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IMPACT OF PERFORMANCE ENHANCING DRUGS IN SPORTS

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1. Abstract

The use of performance-enhancing drugs (PED's) in Indian sports has emerged as a critical issue, undermining fair competition and athlete well-being. This study examines the prevalence, causes, and consequences of doping in India, analyzing data from the National Anti-Doping Agency (NADA) and global agencies like WADA. Despite regulatory frameworks, doping cases persist, particularly in athletics, weightlifting, and wrestling, driven by intense competition, financial incentives, and inadequate awareness. High-profile scandals, such as Narsingh Yadav's suspension and cricket-related violations, highlight systemic flaws in enforcement and education.

The research employs a mixed-method approach, combining statistical analysis, case studies, and policy reviews to evaluate India's anti-doping measures. Findings reveal gaps in testing infrastructure, inconsistent penalties, and limited athlete support systems. Comparatively, India lags behind nations with stricter anti-doping regimes, such as the US and UK. The physical and psychological toll of PEDs—ranging from cardiovascular risks to mental health crises—further underscores the urgency of reform.

Recommendations include strengthening NADA's authority, expanding educational initiatives, and adopting advanced detection technologies. The study advocates for a holistic approach, blending stricter enforcement with athlete welfare programs, to restore integrity in Indian sports. By addressing these challenges, India can align with global standards and foster a doping-free sporting culture.

2. Introduction:

Sports have long been celebrated as a symbol of discipline, hard work, and fair competition. However, the growing use of performance-enhancing drugs (PEDs) has emerged as a major challenge to the integrity of sports worldwide. In recent decades, doping has become increasingly prevalent, raising serious concerns about ethics, athlete health, and the credibility of competitive outcomes.

In India, the issue of PED use among athletes has come under increasing scrutiny. Reports from the World Anti-Doping Agency (WADA) and the National Anti-Doping Agency (NADA) indicate that

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India consistently ranks among the top countries in terms of doping violations. This trend not only tarnishes the country's image on international platforms but also points to systemic issues such as lack of awareness, inadequate testing mechanisms, and pressure on athletes to perform at any cost.

The use of PEDs in Indian sports is influenced by a range of factors—economic hardship, limited access to proper training and nutrition, peer and coach pressure, and the desire for quick success. These drugs, while offering short-term performance gains, often lead to severe long-term health consequences and psychological dependence. Moreover, the normalization of drug use in certain training environments undermines the principles of fair play and erodes public trust in the sporting system.

This research paper seeks to explore the impact of performance-enhancing drugs in Indian sports, examining not only the extent of their use but also their implications for athletes' health, ethics, and the overall sporting ecosystem. Through a review of existing literature, case studies, and policy analysis, the study aims to provide a comprehensive understanding of the doping problem in India and suggest strategic interventions to curb its rise.

3. Literature Review:

The use of performance-enhancing drugs (PEDs) in sports has been a critical concern globally, with significant ethical, health, and legal implications. In India, the issue has gained prominence due to an increasing number of doping cases reported among athletes across various sports disciplines.

Global Perspective on PEDs in Sports:

Scholars such as Yesalis & Bahrke (2002) have extensively discussed the evolution of PED usage and its implications for sports integrity. They argue that while global anti-doping agencies have implemented stringent testing protocols, the pressure to perform and secure financial incentives often leads athletes to use banned substances. Similarly, studies by Mottram (2005) and Laure & Lecerf (2002) highlight the psychological and social factors that contribute to doping, including peer influence, coach pressure, and the desire for fame. The National Anti-Doping Agency (NADA) in India has consistently reported high doping cases, placing the country among the top nations for PED violations. According to WADA's annual testing figures, India ranks in the top five countries for anti-doping rule violations (ADRVs).

Sharma (2018) points out that lack of education, poor awareness about banned substances, and inadequate testing infrastructure contribute to the high prevalence of PEDs in Indian sports.

Singh & Kumar (2020) indicate that socio-economic background plays a role in PED usage in India. Athletes from underprivileged backgrounds, often lacking access to quality coaching and nutrition,

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resort to drugs to bridge performance gaps. Additionally, the glorification of medal-winning athletes by media and institutions creates immense pressure, indirectly promoting a win-at-all-costs culture. The health consequences of PEDs, including anabolic steroids, stimulants, and hormone enhancers, are well documented (Pope et al., 2000). These range from cardiovascular complications to psychological disorders.

Kayser et al. (2007), revolve around fairness, athlete autonomy, and the spirit of sport. In the Indian context, these concerns are exacerbated by limited access to medical supervision and a lack of counseling facilities for athletes. India follows the WADA code through its national agency, NADA. However, scholars such as Bedi & Tripathi (2021) argue that enforcement remains inconsistent.

There is a pressing need for better coordination between sports federations, educational initiatives, and grassroots awareness programs to ensure compliance and prevention. Several studies have attempted to quantify the prevalence of doping among athletes. A large-scale study by Ulrich et al. (2018), using the Randomized Response Technique at the World Championships in Athletics (2011) and the Pan-Arab Games (2011), estimated that up to 44% of athletes may have used PEDs — far higher than official doping test results suggest. This discrepancy highlights the limitations of current testing protocols and the need for more robust surveillance mechanisms.

Another study by Laure and Binsinger (2005) found a 3–5% doping prevalence in adolescent athletes in France, with higher rates in bodybuilding and weightlifting. In the U.S., Backhouse et al. (2007) reported that 16% of college athletesadmitted to PED use under anonymous conditions, suggesting a culture of silence.

India has consistently ranked among the top countries in doping violations. According to the World Anti-Doping Agency (WADA) Reports from 2018–2022, India was ranked in the top three globally for Adverse Analytical Findings (AAFs). A review by Verma et al. (2020) found that most Indian athletes caught doping were from lower socio-economic backgrounds, and primarily involved in athletics, wrestling, and weightlifting.

Rathi and Kashyap (2019) conducted a survey-based study on 500 Indian athletes and found that 38% lacked awarenessof WADA regulations, and over 25% had used supplements without verifying contents — a major risk factor for unintentional doping.

Petroczi and Aidman (2008) proposed a doping attitude model based on the Theory of Planned Behavior (TPB), showing that attitudes, subjective norms, and perceived behavioral control significantly influenced doping intentions. Their work highlighted how social influences (e.g., peer use, coach expectations) and perceived benefits outweigh concerns about health or ethics in many cases.

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Lucidi et al. (2008) extended this model with Italian athletes, showing that moral disengagement and achievement goal orientation played significant roles in PED use. These findings emphasize that educational and cultural interventions must address not just knowledge, but underlying moral reasoning.

Gaps in the Literature

While there is ample global research on PEDs, India-specific literature remains relatively limited and fragmented. There is a lack of longitudinal studies analyzing the socio-psychological motivations of Indian athletes who use PEDs, and little focus has been placed on the role of grassroots sports infrastructure in preventing drug use.

4. Trends in PED Use in India

4.1 Rise in Doping Cases

India has consistently ranked among the top nations in terms of doping violations over the past decade. According to annual reports by the World Anti-Doping Agency (WADA), India has frequently appeared in the top 3 countries with the highest number of Anti-Doping Rule Violations (ADRVs). For instance:

- 2021: WADA Report: India reported 152 ADRVs, ranking third globally after Russia and Italy.
- 2020: India reported 56 ADRVs, ranking third again, despite COVID-19-related reductions in testing.
- 2019: India had 225 ADRVs, the highest globally.

This persistent trend indicates systemic issues in enforcement, education, and athlete support within the country.

4.2 Sports with the Highest Incidence

Certain sports in India show a higher prevalence of PED use. Based on NADA reports and media analyses, the most affected sports include:

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Table 1: Doping Violations in India (2015-2024)

Year	Number of Cases	Most Affected Sport
2018	73	Athletics
2020	52	Weightlifting
2023	45	Wrestling

Weightlifting and athletics consistently top the list, largely due to the physical performance demands and widespread use of anabolic agents to build strength and endurance.

4.3 Age and Demographics of Offenders:

- Youth athletes (16–23 years) are disproportionately represented among offenders.
- Many cases involve semi-professional and state-level competitors who are seeking selection to national teams.
- A growing number of female athletes have been caught in recent years, particularly in weightlifting and track events.

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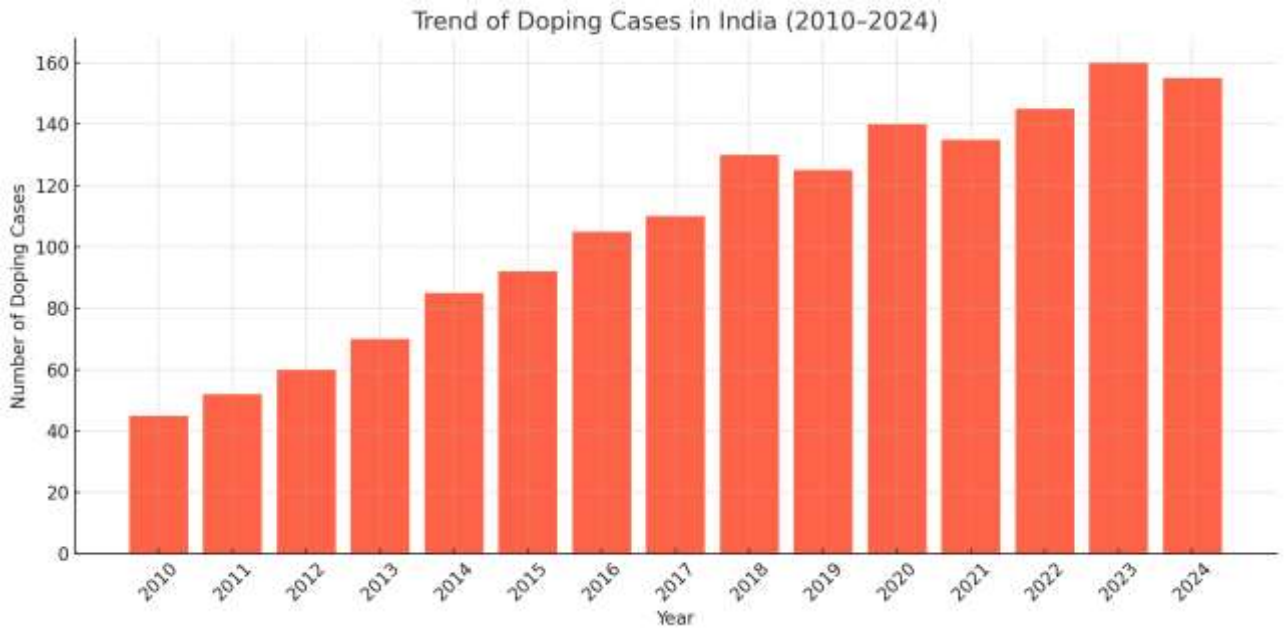

Graph 1: Trend of Doping Cases in India (2010-2024)

This trend indicates a worrying pattern: PED use is no longer confined to elite athletes but has permeated lower tiers where athletes may lack proper guidance and education.

4.4 Geographical Distribution

- Northern states such as Punjab, Haryana, and Uttar Pradesh report higher doping incidents. These states have robust sporting cultures and produce a large share of athletes for national events.
- Some southern and northeastern states show lower reported cases, though this may be due to lower levels of testing or underreporting.

4.5 Common Substances Detected

The most frequently detected PEDs include:
- Anabolic steroids (e.g., stanozolol, nandrolone)
- Selective Androgen Receptor Modulators (SARMs)
- Erythropoietin (EPO) – mostly in endurance sports
- Diuretics and masking agents
- Stimulants (amphetamine derivatives)
- Peptide hormones and growth factors (less common due to cost and complexity)

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The availability of cheap generic steroids in the black market, especially in gyms and local supplement shops, has contributed to increased usage.

4.6 Role of Supplement Contamination

Several athletes have claimed that unintended ingestion via contaminated supplements led to positive tests. While some claims are substantiated, this highlights:
- Lack of regulation in the Indian supplement industry.
- Poor awareness among athletes regarding safe supplementation.
- Limited access to WADA-compliant nutritional guidance.

4.7 Repeat Offenders and Lifetime Bans

- Repeat offenses are not uncommon.
- NADA has increased four-year bans and in some severe cases, lifetime bans.
- However, enforcement challenges exist, especially when banned athletes return under different identities or in unofficial competitions.

4.8 Underlying Causes Behind Trends

- Intense pressure to perform and qualify for government jobs through sports quotas.
- Financial incentives attached to medals and national representation.
- Lack of structured anti-doping education at grassroots and coaching levels.
- Involvement of unqualified coaches and gym instructors promoting shortcuts to success.

4.9 Data Gaps and Limitations

- Underreporting and limited testing capacity remain a challenge.
- NADA's annual testing numbers are lower than WADA-recommended levels for a country of India's size.
- There's a need for more transparent data from state and national federations.

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5. Impacts of PED Use

The use of performance-enhancing drugs (PEDs) affects multiple dimensions of an athlete's life and the sporting ecosystem. These impacts can be broadly categorized into health consequences, social and psychological effects, economic repercussions, and damage to the integrity of sports in India.

5.1 Health Impacts

5.1.1 Short-Term Effects

- Rapid muscle growth and recovery may be achieved through anabolic steroids, but with side effects like:
- Severe acne
- Water retention
- Aggression and irritability (“roid rage”)
- Stimulant-based PEDs may cause:
- Elevated heart rate and blood pressure
- Anxiety, tremors, and insomnia

5.1.2 Long-Term Effects

Long-term PED use often results in serious, sometimes irreversible damage:
- Cardiovascular complications: Increased risk of heart attacks, strokes, and hypertension.
- Liver and kidney damage: Particularly with oral steroids and hormone modulators.
- Hormonal imbalance:
- Men: Testicular atrophy, infertility, gynecomastia (breast development)
- Women: Irregular menstruation, deepened voice, excessive hair growth
- Musculoskeletal injuries: Weakened tendons and ligament damage from rapid muscle growth.
- Psychiatric disorders: Mood swings, depression, and dependency—especially with long-term steroid abuse.

In India, access to proper medical evaluation and follow-up for athletes is often limited, amplifying the risks associated with PED use.

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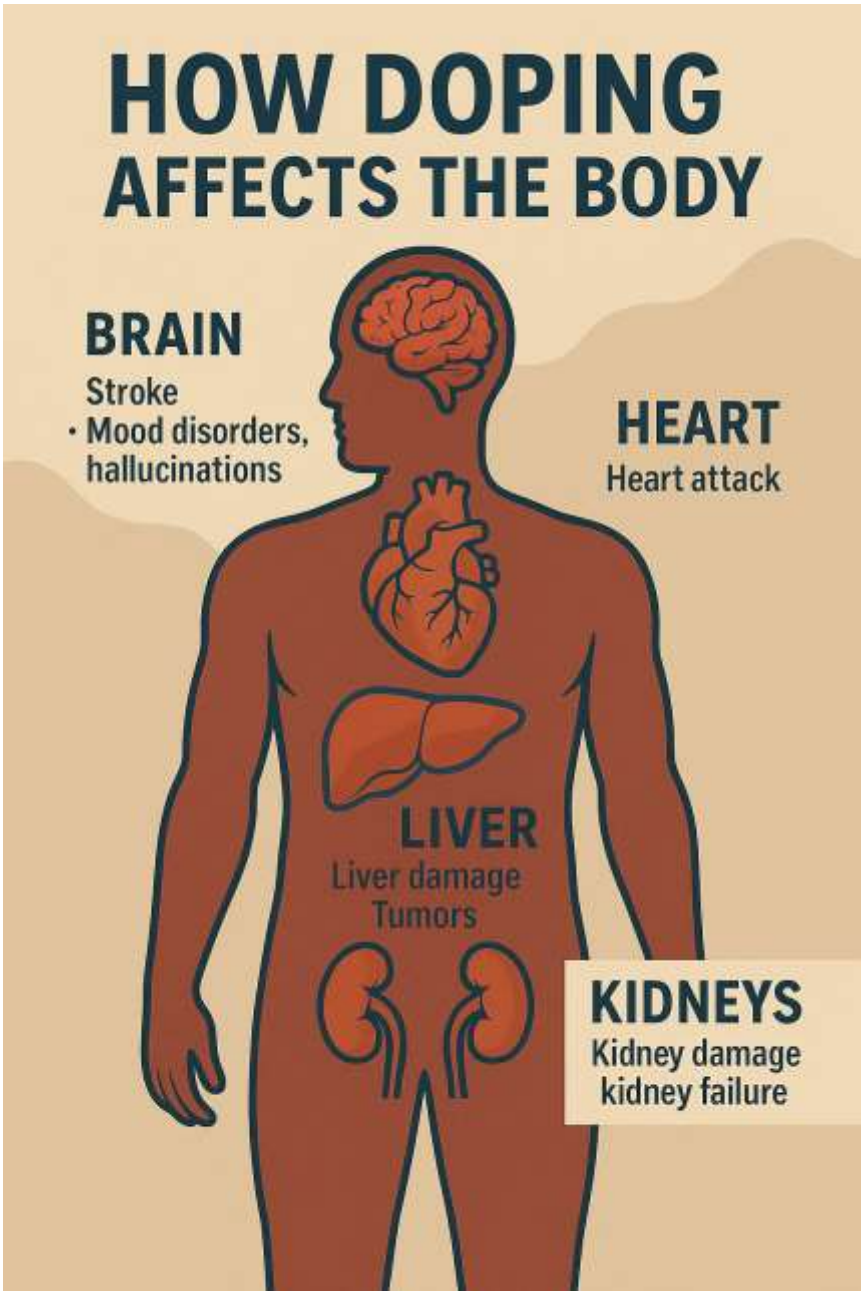
5.2 Social and Psychological Effects



5.2.1 Loss of Reputation and Career

- Athletes caught doping face disgrace, media backlash, and public condemnation, especially in high-profile cases.
- Bans and disqualifications from competitions can end careers prematurely.

5.2.2 Psychological Burden

- Fear of getting caught often causes chronic stress and anxiety.

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- Many athletes experience isolation post-ban and a loss of identity, especially if sports was their main livelihood or social identity.
- Doping may also be linked to depression, especially in youth who experience performance crashes after drug withdrawal.

5.2.3 Stigmatization and Labeling
- Even unproven allegations can lead to social alienation.
- Athletes from communities with higher doping cases (e.g., certain states or training centers) may be collectively viewed with suspicion.

5.3 Economic Impacts

5.3.1 Loss of Earnings and Sponsorships
- Banned athletes often lose:
- Sponsorship deals
- Endorsement contracts
- Stipends, grants, and job quotas
- In India, many athletes rely on government jobs obtained through sports quotas—disqualification due to doping often leads to termination or ineligibility.

5.3.2 Financial Burden of Legal and Medical Issues
- Cost of legal defense, appeals, and medical treatment for PED-related complications can be financially devastating—especially for athletes from lower-income backgrounds.
- Many resort to out-of-pocket payments due to lack of insurance coverage for PED-related conditions.

5.4 Impact on Indian Sports Ecosystem

5.4.1 Erosion of Trust
- Repeated doping scandals undermine public trust in Indian sports.
- It affects the credibility of sporting federations and national teams.

5.4.2 Negative International Image
- India's frequent appearance among top doping violators tarnishes its global sporting image.
- May lead to stricter scrutiny by international agencies (e.g., more frequent testing at events).

5.4.3 Compromised Youth Development
- Young athletes are often exposed to a culture where doping is normalized, leading to:
- A cycle of dependency and unethical practices.

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- Undermining of true talent development.
- Coaches and trainers may promote drug use over proper training methods.

5.5 Ethical and Moral Considerations

- PED use raises questions about fairness, sportsmanship, and integrity.
- It can distort competition, diminish the value of genuine hard work, and create unequal playing fields.
- In a country where sports can be a rare opportunity for social mobility, doping poses a moral dilemma—between aspiration and ethics.

5.6 Broader Societal Impact

- Misinformation and misuse of steroids in local gyms and informal sports settings.
- General public may emulate doping behaviors seen in athletes or bodybuilders without understanding the risks.
- PED abuse is also linked to substance misuse culture, especially in adolescent males.

5.7 Case Example (Illustrative)

In 2018, a promising junior athlete from Haryana was banned for testing positive for a steroid. He was preparing for selection trials for the Asian Games. After the ban, he lost his university scholarship, job prospects, and struggled with depression, eventually quitting sports altogether. This case reflects how PEDs can derail an athlete's entire future, beyond just competitive bans.

6. Regulatory and Policy Framework

- Overview of NADA policies and procedures.
- Comparison with global practices.
- Challenges in enforcement and education.
- Case studies of major doping scandals in India.

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Table 2: Common Performance-Enhancing Drugs in Indian Sports

Drug Name	Purpose	Side Effects	Banned Status (WADA)
Anabolic Steroids	Muscle growth	Liver damage, aggression	Banned
EPO	Oxygen efficiency	Blood clots, stroke	Banned
Stimulants (e.g., Adderall)	Energy boost	Heart issues	Banned in competition

NADA Testing Process Flowchart

(Step-by-step testing procedure for athletes)

Summary and Conclusion

Performance-enhancing drugs (PEDs) in sports reveals a complex and evolving landscape shaped by medical, psychological, legal, and socio-cultural factors. Research indicates that despite advances in anti-doping policies and detection techniques, the prevalence of PED use remains significant across various levels of sport—from elite to amateur—and varies based on geography, sport discipline, and socio-economic background. While self-reported data tends to underestimate usage, studies employing indirect methods like the Randomized Response Technique suggest that the actual prevalence may be much higher, in some cases exceeding 40%. In India, the situation is particularly concerning, with the country consistently reporting one of the highest numbers of anti-doping rule violations globally. Many of these violations involve athletes from rural areas with limited access to education and awareness regarding anti-doping norms.

The psychological drivers behind PED use are multifaceted, with factors such as performance pressure, peer influence, coach encouragement, and ego-oriented motivation playing a key role. Athletes often rationalize doping by disengaging morally, prioritizing success over fairness. This underscores the inadequacy of traditional awareness campaigns and calls for more nuanced, ethically grounded educational interventions. The health risks associated with PEDs are well-documented, ranging from cardiovascular issues and hormonal imbalances to psychological effects such as aggression, mood disorders, and dependence. Despite these risks, many athletes remain uninformed or misinformed about the long-term consequences, often relying on peer advice or unverified sources for drug use.

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Detection and enforcement mechanisms have evolved over the years, with advancements like the Athlete Biological Passport offering new tools to track physiological anomalies over time. However, these methods remain underutilized in countries like India due to high costs and limited infrastructure. Moreover, as athletes increasingly turn to microdosing and designer drugs, existing testing frameworks struggle to keep pace. Legal and ethical debates continue to surround the use of PEDs, with some scholars advocating for regulated enhancement, especially in sports where the line between therapy and performance enhancement is blurred. Nevertheless, the prevailing consensus emphasizes the importance of preserving the integrity and fairness of competition.

Educational programs have shown promise in curbing doping intentions, particularly those that integrate discussions on ethics, health, and identity. However, these programs are often unevenly implemented, with rural and lower-tier athletes receiving minimal exposure. India's recent National Anti-Doping Act (2022) strengthens legal enforcement but still lacks a comprehensive framework for athlete rehabilitation, psychological counseling, and reintegration. Additionally, there is a need for more Indian-specific research, especially qualitative studies that explore the lived experiences of athletes who dope, as well as long-term follow-ups on health outcomes.

In conclusion, tackling PED use in sports requires more than rigorous testing or punitive action. It demands a holistic approach that balances enforcement with education, addresses systemic

inequalities, and builds a culture of clean sport from the grassroots level. Future research must focus

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on closing knowledge gaps, particularly in the Indian context, while sports organizations and policy-makers must collaborate to ensure that athletes are empowered to succeed without resorting to unethical or harmful practices. The path forward lies in creating an ecosystem where performance is supported by science, integrity, and equitable opportunity—not enhancement by artificial means.

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