Doping in Sports: Why Athletes Ignore Safer Performance Alternatives

Virenkumar Chasiya

ABSTRACT

Doping continues to undermine modern sport, even though athletes today have access to advanced, evidence-based methods for improving performance safely. This narrative review explores why many athletes still choose banned substances instead of legitimate alternatives. The paper synthesises peer-reviewed research published between 2010 and 2025, identified through searches of PubMed, PsycINFO, Web of Science, SPORTDiscus, Google Scholar and WADA resources. Studies on competitive and elite athletes examining doping attitudes, intentions, behavior and prevention strategies were thematically analysed. Across the literature, key psychological drivers of doping include ego-oriented goal structures, strong dependence on external approval and moral disengagement processes that reduce feelings of guilt. Social forces such as controlling coaching styles, permissive team cultures and financial pressure further increase vulnerability, whereas autonomy-supportive climates and strong moral identity are consistently protective. At the same time, research shows that optimized nutrition, creatine supplementation, periodised training, psychological skills training and high-quality recovery can deliver substantial performance gains without health risks or ethical violations. Anti-doping education programs are most effective when they are interactive, multi-session and values-based rather than purely informational. Overall, the review argues that effective prevention must combine evidence-based education with environments that support intrinsic motivation, ethical decision-making and easy access to safe performance-enhancement methods, so that athletes can pursue excellence without resorting to doping..

Keywords: doping motivation; moral disengagement; anti-doping education; clean sport; intrinsic motivation; autonomy-supportive coaching.

INTRODUCTION

Doping remains one of the most challenging issues in modern sport. Even though athletes are aware of the health risks, possible life-time bans and damage

Assistant Professor
Department of Physical Education
The Maharaja Sayajirao University of Baroda,
Fatehgunj, Vadodara, Gujarat. -390 002
Email: viren.chasiya-edu@msubaroda.ac.in

to reputation, a noticeable number still choose to use performance-enhancing drugs and methods. At the same time, sports science now offers many safe and legal ways to improve performance, such as structured training, advanced nutrition, sport psychology and recovery strategies. This contrast raises an important question: why do some athletes still move towards doping instead of trusting these safer options?

Recent reports from international competitions suggest that between about 6 and 10 per cent of elite athletes may be involved in some form of doping during their careers (Davoren et al., 2024). These figures show that doping is not only an individual weakness but also a wider cultural and systemic problem in high-performance sport. Athletes often compete in environments where results are closely linked with prize money, government and sponsor support, media attention, national pride and personal identity. Under such pressure, the boundary between fair effort and unfair advantage can become blurred, and rule-breaking may start to look like a necessary risk rather than a clear violation.

Understanding this behavior requires more than simply repeating anti-doping rules. Doping decisions are shaped by a complex mix of personal motives, beliefs about success, team culture, coaching style, financial reality and the availability of expert support. Some athletes may genuinely doubt whether safe methods are strong enough to help them compete at the highest level. Others may use psychological strategies, such as moral justification or minimising harm, to silence feelings of guilt.

This narrative review synthesises current research on these issues. It focuses on four domains: (a) psychological and motivational factors linked to doping, (b) social and environmental influences within teams and sport systems, (c) evidence-based, safer performance-enhancement methods, and (d) the effectiveness of anti-doping education and prevention strategies. By integrating findings across these domains, the review explains why some athletes overlook safer alternatives and identifies practical directions for strengthening a culture of clean sport.

MATERIALS AND METHODS

This narrative review used a structured and transparent process to identify and analyse relevant studies on doping behavior and safer performance alternatives. We searched peer-reviewed literature published between January 2010 and December 2025 in PubMed, PsycINFO, Web of Science, SPORTDiscus, Google Scholar and the World Anti-Doping Agency (WADA) research repository. The main keyword groups were: (a) doping, performance-enhancing drugs, anti-doping; (b) athletes, sport, elite sport; (c) motivation, moral disengagement, achievement goal theory, intrinsic motivation; and (d) education, prevention, intervention, performance enhancement alternatives. These terms were combined using Boolean operators such as “doping AND athletes AND motivation”.

Studies were included when they: (i) involved competitive or elite athletes; (ii) examined doping behavior, intentions, attitudes or prevention strategies; (iii)

used empirical quantitative or qualitative methods, systematic reviews or clearly theory-driven reviews; and (iv) were published in English. Editorials, commentaries, single-case reports and studies on non-sport populations were excluded. After removing duplicates, titles and abstracts were screened, and potentially relevant full texts were read in full. In total, 40 articles met all criteria and were retained for analysis.

A simple quality appraisal was carried out, focusing on study design, sample size and characteristics, clarity and validity of measurement tools, and transparency of data analysis. Longitudinal or experimental designs, validated instruments and clearly described procedures were judged to provide stronger evidence than small, cross-sectional or purely descriptive studies. Rather than generating a numerical score, these quality judgements were used to give more or less weight to individual studies when interpreting the findings.

The included studies were then organised into four main themes: (1) psychological and motivational factors, (2) social and environmental influences, (3) safer performance-enhancement alternatives and (4) anti-doping education and prevention strategies. Within each theme we identified common patterns, differences between studies, methodological strengths and weaknesses, and practical implications for coaches, educators and policy-makers.

RESULTS

The reviewed studies were grouped into five themes: psychological factors, social and environmental influences, safer performance-enhancement methods, anti-doping education, and prevention strategies. Together, they show that doping rarely stems from a single cause but from the interaction of motivation, moral reasoning, social norms, and the perceived availability of support.

PSYCHOLOGICAL FACTORS DRIVING DOPING SUSCEPTIBILITY

Motivational Climate and Achievement Goal Orientation

Achievement Goal Theory explains how athletes define "success" in sport. For task-oriented athletes, success means learning new skills, improving personal bests and working hard. For ego-oriented athletes, success mainly means beating others and being seen as superior. Studies consistently show that athletes who are strongly ego-oriented and weakly task-oriented are more willing to consider doping, especially when they feel that honest effort is not enough to keep up with their rivals (Guo et al., 2021; Ntoumanis et al., 2017).

The environment created by coaches and teams, known as the motivational climate, plays a key role. In task-involving climates, coaches praise effort, learning and improvement. Mistakes are treated as part of the learning process. In ego-involving climates, coaches focus on winning, public comparison and punishment for errors. Research has found that ego-involving climates are associated with higher doping attitudes and intentions, whereas task-involving climates are linked to intrinsic motivation and lower doping risk.

Table 1. Summary of key studies on doping behavior and prevention

Study (Year)	Design & Sample	Main Focus	Key Finding on Doping / Prevention	Main Limitation
Davoren et al. 2024	Cross-sectional survey; U.S. elite athletes subject to testing	Prevalence of doping in elite sport	Estimated lifetime prevalence of doping between about 6.5–9.2% among tested elite athletes, indicating that doping is a persistent issue at the highest level.	Self-report data; limited to one country and athletes in testing pool only.
Guo et al. 2021	Cross-sectional; Chinese adolescent athletes	Motivational climate and moral variables	Ego-involving climate and higher moral disengagement predicted stronger intentions to use banned substances. Task-involving climate related to lower susceptibility.	Cross-sectional design; single cultural context; relies on self-reported intentions rather than behavior.
Stanger et al. 2013	Cross-sectional; competitive athletes	Moral disengagement and antisocial behavior	Moral disengagement was positively related to antisocial behaviors in sport, suggesting similar mechanisms may underlie doping.	Did not directly measure doping; cannot infer causal direction.
Ring & Kavussanu 2018	Experimental lab study; UK athletes	Self-regulatory efficacy and moral disengagement	Higher self-regulatory efficacy reduced doping likelihood indirectly by lowering moral disengagement.	Short-term laboratory scenario; behavioral intentions, not real-world behavior.
Boardley et al. 2014	Cross-sectional; competitive bodybuilders	Moral disengagement and self-reported doping	Bodybuilders with higher moral disengagement scores were more likely to report use of performance-enhancing drugs.	Convenience sample; self-disclosure of illegal behavior may be incomplete.
Lucidi et al. 2013	Cross-sectional; adolescent athletes	Moral disengagement and doping	Specific moral disengagement mechanisms were associated with greater likelihood of self-reported doping behavior.	Cross-sectional; limited information about sport type and level.
Reynoso-Sánchez et al. 2025	Systematic review and meta-analysis; multiple athlete samples	Effectiveness of anti-doping prevention programs	Active, multi-session educational programs produced small-to-moderate improvements in attitudes and reductions in self-reported doping intentions.	Heterogeneity between interventions; relatively few long-term follow-up studies.

Study (Year)	Design & Sample	Main Focus	Key Finding on Doping / Prevention	Main Limitation
Woolf et al. 2020	Review and survey of programs	Anti-doping education practices	Highlighted that many existing programs focus on rules and testing, while fewer address values, motivation and decision-making.	Descriptive rather than experimental; limited outcome data from programs.
Warrier et al. 2023	Systematic review; healthy athletes	Health effects of performance-enhancing drugs	Showed wide range of cardiovascular, hormonal and psychological harms linked to PED use, reinforcing the medical risks of doping.	Evidence base uneven across substances; many observational studies with potential confounding.

However, much of this evidence comes from cross-sectional self-report studies, which cannot prove cause-and-effect relationships. Many samples are drawn from Western or East-Asian countries, so it is still unclear whether the same patterns apply in different cultural and economic settings. There is a need for more longitudinal and experimental work in diverse countries, including India, to test whether changing the motivational climate can actually reduce doping behavior over time.

Moral Disengagement Mechanisms

Moral disengagement helps explain how athletes can break rules but still feel comfortable with themselves. In doping research, six mechanisms appear again and again. Through moral justification, athletes convince themselves that using banned substances serves a "higher" goal, such as helping the team or supporting their family. Euphemistic labels such as "boosting" or "supplementing" soften the language. Advantageous comparison makes doping look minor compared to more serious offences. Diffusion and displacement of responsibility allow athletes to blame coaches, doctors or the wider sport culture. Finally, distortion of consequences leads them to downplay health risks and the damage to fair competition.

Across many studies, higher levels of moral disengagement are strongly linked with greater doping intentions and, in some cases, self-reported doping (Hodge et al., 2013; Lucidi et al., 2013; Ring & Kavussanu, 2018). Anticipated guilt often acts as a mediator: athletes who disengage morally expect to feel less guilt, and this lower guilt makes doping more likely. Conversely, a strong moral identity and sense of personal responsibility appear to protect against moral disengagement and doping.

Nonetheless, most studies rely on questionnaires and self-reported intentions rather than verified behavior, which may underestimate actual doping. Some use general moral disengagement scales rather than sport-specific tools. Future research should include behavioral

indicators and follow athletes over time, to see whether interventions that reduce moral disengagement actually lead to lower doping rates.

External Validation-Focused Identity

For many athletes, sport results are deeply connected to self-worth, social status and future opportunities. When identity is built mainly on external validation—such as media attention, scholarships, sponsorship or praise from parents and coaches—poor performance can feel like a threat to the whole self. In such conditions, doping can appear to be a way to protect identity and secure future rewards.

Studies suggest that athletes who depend heavily on external rewards and recognition are more likely to express favourable attitudes towards doping than those driven by interest, enjoyment and personal growth. However, separating cause and effect is challenging: external rewards may both attract athletes with certain personalities and also slowly shift their motives from intrinsic to extrinsic over time. More longitudinal evidence is needed to understand how identity and values evolve across an athlete's career and how this affects doping risk.

Overall, psychological factors such as achievement goals, moral disengagement, and motivational climate consistently predict doping susceptibility, while moral identity and self-regulation appear protective (Nicholls, 1984; Guo et al., 2021; Hodge et al., 2013; Kavussanu & Ring, 2017; Ring & Kavussanu, 2018; Gentile et al., 2022; Bandura, 1991).

SOCIAL AND ENVIRONMENTAL INFLUENCES

Coaching Style and Peer Influence

Coaches and teammates create the daily atmosphere in which athletes train and compete, so their influence on doping behavior is powerful. Research distinguishes between controlling coaching styles, which rely on pressure, threats and strict commands, and autonomy- supportive styles, which involve listening to athletes, explaining decisions and offering choices within clear rules. Controlling styles are linked with higher anxiety, more moral disengagement and more positive attitudes toward doping, whereas autonomy-supportive coaching is associated with stronger intrinsic motivation, better well-being and lower willingness to dope.

Peer behavior also matters. If athletes believe that many of their teammates or main rivals are doping, they may feel pressure to "keep up" or "level the playing field". Such norms can normalise doping within certain sports or teams. However, some studies show that strong peer disapproval of doping and visible clean-sport role models can have the opposite effect and support ethical choices.

Evidence in this area is still limited by the heavy use of self-report data and by the fact that many studies come from a small number of sports and countries. More multi-sport and cross-cultural research would help to understand how coaching and peer norms interact with structural factors such as funding and selection policies.

Competitive Pressure and Financial Incentives

High-level sport often offers short

career windows and uncertain income. For some athletes, especially those from financially weak backgrounds, success in sport may be seen as the primary route for social mobility. When prize money, contracts and national expectations are tied closely to results, the perceived benefits of doping can outweigh the perceived risks.

Several qualitative studies report athletes describing doping as an "investment" or "necessary risk" to secure a livelihood or meet expectations from family, coaches or sponsors. Yet these accounts typically involve small samples and retrospective interviews, which can be affected by memory and self-presentation biases. Quantitative large-scale evidence on the exact relationship between financial pressure and doping behavior is still limited, and represents an important area for future research, particularly in developing countries.

Taken together, these findings suggest that controlling coaching, peer norms, and structural pressures increase doping vulnerability, while autonomy-supportive environments are protective (Chen et al., 2017; Ntoumanis et al., 2017; Bird et al., 2024; Inguglia et al., 2023; Barkoukis & Elbe, 2013).

SAFER PERFORMANCE ENHANCEMENT ALTERNATIVES

Alongside these psychological and social influences, the literature highlights a range of legal and scientifically supported methods that can boost performance without breaking rules. These safer alternatives cover basic pillars of athlete preparation: nutrition, targeted supplementation, structured training, psychological skills and recovery. When used well, they can provide meaningful performance gains and may reduce the appeal of banned substances.

Optimized Sports Nutrition

Well-planned nutrition is one of the most effective and legal ways to improve performance. Adequate protein intake supports muscle repair and growth; carbohydrate timing helps to fuel training and competition; healthy fats support hormone production and reduce inflammation; and appropriate hydration and micronutrient intake maintain overall physiological function. Individualised plans developed with qualified sports nutritionists can enhance body composition, energy levels, recovery and immune function.

Although evidence for many basic nutrition principles is strong, not all athletes have access to expert advice, and some may be confused by conflicting messages from commercial marketing. More education is needed to translate scientific knowledge into affordable, sport-specific strategies for different contexts.

Creatine and other legal supplements

Creatine monohydrate is one of the most thoroughly studied legal supplements. When used correctly, it can improve high-intensity performance and support gains in strength and muscle mass, especially in sports requiring repeated short bursts of effort. Other legal aids such as caffeine, beta-alanine or nitrate-rich foods may also provide small but meaningful improvements in specific situations. However, effects can vary

between individuals, and not all products sold on the market are of high quality or free from contamination.

Therefore, athletes should be guided by evidence-based recommendations and, where possible, work with qualified professionals. Legal supplements should be seen as additions to, not substitutes for, solid training, nutrition and recovery practices.

Training periodisation and recovery

Modern training theory emphasises periodisation: systematic variation of training volume, intensity and content over weeks and months to promote adaptation while reducing injury and overtraining risk. Well-designed programs integrate phases of general preparation, specific preparation, competition and transition, with planned recovery and tapering. Within this framework, altitude training, resistance training, sprint work and skill development are arranged to match the demands of each sport.

Evidence suggests that athletes following structured, periodised programs can achieve large performance gains without exceeding safe workload limits. However, real-world implementation often falls short of theory, especially in settings with limited coaching support or high competition density. Monitoring tools such as training diaries and wellness scales can help to better match loads to the athlete's current state.

Psychological skills and mental health

Performance in high-pressure situations depends not only on physical capacity but also on psychological skills. Techniques such as goal-setting, self-talk, imagery, pre-performance routines and relaxation skills can enhance confidence, focus and emotional control. Working with sport psychologists can also help athletes to deal with stress, identity issues and transitions, which may otherwise make them more vulnerable to doping or burnout.

Research generally supports the positive impact of psychological skills training on performance and well-being, although studies differ in the exact protocols used. More controlled trials with sport-specific outcomes would further strengthen the evidence base.

Sleep and overall recovery

Sleep is essential for hormonal balance, tissue repair and cognitive function, yet it is often neglected in athletes' routines. Recommendations usually suggest at least seven to nine hours of good-quality sleep per night for adults, with additional rest during heavy training periods. Simple habits such as regular bedtimes, reducing screen exposure before sleep, and creating a dark, quiet environment can make a big difference.

While the role of sleep is strongly supported by general health and performance research, very few studies have directly connected sleep interventions with reduced doping risk. Even so, helping athletes feel physically and mentally recovered may reduce the temptation to look for quick chemical fixes.

ANTI-DOPING EDUCATION EFFECTIVENESS

Anti-doping education is designed to

move athletes from simply "knowing the rules" to making informed, value-based decisions. Programs now range from short awareness talks to interactive workshops, online modules and long-term values-based curricula. Recent reviews show that education can reduce favourable attitudes toward doping and, in some cases, lower self-reported intentions to dope, particularly when the programs are interactive, repeated over time and tailored to the realities of the sport.

However, the evidence also shows that knowledge alone is not enough. Classroom-style information sessions may increase awareness of rules but have limited impact on actual behavior. More effective programs tend to include discussions of real-life dilemmas, role-plays, reflection on personal values, and opportunities for athletes to practise decision-making skills. Involving coaches and support staff can further strengthen the message, as it aligns personal learning with the wider team climate.

Long-term follow-up data are scarce, and it is still not fully clear how long the positive effects of education last without reinforcement. There is also limited work on culturally adapted programs in low- and middle-income countries. Future interventions should be theory-driven, rigorously evaluated and designed to fit the realities of specific sports and regions.

PREVENTION STRATEGIES EMPHASIZING INTRINSIC MOTIVATION

Taken together, the reviewed studies make it clear that testing and punishment alone will never be enough to protect clean sport. Effective prevention must also reshape the environments in which athletes live and train so that doping feels unnecessary and unattractive. The most promising strategies focus on building intrinsic motivation, strong moral identity and easy access to legal performance support, rather than relying only on fear of being caught.

First, creating task-involving, autonomy-supportive motivational climates appears crucial. Coaches can emphasise personal improvement, effort and learning, provide constructive feedback, and allow athletes an appropriate voice in training decisions. This approach supports athletes' basic psychological needs for competence, autonomy and relatedness, which are central to self-determination theory. When these needs are met, athletes are more likely to pursue goals for intrinsic reasons and less likely to seek external shortcuts.

Second, building moral identity and reducing moral disengagement should be a specific target. This can include guided reflection on the meaning of fair play, discussion of real cases, and encouraging athletes to see themselves as role models for younger players. Programs that simply repeat rules and sanctions may not reach the deeper moral level needed to resist doping temptations in high-pressure moments.

Third, strengthening access to legal performance support—nutrition, medical care, sport science and psychological services—can reduce the feeling that doping is the only effective option. When athletes experience real performance improvements from safe methods, the

perceived advantage of banned substances may decrease.

Finally, policies and reward structures at organisational and national levels should support long-term development rather than only short-term results. Selection procedures, funding and media narratives that value consistency, improvement and ethical conduct can send a powerful message that how athletes win is as important as winning itself.

DISCUSSION

The findings of this review indicate that doping behaviour arises from the interplay of motivational orientation, moral reasoning, social context, and structural pressures rather than from ignorance of rules or alternatives. Ego-involving climates, heavy reliance on external rewards, and strong financial or selection pressure all make banned substances appear more acceptable or even necessary. In contrast, task-involving and autonomy-supportive environments, in which athletes experience competence, choice, and relatedness, are associated with lower doping intentions and greater commitment to clean sport.

A central mechanism linking these contexts to behaviour is moral disengagement. When athletes reframe doping as necessary for team success, minimise its risks, or shift responsibility onto coaches and doctors, anticipated guilt is reduced and rule-breaking becomes easier to justify. These cognitive processes are strengthened in controlling environments and when athletes believe that many others are doping, but appear weaker in settings that encourage honest discussion, personal responsibility, and reflection on values.

Another important finding is that safe performance-enhancement strategies are not theoretical ideals; they are real and effective, but not always visible or accessible to athletes. Well-planned nutrition, periodised training, legal supplementation, psychological skills and proper sleep and recovery can together produce large improvements in performance. However, these methods require time, expert guidance and consistent support. In many systems, especially in lower-resource settings, athletes may not have access to sport scientists, nutritionists or psychologists. When they feel that clean methods are too slow or too weak, the relative attraction of doping increases. Closing this "support gap" is therefore a crucial part of prevention.

The evidence also indicates that traditional anti-doping education, based mainly on one-off lectures about rules and sanctions, is not enough. Programs are more effective when they are interactive, repeated over time and linked to the daily reality of training and competition. Approaches that invite athletes to discuss real dilemmas, practise decision-making and connect clean sport to their own values appear more promising than those that simply list banned substances. Involving coaches and support staff is essential, because their behavior strongly shapes the motivational climate and the unspoken "norms" around performance enhancement.

Despite these insights, the current literature has several limitations. Much of the research is cross-sectional, relies on self-report questionnaires and is concen-

trated in a small number of countries and sports. This limits the ability to draw firm causal conclusions and to generalise findings to contexts such as South Asia, Africa or less commercialised sports. Future studies should use longitudinal and experimental designs, include objective or behavioral indicators where possible and pay more attention to cultural and economic differences between sporting systems. Research that follows athletes over time as they move through talent pathways, face transitions and deal with injury and deselection would be especially valuable.

Overall, the evidence supports a multi-level approach to prevention. Testing and sanctions remain important, but they must be combined with motivationally supportive coaching, value-based education, and reliable access to legal performance support. Policies that reward long-term development and ethical conduct, rather than only short-term victories, are likely to strengthen athletes' belief that clean performance can be both successful and respected.

CONCLUSIONS

This review concludes that athletes' decisions about doping are shaped by how they define success, how they manage moral conflict, the coaching and peer climate around them, and the structural pressures they face. When goals are narrowly ego-focused and environments are controlling or financially insecure, banned substances can appear to offer a fast and powerful solution. Conversely, when athletes experience task-involving and autonomy-supportive climates, feel morally responsible for their choices, and have access to competent support staff, the attraction of doping is reduced.

Lasting progress will require prevention strategies that move beyond slogans and isolated lectures. Coaches and organisations must create settings in which effort, improvement, and ethical behaviour are recognised as strongly as medals; anti-doping education should be interactive and sustained; and athletes should have real opportunities to benefit from safe performance-enhancement methods. Under these conditions, clean sport becomes not only a moral ideal but also a realistic and sustainable pathway to high performance.

Ethical Approval

This manuscript is a narrative review that relies entirely on previously published research and does not involve the collection of any new data from human participants or animals. All studies discussed were conducted according to the ethical standards reported in their original articles and in line with the principles of the Declaration of Helsinki. Because no new data were collected for the present work, separate approval from an ethics committee and additional informed consent were not required.

Conflict of Interest

The author declares that there are no financial, personal, or professional conflicts of interest that could have influenced the work reported in this manuscript.

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