

Comparative Analysis of the use of Doping Drugs for Performance Enhancement among Indian and International Weightlifters.

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ABSTRACT

The aim of this study is to make a comparative analysis of the use of doping drugs among Indian and International Weightlifters for Performance Enhancement at the time of Competition and Training Sessions. The present study was designed to collect data on the cases of those Weightlifters who were found guilty of abusing drugs banned by the WADA, NADA, and International Olympic Committee, at various National and International Games. The relevant data pertaining to players who were declared positive in doping tests by IOC Medical Committee, NADA, and WADA was sourced from their official websites respectively.

Keywords: *NADA, WADA, IOC, Doping, Drugs, Performance Enhancement, Prohibited Substances, Anabolic-androgenic steroids.*

Historical Background: The first evidence of doping in athletics dates back to the Ancient Olympics when athletes were said to have consumed figs to boost their performance. Many sportsmen know that approaches are being created to help stem the tide of Violence. In the beginning, it was to experiment with chemical mixtures to boost strength and overcome exhaustion after the introduction of modern pharmacology in the 19th century. [1] Because this was not an unlawful activity, there are many records of the extent to which athletes would go to win. Along with the advantages came the risks, and after multiple deaths, a code to prohibit performance-enhancing medications was gradually formed. In the 1950s, growth hormone was extracted from the pituitary gland of humans. Its anabolic properties were quickly recognized, and athletes had begun to abuse it by the early 1980s, at least a decade before adult endocrinologists began using it therapeutically. Several well-known athletes have admitted to using growth hormones. It has been difficult to detect its abuse, and the lack of an adequate test has likely promoted it.

Introduction: "Competing clean is not only a key principle in preserving the integrity and fairness of sport, for the benefits of athletes, coaches and fans alike, it also helps in protecting the image of players and above all, your health. Doping robs you of all of these things. As a clean athlete, you can take pride in your performances." [2]

Doping is a serious problem in sports physiology today, both at the national and international levels. This is not only about health, but also about the moral and ethical ideals of humanity that influence the honest team spirit of sports competition. Initially, the term "doping" was limited to blood doping, but today, the scope of doping has expanded to

the point that available tests are useless in detecting it. Any behavior that leads to the use of certain medicines with the goal of improving performance or stamina in sport is referred to as doping, and it is deemed immoral by relevant organizations. Such activities can occur at both the national and international levels. This topic has been declared illegal by the International Olympic Committee (IOC). Sportspeople frequently use drugs to increase their performance without fear of being detected and are often unaware of the long-term effects these medications can have on their bodies. This not only shatters the spirit of sportsmanship but also highlights corruption and unethical athlete victory. The International Anti-Doping Agency makes the decision and declares the winner. Doping is defined as the use of substances on a forbidden list, as well as the use of such substances and procedures. Winning is crucial today since it brings in a lot of money and helps athletes advance their careers. For this reason, instructors are more focused on enhanced performance for winning a tournament, instead of the spirit of sportsmanship and the essence of participating in a sport which is – enjoyability. It doesn't matter if you win or lose a competition; what counts is that you participate with this enthusiasm. Athletes have taken drugs for performance improvement in the past; therefore, drug usage is a continuing, ever-evolving, and one of the most serious issues in the sports world. Even Performance-enhancing medications are also used by impaired athletes. Doping is putting the sport in danger. It puts pressure on athletes all across the world, completely destructing the discipline of free and fair competitions. Sportspeople serve as role models for young people, therefore if doping is simply seen as a minor issue, it will have a negative impact. If we're talking about sports authority, that's not correct since there's a probability that young people will get involved. Following in the footsteps of these athletes, the next generation may be tempted to dope as well.[3]

Meaning of doping: Doping has been around for a long time. Doping is the use of chemical compounds that are alien to the body in order to enhance sports performance. Doping is defined as the use of substances or the use of methods to artificially improve an athlete's performance during competition or preparation.

Doping is defined as breaking any of the code's anti-doping rules, which are included in Articles 2.1 through 2.8.

One or more of the following anti-doping rules are used to define doping. [4]

- (1) Inclusion of performance-enhancing substances in a sample.
- (2) Making use of an illegal substance or method.
- (3) After being notified, refusing to submit a sample.

- (4) Failure to provide information on where the formation is located.
- (5) Attempting to tamper with the doping control procedure.
- (6) Having a forbidden substance in your possession.
- (7) Prohibited substance trafficking.
- (8) Giving an athlete a forbidden substance or method to use.

List Of Prohibited Substances And Their Side Effects:[5]

Performance-enhancing drugs are banned from sports but this does not stop athletes from taking them.

1 Anabolic Steroids: When these are taken the body breaks them down into smaller molecules that can enter cells and bind to a structure called an androgen receptor. Normally testosterone binds to this but anabolic steroids can too. Once the androgen receptor is activated body starts to produce more proteins during the process of anabolism, and the cells in the skeletal muscles start to replicate and this means muscles will start to grow and become stronger. Anabolic steroids help athletes train harder and recover faster by shortening catabolism the process in which proteins are broken down into amino acids. However, not all effects of anabolic acids are positive, they can also cause acne, high blood pressure, and baldness in both men and women, and they can cause men's testicles to shrink, decrease sperm count and increase the risk for prostate cancer and women using these steroids can develop facial hair, a deepened voice and their periods may change or even completely stop.

2 Creatine: Creatine is a naturally occurring compound that aids in the energy release of your muscles. Creatine may have some athletic benefits, according to scientific evidence, by producing small gains in short-term bursts of power. Creatine appears to aid muscle production of adenosine triphosphate (ATP), a molecule that stores and transports energy in cells and is used for high-intensity activities like weightlifting and sprinting. The **side effects** of creatine are stomach and muscle cramps and weight gain.[6]

3 Stimulants: Stimulants are used by athletes to increase blood pressure to stimulate the brain and increase the heart rate, this increases endurance power, and reduces appetite and fatigue. Caffeine is a very common stimulant and is taken by athletes in large quantities in their energy drinks this makes them more alert and aggressive. The **side effects** of stimulants are heart diseases, dehydration, insomnia, addictions, and weight loss.

4 Diuretics: Athletes prefer diuretics as by this there is water loss from the body which reduces the weight. The **side effects** of diuretics are dehydration, dizziness, cramps, and sometimes death.

5 Erythropoietin: It is used to increase endurance as it increases the oxygen flow to muscles by increasing the production of red blood cells in the body in the 1990s eighteen cyclists died due to the erythropoietin. The **side effects** of erythropoietin are heart attacks and blockage of arteries of the lungs.

6 Human Growth Hormone: It increases athletes' sprinting capacity by up to 4% and increases muscle growth as well. The **side effects** of taking human growth hormone are pain in joints, weakness of muscles, diabetes, hypertension, and eye problems.

7 Blood doping: The goal of blood doping is to increase the amount of oxygen-carrying red blood cells in the blood and this is usually done with either blood transfusions using own blood or by injecting with erythropoietin a molecule that stimulates the production of more red blood cells and the basic idea is that the more oxygen that can get to bodies muscles the more endurance The **side effects** of blood doping are heart diseases as it becomes difficult for the heart to pump blood due to the thickening of the blood and cerebral embolism.[7]

8 Gene doping: Body cells or genes are manipulated by the use of substances that improve performance. In 2003 WADA added gene-altering techniques to the list of prohibited substances however gene doping is not as popular as blood doping as it is costly and is risk-oriented too. The **side effects** of gene doping are increased blood viscosity, hypertension, abnormal vision, and headache.[8]

Anti-Doping Agencies

Doping control is an essential part of anti-doping programme to promote and protect sports' integrity and athletes' health.

World Anti-Doping Agency [9]

The World Anti-Doping Agency is a foundation initiated by the International Olympic Committee based in Canada to promote, coordinate and monitor the fight against doping in sports.

List of Prohibited Substances by WADA (2022)[10]

1. Peptide Hormones, Growth factors, related substances, and mimetics.
2. Beta-2 Agonists.

- 3. Hormone and Metabolic Modulators.
- 4. Diuretics and Masking agents.
- 5. Stimulants.
- 6. Glucocorticoids.

National Anti-Doping Agency:[11]

The National Anti-Doping Agency is responsible for promoting, coordinating, and monitoring the doping control programme in sports in the country. Its vision is a dope-free sport in India. The functions of NADA are implementation of anti-doping rules, anti-doping policies to be adopted and implemented increase testing, and promote research in education for anti-doping. NADA is responsible for conducting tests in competitions.

Anti-Doping rules of NADA:

Anti-Doping rules placed a strict liability on athletes that they have to keep themselves up to date about substances that enter their bodies. However, many sportspersons in India are not educated enough to be aware of the substances that amount to doping.

Methodology:

The present study was designed to collect data on the cases of Indian and International Weightlifters who have been found guilty of using abused drugs by the NADA, WADA. This paper gives a critical analysis regarding the comparison of drugs consumed by Indian weightlifters with International Weightlifters for Performance enhancement. The basic sources of data pertaining to players who have been declared positive in doping test by NADA testing laboratories, IOC Medical Committee, and WADA at Various National and International tournaments were collected from the official website of NADA and WADA. A list of Indian Weightlifters (10 Subjects) was randomly selected from the published data of NADA regarding athletes that tested positive for dope substances and sanctions imposed by the Anti-Doping Disciplinary Panel in the year 2016.[12] The list of International Weightlifters who have consumed drugs and tested positive were all medal winners at the London Olympics 2012 and Rio Olympics 2016 (10 Subjects). This data was taken from the List of stripped Olympic medals issued by the governing body of the IOC.[13]

Table-1 [12]

S.no	Name	Country	Drug Consumed	Effects on Performance	Side Effects on Health
1	Ms. Manpreet	India	Testosterone	Helps in hard	High Blood

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	Kaur			training and Faster recovery after training sessions.	pressure and facial growth among women.
2	Ms. Geeta Devi (Double case)	India	Methandionene & Testosterone	Helps in Muscle Building.	Liver and Heart Diseases.
3	Ms. Hakirat Kaur	India	Testosterone	Helps in Muscle Building.	Liver and Heart Diseases.
4	Mr. Jameer Hussain	India	Testosterone	Helps in Muscle Building.	Liver and Heart Diseases.
5	Ms. Mhaskar Meghali	India	Methandionene	Anabolic steroid- Helps in Muscle Building.	Estrogenic effects like fluid retention, liver damage, Hair growth, voice changes.
6	Mr. Ansu Singh	India	Nandrolone	Tissue Building Booster, Maintaince of muscle mass.	Hypertension, Diarrhea, Jaundice and Menstrual abnormalities in females.
7	Parneichong Kom Mangte	India	Nandrolone	Tissue Building Booster, Maintenance of muscle mass.	Hypertension, Diarrhea, Jaundice and Menstrual abnormalities in females.
8	Ms Apurba chetia	India	Testosterone	Helps in Muscle Building	Liver and Heart Diseases.
9	Mr. Rajesh Prasad	India	Testosterone	Helps in Muscle Building.	Liver and Heart Diseases.
10	Ms. Sonia Rani	India	Nandrolone	Tissue Building Booster,	Hypertension, Diarrhea, Jaundice and

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				Maintaince of muscle mass.	Menstrual abnormalities in females.
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Table-2 [13][14]

S.no	Name	Country	Drug Consumed	Effects on Performance	Side Effects on Health.
1	Svetlana Podobedova	Kazakhstan	Stanazolol	Helps in Muscle building.	Liver and Heart Problems
2	Maiya Maneza	Kazakhstan	Steroid- Stanozolol	Muscle Hypertrophy.	Hypercalcemia, Prostate Cancer.
3	Zulfiya Chinshanlo	Kazakstan	Steroid- Stanozolol & Oxandrolone	Androgen- Increases Muscle Mass.	Facial Growth, Voice change in Females.
4	Svetlana Tsarukaeva	Russia	Turinabol- Dehydromethyl testosterone	Helps in Muscle building.	Facial Growth, Voice change in Females.
5	Nijat Rahimov	Kazakhstan	Anabolic steroids.	Helps in Muscle building.	Hypercalcemia, Prostate Cancer
6	Gabriel Sincaian	Romania	Testosterone	Helps in Muscle building.	Liver and Heart Problems.
7	Izzat Artykov	Kyrgyzstan	Strychnine	Performance enhancer.	Respiratory failure , kidney failure.
8	Natalya Zabolotnaya	Russia	Turinabol	Helps in Muscle building.	Liver and Heart Problems.
9	Yuliya Kalina	Ukrainian	Turinabol- Dehydromethyl testosterone.	Steriods	Cardiac Problems.
10	Aleksandr Ivanov	Russia	Turinabol- Dehydromethyl testosterone.	Harmone Receptors	Heart problems and Liver Problem.

Discussions of Findings:

As per the study conducted all Weightlifters from foreign countries and Weightlifters from India were taking drugs for performance enhancement were mostly Anabolic-androgenic

steroids (AAS) and Stimulants in the form of Testosterones, Turibinol, Nandrolone, Methandionene, Dehydromethyl, Tamoxifen, Stanozolol & Oxandrolone. Anabolic-androgenic steroids (AAS) are usually used to build muscle mass, and as a result, they are linked to activities that need a high level of strength and peak power. In the above table 2 all the mentioned weightlifters were Olympic medalists at the London 2012 Olympics and Rio 2016 Olympics after failing the dope test the IOC stripped their medals for violating the anti-doping rules. Sometimes it suspects that the doping problem is within the IWF. They believe that there were few officials within the National and International Federations of Weightlifting who were promoting a doping culture among weightlifters which is why weightlifters all over the world were consuming drugs free of fear. IWF also changes all weight categories in the weightlifting for men and women for the 2020 Tokyo Olympics but this also proves nothing [15].

A depressing issue for such historic sports:

Weightlifting was one of just nine sports at the first Olympics in 1896, but its days on the summer programme may be numbered. Weightlifting has had doping issues for decades but the issue has become so widespread that the IOC has previously threatened to withdraw its Olympic status. [16] Weightlifting also dominated the Indian doping scene to such an extent that the IWF International Weightlifting Federation suspended the country twice between 2004 and 2006 for having too many Indian competitors testing positive in Internationals. [17]

The study also revealed that these life-threatening drugs are easily and openly available to sportsperson. It is suggested that sportspersons need to be made aware of doping and doping laws. Strict laws should be imposed on the pharmacist for selling such drugs to athletes without any prescriptions. After critical analysis of literature it was seen that low pricing anabolic androgenic steroids (AAS) drugs and its consequent affordability is one of the reasons for weightlifters to have easy access to these drugs. The study also highlighted how do Indian players get free access to banned drugs - that too outside the prestigious National Institute for Sports in Patiala where Anabolic steroidal drugs are openly sold over the counter at chemist shops just a few hundred meters away from the NIS in Patiala. [18]

The study also indicates that the majority of Indian weightlifters used testosterone. The physiological characteristics of testosterone are an androstanoid called testosterone has 17 beta-hydroxyl and 3-oxo groups as well as C-4-C-5 unsaturation. It functions as an androgen, a human metabolite, a metabolite in *Daphnia magna*, and a metabolite in mice. It is a C19 steroid, androstanoid, 17beta-hydroxy steroid, and 3-oxo-Delta (4) steroid. [19] From the findings of the study it is evident that majority of weightlifters competing internationally took turinabol (Chlorodehydromethyl testosterone). Turinabol has 4-

Chloromethandienone, a 3-hydroxy steroid, as one of its chemical constituents. It plays the part of an androgen.[20] Being the only AAS developed for non-medical uses, turinabol is a strong oral anabolic steroid with a distinctive history.[21]

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