

## Chapter-4

### Doping

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#### VERY SHORT TYPE QUESTION (30 WORDS)

(CARRYING 1 MARK)

**Q1. Mention the doping substances.**

**Ans.** The various doping substances are stimulants such as Heroin, Cocaine, Steroids such as Anabolic Steroids, Testosterone, Growth Hormone such as Somatotropin, peptide hormone.

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**Q2. Define doping and its types.**

**Ans.** Doping can be defined as the use of banned performance enhancing drugs in sports particularly by the organization that regulate sports competitions.

There are two types of Doping

**(a)** Performance enhancing substances

**(b)** Physical methods.

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**Q3. Explain out of competition doping test.**

**Ans.** Out of competition doping test is any such testing of an athlete not in competition or in a way associated with athlete's immediate participation in an event.

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**Q4. What do you mean by WADA.**

**Ans.** WADA stands for world anti-doping agency.

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**Q5. Define Blood doping?**

**Ans.** Blood doping is a method of improving athletic performance by artificially boosting the blood's ability to bring oxygen to the muscles. Blood doping increases the amount of hemoglobin in the blood stream.



## SHORT TYPE QUESTION (60 WORDS)

(CARRYING 3 MARK)

**Q1. Explain the use of stimulants and steroids in sports.**

**Ans.** Stimulants increase the heart rate and palpitation. These drugs improve work output ability by reducing the feeling of fatigue. They tend to increase alertness and physical activity. It increases the heart rate and reduces the reaction time. Examples of these are caffeine, amphetamines. They are used to increase endurance and speed.

Steroids are very strong chemicals which are used by the players during training period. They increase the heart rate, body weight, muscle mass and blood circulation. They promote growth and healing process. By increasing muscle size and strength, athletes enhance the performance in sports. Steroids are either taken orally or by intra muscular injection.

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**Q2. Write down the harmful effects of prohibited substances?**

**Ans.** Prohibited substances are those substances which are banned or prohibited from use in sports. There are some substances which are banned or prohibited only during competition. A substance is added to the list of prohibited substances if it enhances the sports performance or damages the health of the athlete. For exemption it must be verified by the physician. In order to be accepted the following points must be true:

**(a)** The athlete would have vital health problems if he does not take such drug.

**(b)** There is no other suitable alternative to that drug.

**(c)** There is no considerable performance enhancing benefits.

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**Q3. Discuss the effects of blood doping.**



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**Ans.** Blood doping is the process of increasing the Red Blood cells by administration of blood transfusion. Increased amount of RBCs helps in strength and endurance activities. This can be done by injecting extra RBCs production. Blood doping increases the amount of hemoglobin in the blood stream. Hemoglobin is an oxygen carrying protein in the blood. So increase in hemoglobin allows higher amount of oxygen to reach and fuel an athlete's muscles, which increases stamina and performance particularly in long distance events such as running and cycling.

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#### **Q4. Enlist the responsibilities of athlete for Doping.**

**Ans.** An athlete can be called for drug test at any time. In competition or out of competition. During competition, drug test is done on winning team/ teams. Other athletes can be tested by random selection from all competitors.

The responsibilities of athlete are:

- (i)** Remain in direct observation of the Doping Control Officer until the completion of sample collection procedure.
- (ii)** Produce appropriate photo identification.
- (iii)** Comply with sample collection procedures.
- (iv)** Report immediately for test, unless there is valid reason for a delay.

It educates athletes regarding harmful effects of drugs. WADA also provides the list of banned or prohibited substances in sports. In India the controlling body under the WADA is named as National Anti Doping Agency (NADA).

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#### **Q5. Write short note on Ergogenic aids.**

**Ans.** Ergogenic aids are the external influences that can be determined to enhance performance in sports. These includes mechanical aids, pharmacological aids, physiological aids, nutritional aids and psychological aids.

- (i) Mechanical aids:** It includes altitude training, Aqua training, uphill and downhill running,



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treadmills, weight training, clothing, Footwear, equipments etc. These are valid Ergogenic aids.

**(ii)Pharmacological aids:** It includes anabolic steroid, Beta Blocker, Caffeine, protein supplements, Sodium bicarbonate. These are banned by IOC in sports.

**(iii)Physiological aids:** It is like Acupuncture, Blood doping, creatine, Herbal medicines, Human Growth hormones, physiotherapy, sports massage, sauna etc. Many of these are banned by IOC in sport

**(iv)Nutritional aids:** They are like Bicarbonate of soda, caffeine, creatine, sports drinks. Many of these are banned by IOC in sports.

**(v)Psychological Aids:** These includes meditation, motivation, cheering, Relaxation. Most of these are valid and applicable in sports.



## LONG TYPE QUESTION (150 WORDS)

(CARRYING 5 MARK)

**Q.1 Describe the ill effects of stimulants, steroids, Narcotics and Diuretics.**

**Ans.** The ill effects of the banned drugs are as follows:

**(i) Stimulants:** These are chemicals which have direct effect over Central nervous and Cardiovascular Systems. The toxic effects of stimulants are aggression, violent behaviour, blurred vision, dizziness, irregular heartbeat etc. It has addictive effect, moreover its dependence can lead to high dosage.

**(ii) Steroids:** They adversely affect the body leading to heart attack, cause cancer, infertility (In females), hypertension, aggressive behaviour, uncontrolled emotions etc.

**(iii) Narcotics:** It may cause loss of balance and co-ordination. They cause loss of concentration. There may be drowsiness, nausea, vomiting, constipation, fainting and coma etc. They create illusion of athletic powers beyond actual capacity. They are good pain killers. Examples of these are morphin (Ganja), Opium, heroin, Cocaine etc. they are found in cough syrups.

**(iv) Diuretics:** These drugs reduces fluid from the body. The person reduces body weight in very short period. These are generally used by wrestlers, judo and boxing players. These drugs increases urine secretion. It reduces the natural appetite, may lead to malnutrition, body fainting, dehydration etc. The amount of potassium and sodium decreases in the body, which may lead to mineral imbalance in the body.

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**Q2. How does an individual, health get affected by the ill effects of Doping?**

**Ans.** The use of performance enhancing substances leads to serious health problems and



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even death.

**(a) Addictive effects:** Most of these substances have addictive effects and hence it creates physical and psychological effects.

**(b) Cardiac Problems:** Doping has adverse effect over heart and causes many types of cardiac problems like varied heart beat, hypertension, cardiac arrest etc.

**(c) Affects Kidney and liver:** Doping substances contains strong chemicals and hence it affects liver and kidney adversely. It leads to non-functioning and partial damage of important organs.

**(d) Unbalanced Psychological Behaviour:** These substances usually leads to un-balanced psychological behaviour like aggression, loss of concentration, headache, loss of neuromuscular responses, insomnia, depression etc.

**(e) Impotence:** Doping causes impotence in males i.e. shrinking of testicles, reduction of sperm production. In females it causes infertility.

**(f) Dehydration:** Doping causes great loss of water from body, thus leads to dehydration. Dehydration results in cramps, heat stroke, high temperature etc.

**(g) Digestive problems:** Most of these banned drugs cause digestive or gastro problems like loss of appetite, hormonal variation, constipation, stomach ache etc.

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### Q3. Describe the doping test procedure.

**Ans.** Doping test is a technical analysis of specimens of urine, blood, sweat, saliva or oral fluid to determine the presence of specified drugs or their metabolism. An athlete can be called for drug test at any time, usually drug test is done on winning team or top three competitors.

**Testing procedure:** During the drug test, samples of urine, blood, saliva is take. These collected samples are split into two parts (sample A and sample B) and sealed by athlete. The first sample (Sample A) is sent is registered laboratory for drug test. If the first sample (Sample A) found positive or sports enhancing drugs are found in this sample, then the athlete is notified. After words second sample (Sample B) is tested in the presence of athlete



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or coach.

If both the samples (sample A and sample B) are positive then relevant sports federation is notified. It is the responsibility of concerned federation to decide the penalties or ban to be imposed over that athlete. Through this dope test, it educates athletes regarding harmful effects of drugs. It also checks the quality of athletics related to doping or drug use in sports.

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#### **Q4. Explain the performance enhancing substance in detail.**

**Ans.** The performance enhancing substances are as follows:

The use of drugs to enhance performance is considered unfair and puts the health of athlete at high risk like

**(a)Mechanical aids:** It includes altitude training, aqua training, elastic cord, treadmills, vibration training, weight training etc.

**(b)Pharmacological aids:** It includes Anabolic steroid, beta blockers, caffeine, cholrine, sodium bicarbonate. These are all banned by IOC in sports.

**(c)Physiological aids:** It includes Herbal medicines, sports massage, sauna, Human Growth hormones.

**(d)Nutritional aids:** They are like Bicarbonate of soda, carbohydrate loading, creatine, sports drinks.

**(e)Psychological aids:** These includes meditation, motivation, centering, cheering, Relaxation. Most of these are valid and applicable in sports.

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#### **Q5. What do you mean by physical methods? Explain the methods prohibited in the field of sports?**

**Ans.** Physical Methods include blood doping, Gene doping.

**Blood doping:** It is an illicit method of improving athletic performance by artificially boosting the blood ability to bring more oxygen to muscles. Blood doping increases the amount of hemoglobin in the blood stream. Since hemoglobin is an oxygen carrying protein



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in the blood. So increasing hemoglobin allows high amount of oxygen to reach and fuel in an athlete's muscles.

**Gene doping:** It is the non-therapeutic use of cells. Or the modulation of gene expression, having the capacity to improve athletic performance. Increased muscle growth, blood production, endurance, oxygen disposal and pain resistance. In such cases nothing unusual would enter the blood stream. The new gene may be identical to the natural gene and may not be in every cell of the body. Some viruses are present in certain organs such as kidney, liver thus only samples taken from these are as can lead to detection.

**Prohibited Substances and Methods:** Prohibited substances and methods are those substances which are banned or prohibited from use in sports. A substance or method is added to the list of prohibited substances and methods if it enhances the sports performances or damages the health of the athlete. In case any athlete takes such substance for therapeutic use he will have to apply to the International federation for exemption.