ANABOLIC ANDROGENIC STEROIDS (AAS)

- Most widespread abused drugs are AAS. Anabolic steroids are synthetic derivatives of natural male hormone testosterone.
- *EXOGENOUS (A substance which is not capable of being produced by the body naturally) eg. Stanozolol, Nandrolone etc.
- *ENDOGENOUS (A substance which is capable of being produced by the body naturally) eg. Testosterone, Dihydrotestosterone.

WHY ATHLETES USE AAS?

ANABOLIC ANDROGENIC STEROIDS (AAS)

- Body builders desire more lean mass and less body fat.
- Weightlifters desire to lift maximum amount of weight possible.
- Field athletes want to put the shot or throw the hammer, discus or javelin farther.
- Swimmers and Runners hope to perform better without physical breakdown.

SIDE EFFECTS OF AAS

In Adult Males :

- Breast Enlargement.
- Increase risk of heart disease.
- Reduction in sperm production.
- Increase sexual desire.
- Decrease sexual performance.



SIDE EFFECTS OF AAS

In Adult Females:

- Deepening of voice
- Male pattern balding
- Excessive hair growth on face and body.
- Abnormal/Irregular or absent menses

S2. PEPTIDE HORMONES, GROWTH FACTORS AND RELATED SUBSTANCES

💧 **ERYTHROPOIETIN (EPO): -**

- 💧 Regulate red blood cell production.
- 💧 Mainly used by endurance athletes to increase aerobic endurance.

💧 **SIDE EFFECTS :--**

- 💧 Thrombosis
- 💧 Increase blood Viscosity
- 💧 Elevated blood Pressure
- 💧 Myocardial Infarction
- 💧 Hypertension



S2. PEPTIDE HORMONES, GROWTH FACTORS AND RELATED SUBSTANCES

GROWTH HORMONE (GH),

◆ **Chorionic Gonadotrophin (CG) and LH in males, CORTICOTROPHINS**

◆ GH-To increase muscle mass strength

◆ CG-To increase endogenous production of steroids.

SIDE EFFECTS OF hGH:

◆ Acromegaly (overgrowth of limbs)

◆ Abnormal growth of organs

◆ Arthropathies (joint disorders)

◆ Diabetes Mellitus

S3. BETA -2 AGONISTS

- ALL Beta 2 Agonists ARE PROHIBITED except salbutamol (MAX. 1600 μg OVER 24 Hrs), and Salmeterol which requires declaration of use in accordance with international standard for TUE.
- Threshold of Salbutamol in urine is 1000 ng/ml.
- Increases skeletal muscle mass, Lypolysis, decrease fat deposition and there by increase lean body mass.
- SIDE EFFECTS:**
 - Myocardial infarction
 - Anxiety
 - Tachycardia



S4. HORMONE AND METABOLIC MODULATORS

- ◆ **Aromatase Inhibitors.**
- ◆ Block the action of Aromatase Enzymes in the body which convert Androgens into estrogens.
- ◆ **Anti-estrogenic substances (clomiphene, cyclofenil, fulvestrant)**
- ◆ **Metabolic Modulators (insulins)**
- ◆ **Side effects of Hormone Antagonists:**
 - ◆ -Hot flushes
 - ◆ -Gastrointestinal disorders
 - ◆ -Fluid retention
 - ◆ -Venous Thrombosis

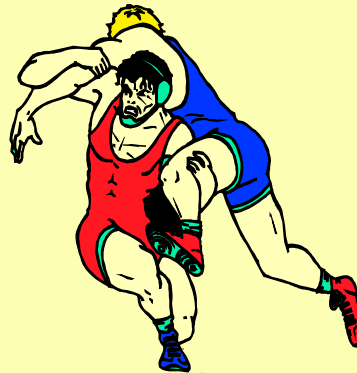


S5. DIURETICS AND OTHER MASKING AGENTS

- ◆ **Common Diuretics (Acetazolamide, Probenecid and thiazides)**
 - Acute weight reduction.
 - To modify the excretion rate of urine to alter the concentration of drugs.

- ◆ **SIDE EFFECTS OF DIURETICS:**

- ◆ -Decrease Work Performance.
- ◆ -Decrease Blood Volume.
- ◆ -Decrease Cardiac Function
- ◆ -Decrease Aerobic Capacity.
- ◆ -Impairment of body temperature regulation.
- ◆ -Electrolyte Imbalance.



S6. STIMULANTS



💧 Amphetamine/Cocaine/

💧 Methylhexanamine:

- Alertness
- Wakefulness
- *Increase* ability to concentrate
- Decrease sensitivity to pain
- Delay the point of fatigue.

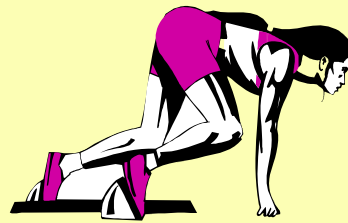
SIDE EFFECTS

- Loss of appetite
- Increase heart rate
- Increase blood pressure
- Dehydration
- Insomnia
- Addiction.
- Hyperthermia
- Hypertension

- CATHINE IS PROHIBITED WHEN ITS CONCENTRATION IN URINE EXCEEDS 5 $\mu\text{g}/\text{ML}$
- EPHEDRINE AND METHYLEPHEDRINE IS PROHIBITED WHEN ITS CONCENTRATION IN URINE EXCEEDS 10 $\mu\text{g}/\text{ML}$
- PSEUDOEPHEDRINE IS PROHIBITED WHEN ITS CONCENTRATION IN URINE EXCEEDS 150 $\mu\text{g}/\text{ML}$.

S7. NARCOTICS

Diamorphine (heroin) its derivatives, morphine, oxycodone, oxymorphone, pentazocine, pethidine etc.



SIDE EFFECTS:

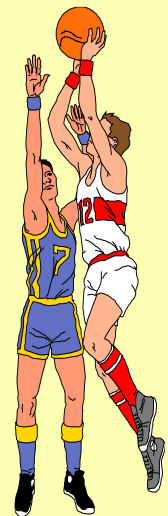
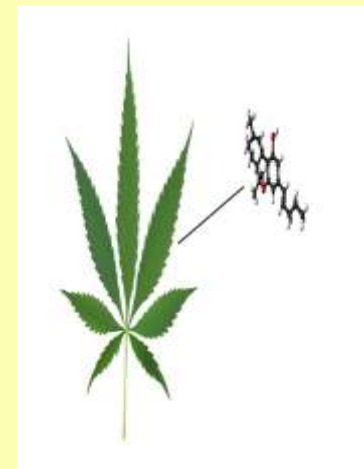
Nausea, Mental clouding, Vomiting, Constipation, Delirium, Dizziness, Dysphoria, Parkinsonism, Addiction.

S8. CANNABINOIDS

Natural (Canabis, Hasish & Marijuana) or Synthetic (THC) are banned.

SIDE EFFECTS OF CANNABINOIDS:

- Impairs Eye hand coordination
- Decrease Reaction time
- Decrease Motor coordination
- Decrease Concentration
- Decrease Maximal Exercise capacity
- Increase Appetite



S9. GLUCOCORTICO-STEROIDS

- ◆ All Glucocorticosteroids are prohibited when administered by oral, intravenous, intramuscular or rectal routes.

SIDE EFFECTS:

- ◆ Fluid Retention
- ◆ Hyperglycemia
- ◆ Musculoskeletal Disorders

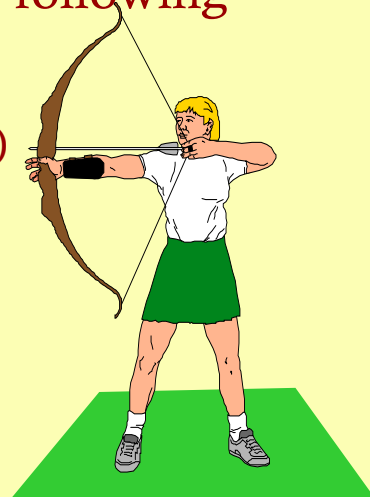


SUBSTANCES PROHIBITED IN PARTICULAR SPORTS

◆ P1. BETA-BLOCKERS

Unless otherwise specified, beta-blockers (eg. Acebutolol, Alprenolol) are prohibited in competition only in the following sports..

- ARCHERY(FITA)(ALSO PROHIBITED OUT OF COMPETITION)
- AUTOMOBILE(FIA)
- BILLIARDS all disciplines (WCBS)
- GOLF (IGF)
- SHOOTING (ISSF,IPC) (ALSO PROHIBITED OUT OF COMPETITION)



◆ SIDE EFFECTS:

- Slow down Heart Beat
- Weakness, fatigue



SANCTIONS FOR ADRV

- ◆ Disqualification of results in Event during which an Anti Doping rule violation occurs.
- ◆ Imposition of ineligibility for prohibited substances and prohibited methods except for the Specified substances as mentioned.
- ◆ **1st Violation:** Four (4) years ineligibility subject to further reduction of two years.
- ◆ **2nd Violation:** 8 years - Life time ineligibility.

Thanks



Say “No” to drugs in Sports

*THANK YOU
FOR YOUR
ATTENTION!!!*

Any questions?