

PERFORMANCE ENHANCING BANNED DRUGS AND THEIR EFFECTS ON HUMAN BODY OF THE PLAYERS

Dr. Rajkumar Sharma* & Dr. Ashish Kumar Nigam**

ABSTRACT

The purpose of this study was to explore the effect of the main performance enhancing banned drugs on human body of the players of different games and sports. From the review based literatures, author of this article concluded that an athlete should not use the medication of performance enhancing drugs without prior permission from a authentic physician. an athletes should nor forget that the medication of these banned substances by IOC is illegal. These medical drug are effective in treating disease, and have beneficial effects. The magnitude of the side effects is dependent on the amount of the drug that is consumed. But, they have side effect on health of an individual, when they are taken in excessive amount. An athlete is using the doping to obtain quick results in sport competitions. They should also examine the purity of these substances, because of many drug's pharmacy in black market are producing the injection/tablets contained bacteria/ viruses. They produce significant risk for the health and career of an athlete. So, It is Clear that, the game of doping is totally against the worth playing and misconduct in competition.

Keywords: Performance, Banned drugs, side effects, Medication, Players

* Senior Grade Gymnastic Coach, Sport Authority of India, NSTC/STC, Malhar Ashram, Indore (M.P.)

** Sport Officer College of Agriculture, J. N. K.V.V., Tikamgarh (M.P.)

INTRODUCTION

In modern times, the use and abuse of pharmacologically active substances have become so widespread in all over world. The young athletes, professional and amateur athletes could not spared themselves. The coaches, trainers and physicians have already provided them, tablets, injections, vitamins and other stimulating drugs to enhance performance, to reduce inflammation, to reduce pain and to remove anxiety etc. Indeed, athletes often have no knowledge about the immediate and later on toxic effects of many medical drugs. So, It is essential for all the athletes, beginners and professionals to understand the use of these prohibited substance and their severe consequences. It is also essential to know that the substances presented here are normally used for specific diseases. They are not to be consumed without prior permission of physician. As a rule, these substance must be validated by a physician. Because he has right to confirm the correct approach, dosage and health condition of an athlete. Authors of this papers presented the theoretical concept of banned drugs and their effects on human body of an athlete after reviewing the literature of many scientists, researchers and sport physicians in India and abroad.

1. ANABOLIC ANDROGENIC STEROIDS

Anabolic androgenic steroids are most commonly used by the players of weight-lifting, track and field, swimming, ice-hockey events etc. Many researchers indicated that Anabolic androgenic steroids can accelerate muscle size and strength, as well as increase aggressiveness (Haupt, 1984; Wilson & Griffin, 1980). Anabolic androgenic steroids (AAS) are used by some athletes to enhance their performance (Wright, 1978, 1982) These substances are generally taken before several weeks of a competition in the form of tablets or injections. These anabolic steroids have not been adequately sterilized and are knowingly mislabeled. The possible health hazards may arise from the use of these substances.

1.1.1 Causes

Anabolic androgenic steroids may cause depression, paranoid, ideation, overt self-talk, euphoria, irritability, racing thoughts, hyperactivity, psychotic affective syndromes, sleep disorders, anorexia, psychomotor retardation, feelings of guilt, delusion of reference, visual and auditory hallucinations, confusion, nightmares, chronic anxiety, and moderate agoraphobia in athletes (Annitto & Layman, 1980; Freinhar & Alvarez, 1985; Pope & Katz, 1987; Wilson, Prango, & Lara, 1974)

1.1.2 Symptoms

Acne, Muscular rupture, Hair loss (face, regions between and around nipples, back, shoulders, and back of thighs regions), which creates problems of growth in the young athletes, increases and decreases in sex drive, fainting and vertigo, Headaches, excessive aggressiveness, Psychiatric effects: to take place of extreme violence and Dependence.

1.1.3 Side Effects

Liver cancer, Excessive blood cholesterol levels, Prostate cancer, Hypertension, Infarction of the myocardium, Diabetes, Sleep apnea syndrome, Decrease in the size of testicles, Disappearance of sperm in the semen, Reversible sterility, Breast development in men, Castrato-like voice, Aggressiveness and groundless violence.

The common side effects includes the irritations and bleeding of the gastric mucous membranes. Skin eruptions, Ear ringing, Edemas, Bronchial spasms.

Several researchers have conducted study on doping and described the positive effects of Anabolic androgenic steroids i.e. increases the self-confidence and pain threshold (Holzbauer, 1976); arousal elevation, may be needed for enhancing performance (Rejeski, Brubaker, Herb, Kaplan, and Koritnik, 1988); reduce levels of fatigue, enabling longer, more frequent and/or more intense training sessions (Frood, Banks, Longson, & Burley, 1975); positively correlated with heightened mental alertness, mood elevation, improvement of memory and concentration, and the reduction of sensation of fatigue and stimulated central nervous system (Itil, Cora, Akpinar, Hermann, and Patterson, 1974); stimulate neurons of the somatomotor system and circuits associated with aggression (Stumpf & Sar, 1976) and increase the aggressiveness and irritability (Goldman, Bush, and Klatz, 1984., Taylor, 1987 and Wright, 1982). Medical literature suggests that prolonged Anabolic androgenic steroids intake may reduce the quality and longevity of life. Anabolic androgenic steroids have the potential effects on health and well being including depression, chronic anxiety, poor concentration, hypertension, and severe mood disturbances (Pope and Katz (1987, 1988). Anabolic androgenic steroids also elevated the anxiety, inability to cope with stress, suicidal tendency, short attention span, and depression (Corrigan, 1988; Donald, 1993; and Lamb, 1984). Other physical effects includes the backache, testicular shrinkage, hair loss, poor vision, and heart murmur. Increases the risk of violent antisocial behavior was reported by Lubell (1989). Perry, Andersen, and Yates (1990) indicate that the weightlifters were found to have increased hostility, aggression, depression, paranoid thoughts, psychotic features, and personality disturbances. Strauss, (1987) indicated that the use of Anabolic androgenic steroids by an athlete is a cheating by gaining an unfair competitive advantage.

2. CORTICOTROPHIN

Corticotrophin is used to increase the corticosteroid levels in the blood and to produce the associated euphoric effects on the organism.

2.1 Cause:

Corticotrophin may cause an allergic reaction in individuals that have a predisposition towards asthma, urticaria, eczema, etc. Drug injections can cause severe reactions, such as anaphylactic shock.

2.2 Side Effects:

Water retention, edema, hyperglycemia, blood hypertension, modification in the psyche, osteoporosis and decrease in resistance to infections

3. AMPHETAMINES

Amphetamines were first synthesized in 1887. They are generally consumed just prior to competition. The main effects of amphetamines depends on the different activities and their levels. It is a true that they have no positive long term effects on performance of an athlete. An athlete may want to increase his concentration and awareness. Amphetamines are taken to reduce fatigue, increase aggression and self esteem and the users feel in general more strong and ready for a competition.

3.1 Signs and Symptoms

Changes in judgment capacity, repeated occurrence of wounds, increase in recuperation time, stimulation of anxiety.

Facial expression of anxiety, pinched nose, dilated pupils, teeth grinding, dry mouth, a nauseous state, paleness of mucous membranes and on the finger tips -nails, cold extremities,

goose bumps, sudation, palpitations, lowered heart beat, hypertension, erection, loss of vision, nervousness, disorientation relative to people and places, mistrust of one's entourage, incoherent speech, violent acts, personality problem which alters the perception and understanding of reality.

3.2 Acute side effects

Impatience, vertigo, tremors, irritability, insomnia, euphoria, uncontrolled movements, cephalgia, palpitations, nausea, vomiting, confusion, fights, delirium, paranoia, hallucinations, convulsion, cerebral hemorrhage, infarction of the myocardium blood hypertension and circulatory collapse.

3.3 Chronic side effects

Addiction, weight loss, psychosis, paranoid delirium, dyskinesia, behavioral disorders compulsive/ stereotypical / repetitive, vascularity, neuropathies. repeated use of amphetamines may result in chronic fatigue, lethargy, somnolence, depression and penalize a sports activity.

3.4 Positive effects

A decrease in the perception of fatigue, an increase in self-confidence and motor function, decrease in appetite etc..

4. BARBITURATES

Barbiturates such as benzodiazepines and alcohol are usually not considered as ergogen drugs. They may have beneficial effects in some specific situations. Indeed, both substances are effective in reducing tremors.

4.1 Side effects

Sedation, reduced acuteness of vision, lowered vigilance (during vehicle driving), balance problems in walking, decrease memorization capacity, euphoria, withdrawal insomnia, dependence, tolerance, clinical withdrawal syndrome, respiratory distress, and coma etc.

5. DIURETICS

Diuretics stimulate the excretion of water and salts from the body. They also may be consumed to decrease body weight and therefore permit the athletes to enter lower weight categories in weight categories sports. Side effects of diuretics include dehydration, hypovolemia, muscular cramps, and orthostatic hypotension. change in potassium levels.

6. BETA-BLOCKERS

Beta blockers are taken mainly in those sportive practices where the athletes seek calm and precision, like archery, target practice and clay pigeon shooting etc The use of beta-blockers should be strictly prohibited in case of asthma, cardiac insufficiency, digestive tract hemorrhages, occult bleeding, and diabetes. Asthma sufferers can cause bronchial spasms. Beta-blocker may cause insomnia, nightmares and even a depression syndrome and sexual difficulties, such as weakened erection.

6.1 Side effects

Side effects may include hypoglycemia, troubles with digestion, asthenia, muscle cramps, vertigo, circulation problems in the extremities upon exposure to cold, fingers turn pale, insomnia, nightmares, depressive tendencies and changes in the libido, cardiac insufficiency and cardiac rhythm problems

7. CAFFEINE

Caffeine (high doses) stimulates the muscles and the central nervous system. The effects caffeine on the health resembles with cocaine and amphetamines. Caffeine stimulates the central nervous system. Main side effects may include hypercholesterolemia, tachycardia, anxiety, insomnia, headaches etc. This stimulant include acute and chronic type effects on human body of athletes.

7.1 Acute effects

Peptic ulcer, delirium, convulsions, coma, arrhythmia, lesions, and death (about 6 liters dose), nervousness, excitation, irritability, insomnia, tachycardia, blood hypertension, palpitations, headaches, tremors, exaggerated fear or anxiety, increased levels of cholesterol and higher risk of heart attack.

7.2 Chronic effects

Increase in cholesterolemia, increased risk of ischemic cardio-pathy, teratogenic activity carcinogenic activity, risk of breast fibrocystic, problems with digestion, in particular when coffee is mixed with milk.

8. COCAINE

Cocaine is a stimulant of the central nervous system. whose effects are similar to amphetamines and caffeine. Cocaine abuse in the adult represents a significant risk. Competition merely increases the cardiovascular side effects through cardiac hyper-stimulation accompanied by arrhythmia and heart attacks. Main side effects include strong addiction and cardiovascular, cerebrovascular and neurological complications etc.

8.1 Side effects

The side effect may include the ventricular arrhythmia, sudden death, angina pectoris, aortic dissection, myocarditis, brain and meningeal hemorrhage, convulsions, blindness, optical neuritis, habit formation, insomnia, mental confusion, aggressiveness, paranoid delirium, repetitive behaviors, stereotyped movements of the mouth and tongue, anorexia, sex problems, loss of sense of smell, bacterial infections, and spontaneous abortion in females, liver toxicity, gastrointestinal ischemia, hyperthermia etc.

9. NARCOTICS

Narcotics are very strong pain killers. They are often given whenever the sportsman or sportswoman is faced with very great pain while doing sports e.g. boxing. The use of pain killers is frequent in sports, especially among athletes engaged in violent activities. Morphine derivatives are usually used to alleviate pain consequent to trauma, cramps and violent sports. Negative effects include addiction, convulsions, mood alteration, nausea etc.

9.1 Side effects

The most common effect of this class of substances is sedation, providing habitual doses are used. One must be aware of physical and psychological addiction induced by many opiates which are justly classified as narcotics. Possible side effects are .nausea, vomiting, vertigo, memory loss, mood problems, delirium, convulsion crises, addiction, withdrawal syndrome

10. CORTICOSTEROIDS

Corticosteroids have a pain-relieving effect and are anti-inflammatory; the body shows a higher stress tolerance and greater willpower. They are used in sports with long duration.

The possible side effects are to increase in blood sugar levels, presence of glucose in the urine, increase in blood pressure, increase in body weight, osteoporosis, eye disorders, risk of fractures and delayed bone repair, formation of blood clots, decrease in muscle nutrition, muscular atrophy, eye disorders, disorders of the nervous system, muscular cramps, insomnia etc. Corticosteroids can even lead to decrease or an arrest in the growth of young athletes.

11. EPHEDRINE ANALOGS

They are used to treat benign conditions such as a cold. One must be very cautious in examining this class of substances since there are over 50 derivatives which have similar effects. They have acute side effects caused by ephedrine analogs.

11.1 Side effects

The acute side effects include nervousness, irritability, insomnia, anorexia, vertigo, slight increase in blood tension, agitation, confusion, paranoia, mania, hallucinations, ictus, cerebral vascularisation, cerebral hemorrhage, severe hypertension, myocardial ischemia, and ventricular arrhythmia etc.

12. CANNABIS

Most countries consider cannabis as an illegal drug. Over the recent past, the quality of the drug has improved dramatically: the levels of active substances in plants bred nowadays are 10- to 30-fold higher than 15 years ago. Hence, it is difficult to still consider cannabis as a harmless product. Indeed, certain preparations found on the present day market are extremely potent. Consequently, the principal undesirable side effects which are listed below:

12.1 Side effects

Panic attacks, delirium, psychosis and loss of motivation syndrome, increase in carboxy-hemoglobin, pharyngitis, bronchitis, rhinitis, pharyngitis, bronchial spasms, blood shot and light-sensitive eyes, euphoria, depression, hallucinations, deterioration in vigilance and coordination, decrease in sperm production, inhibition of ovulation in women and gynecomastia in men, a faster onset of fatigue during exercise, acceleration of cardiac rhythm, enhanced feeling of thirst and loss of motivation etc.

13. OTHER SUBSTANCES

ACTH stimulates the production of corticosteroid and related anabolic effects. Side effect may include hypertension, hyperglycemia, osteoporosis, weakness of the immune system etc. Insulin is taken because is believed to increase the level of growth hormone, have anabolic effect. Side effects include anxiety, cardiovascular complications, hypoglycemia, damage to the brain etc. Chorionic gonadotropin increase testosterone production and counteract. The consumption of chorionic gonadotropin may lead to thrombosis, psychic disorders etc. Erythropoietin is a hormone which stimulates red blood cells production and thus increases the oxygenation of muscle tissue and physical recovery after physical activity. The increase of blood viscosity due to the gain of red blood cells may cause severe problems such as vascular thrombosis possibly leading to heart attack or stroke. Growth hormone stimulates the growth of men and women and also regulates the metabolism of sugars proteins and fats. It is taken by athletes and in particular bodybuilders for the possible anabolic effects. Side effects include hypertrophy of the viscera, diabetes mellitus, cardiovascular diseases etc (Gottardi and Fimognari, 2009).

BIBLIOGRAPHY

- Annitto, W. J. and Layrnan, W.A.** “Anabolic steroids and acute schizophrenic episode”. Journal of Clinical Psychiatry . 41 (1980): 143-144.
- Donald, K.** “Anabolic steroids in athletes: Crossover double-blind trial on weightlifters”. British Medical Journal. 2 (1983) : 471- 473.
- De Mondenard, J.P.** Dictionary of doping substances and behaviors. Paris: Editions Masson, 1990.
- Freinhar, J.P. & Alvarez, W.** “Androgen-induced hypomania”. Journal of Clinical Psychiatry. 46 (1985): 354-355.
- Gottardi, Michele and Fimognari, L.** “Risk, hazard and reward perception concerning anabolic androgenic steroids intake” Unpublished Master’s Thesis. Roskilde University, 2009.
- Haupt, H.A. and Rovere, G.D.** “Anabolic Steroids: a review of the literature”. American Journal of Sports Medicine. 12 (1984) : 469-484.
- Holzbauer, M.** “Psychological aspects of steroids with anesthetic properties”. Medical Biology. 54 (1976) : 227-242.
- Itil, T.M., Cora, R., Akpinar, S., Hermann, W.M., and Patterson, C.J.** “Psychotropic” action of sex hormones: computerized EEG in establishing the immediate CNS effects of steroid hormones”. Current Therapeutic Research, 16 (1974) : 1147-1170.
- Lamb, D.R.** “Anabolic steroids in athletics: How well do they work and how dangerous are they”? American Journal of Sports Medicine . 12 (1984) : 31-38.
- Lefavi, R.G., Reeve, T.G. and Newland, M.C.** “Relationship between anabolic steroid use and selected psychological parameters in male bodybuilders” . Journal of Sports Behaviour, 13 (1990) : 157-166.
- Lubell, A.** “Does steroid abuse cause or excuse violence”? Physician and Sports medicine. 17 (1989):176-185.
- Manuila, A., Manuila, L., M, and Lambert. N. H.** French Dictionary of Medicine and Biology Volume 4, Paris : Masson, 1971.
- Perry, P.J., Andersen, H. and Yates, W.R.** “Illicit anabolic steroid use in athletes”. American Journal of Sports Medicine. 18 (1990): 422-428.
- Pope, H.G. & Klatz, D.L.** “Bodybuilders psychosis”. Lancet. 1 (1987) : 863.
- Pope, H.G., & Klatz, D.L.** “Affective and psychotic symptoms associated with anabolic steroid use”. American Journal of Psychiatry. 145 (1988): 487-490.
- Prokop, L.** The history of doping, Proceedings of the International Symposium on Drug Abuse in Sports. Seoul, Korea: Korea Institute of Science and Technology, (1990) : 5.
- Strauss, R.H.** Drugs and performance in sports. Philadelphia: W.B. Saunders, 1987.
- Taylor, W.N.** “Anabolic steroids: a plea for control chiropractic” Sports Medicine. 1 (1978) : 47-52.
- Wilson, I. C. and Griffin, J.E.** “The use and misuse of androgens”. Metabolism . 29 (1980): 1278-1295.
- Wilson, I.C.: Prange, A.J. and Lara, P.O.** “Methyl-testosterone and imipramine in men: conversion of depression to paranoid reaction” . American Journal of Psychiatry . 131 (1974) : 21- 24.

Wright, J.E. “Anabolic steroids and sports”. Natick, MA: Sports Science Consultants, 1978.

Wadler, G. I. and Hainline B. “The Athlete and Doping, Drugs and Medication”, Sport assignment, Editions Vigot, Paris, 1993,

INTERNET SOURCE

Chapman D. <http://www.abcfitness.com/artic/storia.htm>

Garattini S. <http://www.sportedoping.it /portal/ default>. 2005.

Rivier, Laurent. www.coachingireland.com 12 October, 2007

<http://www.uci.ch/Modules/Builtin/getObject>.