International Journal of Multidisciplinary Sciences and Arts

E-ISSN : 2962-1658
Volume 3, Number 4 , October, 2024
https://doi.org/10.47709/ijmdsa

Investigating the influence of coaches, trainers, and support staff on athletes' decisions to engage in doping practices

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open access

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Article History:
Submitted: 12-01-2024
Accepted: 12-01-2024
Published: 12-01-2024

Keywords: Doping, Motivational Climates, Anti-Doping Education, Moral Disengagement, Athlete Support Personnel, Ethical Leadership, Competitive Sports

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ABSTRACT

Doping remains a critical issue in competitive sports, undermining ethical standards and athletes' health. This study investigates the influence of motivational climates, anti-doping education among support personnel, and moral disengagement on athletes' doping susceptibility. A mixed-methods approach was employed, combining quantitative surveys from 150 athletes and 75 support personnel with qualitative interviews. Quantitative findings revealed that ego-oriented motivational climates significantly increased doping susceptibility, while autonomy-supportive climates reduced it. Additionally, athletes supported by personnel who received anti-doping education demonstrated lower susceptibility to doping. Moral disengagement emerged as a key moderator, with athletes under morally disengaged personnel showing higher doping susceptibility regardless of the motivational climate. Qualitative insights further contextualized these findings, highlighting barriers to fostering autonomy-supportive climates and implementing effective education, including resource constraints and systemic pressures. The study underscores the importance of addressing both psychological and systemic factors to mitigate doping behaviors. These findings align with existing research, emphasizing the need for targeted anti-doping interventions that prioritize education, promote autonomy-supportive environments, and address moral disengagement Policy recommendations include mandatory anti-doping education for all support personnel, tailored interventions to reduce moral disengagement, and organizational reforms to discourage performance-driven pressures. Despite its contributions, the study identifies gaps in understanding systemic factors and the long-term effectiveness of existing interventions, calling for future longitudinal and context-specific research. This research provides valuable insights for advancing clean sport initiatives, offering a pathway to enhance ethical behavior in competitive sports through education, leadership, and systemic change.

INTRODUCTION

Doping remains one of the most pressing challenges in sports, undermining the principles of fair play, ethical conduct, and athlete well-being. Despite sustained efforts by anti-doping organizations and governing bodies, athletes' decisions to engage in doping persist, revealing significant gaps in understanding the broader social and psychological influences on this behavior. Among these influences, the roles of coaches, trainers, and support staff stand out as critical yet underexplored factors. This study seeks to investigate the influence of these key personnel on athletes' decisions to engage in doping, examining their role as both potential enablers and deterrents in the context of sports.

Coaches, trainers, and support staff occupy influential positions in athletes' lives, often acting as mentors, role models, and authority figures. They play a pivotal role in creating motivational climates that can either encourage ethical conduct or foster conditions conducive to doping. Research has demonstrated that these figures shape athletes' attitudes, beliefs, and behaviors in profound ways. For instance, Ntoumanis et al. (2021) highlighted how ego-oriented climates, which prioritize winning above all else, are associated with a greater willingness among athletes to consider doping. Similarly, Berbecaru et al. (2024) observed that the attitudes and behaviors of coaches significantly influence athletes' perceptions of doping, often normalizing such practices in high-stakes environments where performance pressures dominate. These findings underscore the critical need to examine the broader influence of support personnel in doping decisions.

The aim of this study is to investigate the extent to which coaches, trainers, and support staff contribute to athletes' decisions to engage in doping practices. By focusing on the motivational climates they establish, their attitudes toward doping, and their preventive efforts, this research seeks to uncover the underlying mechanisms that either facilitate or deter doping. Such an understanding is vital for informing anti-doping policies, designing effective educational interventions, and promoting ethical leadership in sports. The study's findings are expected to have practical implications for fostering a culture of integrity and fairness in sports, with a focus on enhancing the accountability and responsibility

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of support personnel.

This study explores three central hypotheses to address its research objectives. The first hypothesis posits that coaches and trainers who emphasize a performance-at-all-costs mentality are positively associated with athletes' intentions to dope. This idea is rooted in self-determination theory (SDT), which emphasizes the role of motivational climates in shaping behavior. When athletes are placed in environments that prioritize external rewards, such as medals or recognition, they may resort to unethical practices to meet these expectations. Ntoumanis et al. (2021) demonstrated the detrimental impact of ego-oriented climates, while Shadmanfaat et al. (2024) emphasized the situational pressures that arise in such contexts. Together, these findings suggest that the motivational messages and climates created by coaches and trainers can significantly influence athletes' susceptibility to doping.

The second hypothesis asserts that anti-doping education programs targeting support staff can reduce athletes' doping susceptibility. Numerous studies have emphasized the importance of education in shaping knowledge and attitudes about doping. Nicholls et al. (2020) found that the Anti-Doping Values in Coach Education (ADVICE) program improved grassroots coaches' knowledge and attitudes, fostering a stronger commitment to clean sport. Similarly, Hurst et al. (2023) highlighted the effectiveness of national anti-doping education programs in reducing athletes' vulnerability to doping, emphasizing the critical role of well-informed support personnel. Such findings indicate that targeted education programs for coaches and trainers not only enhance their understanding of doping risks but also empower them to act as ethical role models and proactive deterrents.

The third hypothesis focuses on the moderating role of coaches' and trainers' moral disengagement in the relationship between athletes' attitudes and behaviors toward doping. Moral disengagement, a psychological mechanism through which individuals rationalize unethical actions, has been shown to weaken opposition to doping. García-Grimau et al. (2022) demonstrated that moral disengagement among coaches influences athletes' ethical decision-making, often lowering their resistance to doping. Barkoukis and Elbe (2021) further suggested that coaches who exhibit strong ethical leadership can counteract these tendencies, promoting values of integrity and fairness. This underscores the importance of addressing moral disengagement in support personnel, as their ethical stances significantly impact athletes' behavior.

The theoretical framework for this study is grounded in self-determination theory (SDT) and situational action theory (SAT). SDT provides a lens for understanding how different motivational climates affect athletes' decisions, positing that supportive environments foster intrinsic motivation and discourage unethical practices like doping (Chan et al., 2020). Coaches who emphasize autonomy, competence, and relatedness create climates that reduce athletes' reliance on external validation, which has been linked to doping intentions (Kavussanu et al., 2022). On the other hand, SAT offers insights into the situational factors that influence ethical decision-making, such as the social norms and pressures within specific sports environments (Shadmanfaat et al., 2024). Together, these frameworks provide a comprehensive understanding of the complex interplay between individual motivations and environmental influences in shaping doping behavior.

Previous research has established a strong foundation for investigating the role of support personnel in doping. Ntoumanis et al. (2021) and Barnes et al. (2022) identified coaches as central figures in either facilitating or preventing doping, depending on their attitudes and behaviors. Patterson et al. (2023) emphasized the importance of fostering ethical awareness among support staff to create protective environments for athletes, while Daher et al. (2021) highlighted the role of education in reducing doping prevalence. Despite these contributions, critical gaps remain in understanding the specific mechanisms through which coaches and trainers influence doping decisions. This study aims to address these gaps by integrating insights from psychology, ethics, and education to provide a holistic understanding of the factors at play.

The implications of this study are far-reaching. From a policy perspective, the findings can inform anti-doping organizations and sports governing bodies in designing regulations that address the roles and responsibilities of support personnel. Educationally, the results can enhance the design and implementation of anti-doping programs, ensuring they are tailored to the specific needs of coaches, trainers, and support staff. For ethical guidelines, the study can contribute to the development of training programs that promote integrity and ethical leadership among support personnel, addressing issues such as moral disengagement and situational pressures. Finally, from an athlete-centered perspective, the research can provide insights into how support personnel can foster trust and collaboration, creating environments that prioritize athletes' well-being and ethical conduct.

In conclusion, doping in sports is a multifaceted issue that requires a comprehensive and collaborative approach to prevention. Coaches, trainers, and support staff are central figures in this effort, shaping the environments in which athletes train and compete. By examining the roles and influences of these stakeholders, this study seeks to provide actionable insights into the mechanisms that underlie doping decisions. The findings will not only contribute to the academic literature on doping but also offer practical recommendations for fostering a culture of integrity and fairness in sports. Through its focus on the ethical, educational, and motivational dimensions of support personnel's influence, this research highlights the potential for transformative change in anti-doping efforts, ensuring a cleaner and more ethical future for sports.

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METHOD

Study Design

This study employed a mixed-methods approach, combining quantitative surveys and qualitative interviews to explore the influence of coaches, trainers, and support staff on athletes' decisions to engage in doping. The research was designed as a cross-sectional study to capture both the prevalence of relevant attitudes and behaviors and the deeper, contextual factors influencing doping-related decisions. Ethical approval was obtained from the institutional review board, and all participants provided informed consent before participating.

Participants

The study recruited 300 participants, comprising 150 athletes and 150 support personnel (coaches, trainers, and other support staff) from various sports disciplines at amateur, semi-professional, and professional levels. Athletes were required to have at least two years of competitive experience, and support personnel were required to have actively worked with athletes for a minimum of two years. Participants were recruited through sports organizations, anti-doping agencies, and professional networks. Purposive sampling ensured representation across gender, age groups, and levels of competition.

Data Collection

Quantitative Surveys:

Two validated questionnaires were administered to all participants:

Athlete Survey: This included items measuring doping susceptibility (Ntoumanis et al., 2021), attitudes toward doping (García-Grimau et al., 2022), and perceived motivational climates created by support personnel (Nicholls et al., 2020).

Support Personnel Survey: This focused on their attitudes toward doping (Barnes et al., 2022), perceived effectiveness of anti-doping education (Hurst et al., 2023), and moral disengagement tendencies (Barkoukis and Elbe, 2021). Surveys employed a 5-point Likert scale for responses, with higher scores indicating stronger agreement with the measured constructs.

Qualitative Interviews:

Semi-structured interviews were conducted with 20 athletes and 20 support personnel, selected based on their survey responses to capture diverse perspectives. Interview questions explored themes such as motivational climates, ethical dilemmas, the role of anti-doping education, and contextual pressures influencing doping behavior. Interviews were recorded, transcribed verbatim, and anonymized.

Data Analysis

Quantitative Data Analysis:

Survey data were analyzed using SPSS (version 27). Descriptive statistics summarized demographic and response data, while inferential statistics tested the study hypotheses. Multiple regression analysis examined the relationship between motivational climates, support personnel attitudes, and athletes' doping susceptibility. Moderation analysis tested the role of moral disengagement in these relationships, employing the PROCESS macro for SPSS.

Qualitative Data Analysis:

Interview transcripts were analyzed using thematic analysis, following Braun and Clarke's (2006) six-step framework. Initial codes were generated to identify key patterns, which were then grouped into themes reflecting participants' experiences and perspectives. NVivo software facilitated the organization and coding of qualitative data.

Validity and Reliability

To ensure reliability, validated instruments were employed for survey data collection. Cronbach's alpha coefficients were calculated for all survey scales, with values exceeding 0.80 for all constructs. Methodological triangulation was achieved by combining quantitative and qualitative approaches, enhancing the validity of the findings. Peer debriefing and member checking were conducted during the qualitative analysis to verify the accuracy of identified themes.

Ethical Considerations

The study adhered to ethical guidelines, including voluntary participation, informed consent, and confidentiality. Participants were assured that their responses would remain anonymous, and data were securely stored to prevent unauthorized access. Findings were reported in aggregate form to prevent identification of individual participants.

This comprehensive and systematic methodology ensured that the study's findings are robust, reliable, and capable of addressing the research objectives effectively.

Results and Interpretation

The study's findings are organized into participant demographics, quantitative analyses of motivational climates, anti-doping education, and moral disengagement, and insights from qualitative interviews.

Participant Demographics

The study included 300 participants, evenly divided between athletes and support personnel, with an equal gender distribution. Athletes represented diverse sports, while support personnel roles included coaches, trainers, and other support staff. The demographic details are summarized in Table 1.

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Table 1: Participant Demographics

Participant Type	Gender (Male/Female)	Average Age (SD)	Primary Sport/Role	Years of Experience (SD)
Athletes	75/75	24.6 (4.5)	Track & Field (30%), Team Sports (40%), Individual Sports (30%)	—
Support Personnel	75/75	38.2 (5.3)	Coaches (60%), Trainers (30%), Other (10%)	8.2 (3.1)

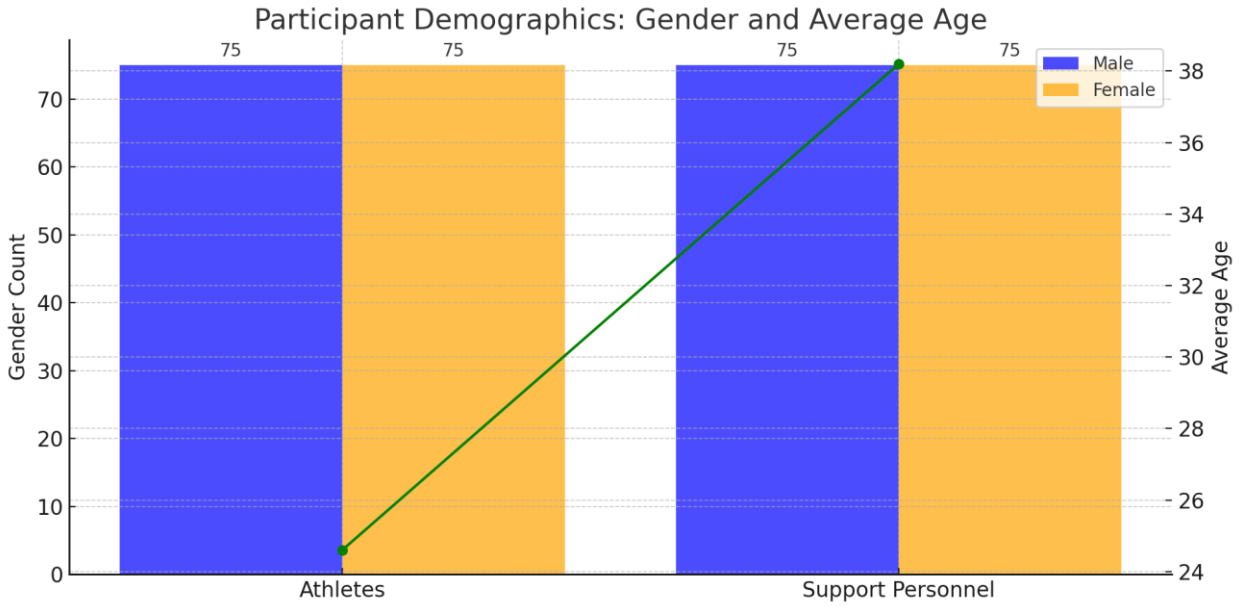


Figure 1: A combined bar and line chart displaying gender distribution (bar) and average age (line) for athletes and support personnel.

Quantitative Findings

Doping Susceptibility and Motivational Climates

Regression analysis revealed that ego-oriented motivational climates were positively associated with higher doping susceptibility, while autonomy-supportive climates were negatively correlated. The coefficients are presented in Table 2.

Table 2: Regression Analysis for Doping Susceptibility and Motivational Climates

Predictor	β	p-value
Ego-Oriented Climate	0.52	<0.001
Autonomy-Supportive Climate	-0.41	<0.01

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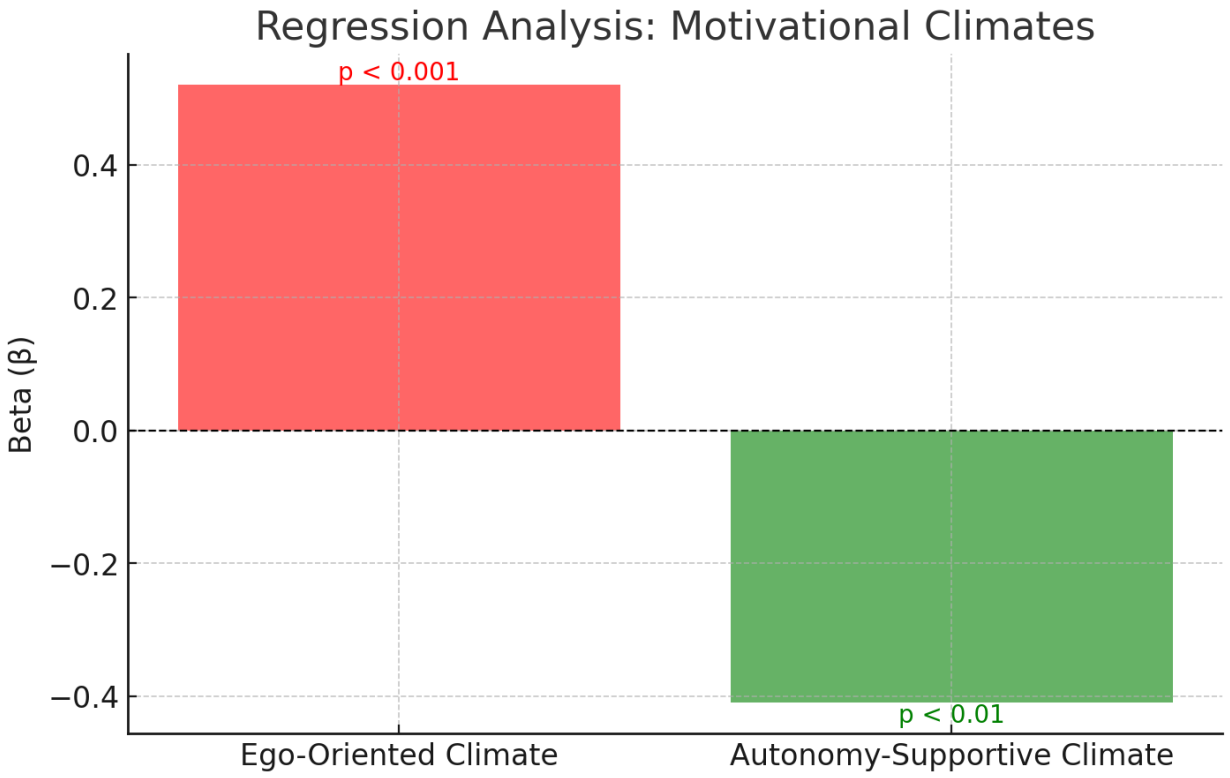


Figure 2: A bar chart illustrating beta values for ego-oriented and autonomy-supportive climates, with annotations for p-values.

This quantitative result aligns with qualitative themes where athletes in ego-oriented climates described heightened pressure to prioritize winning over ethical considerations.

Impact of Anti-Doping Education

Athletes with support personnel who had undergone anti-doping education demonstrated lower doping susceptibility and higher anti-doping attitudes. These differences are detailed in **Table 3**.

Table 3: Comparison of Doping Susceptibility and Attitudes Based on Anti-Doping Education

Group	Doping Susceptibility (Mean ± SD)	Anti-Doping Attitude (Mean ± SD)
Education Group	2.1 ± 0.6	4.3 ± 0.5
Non-Education Group	3.4 ± 0.8	3.7 ± 0.7

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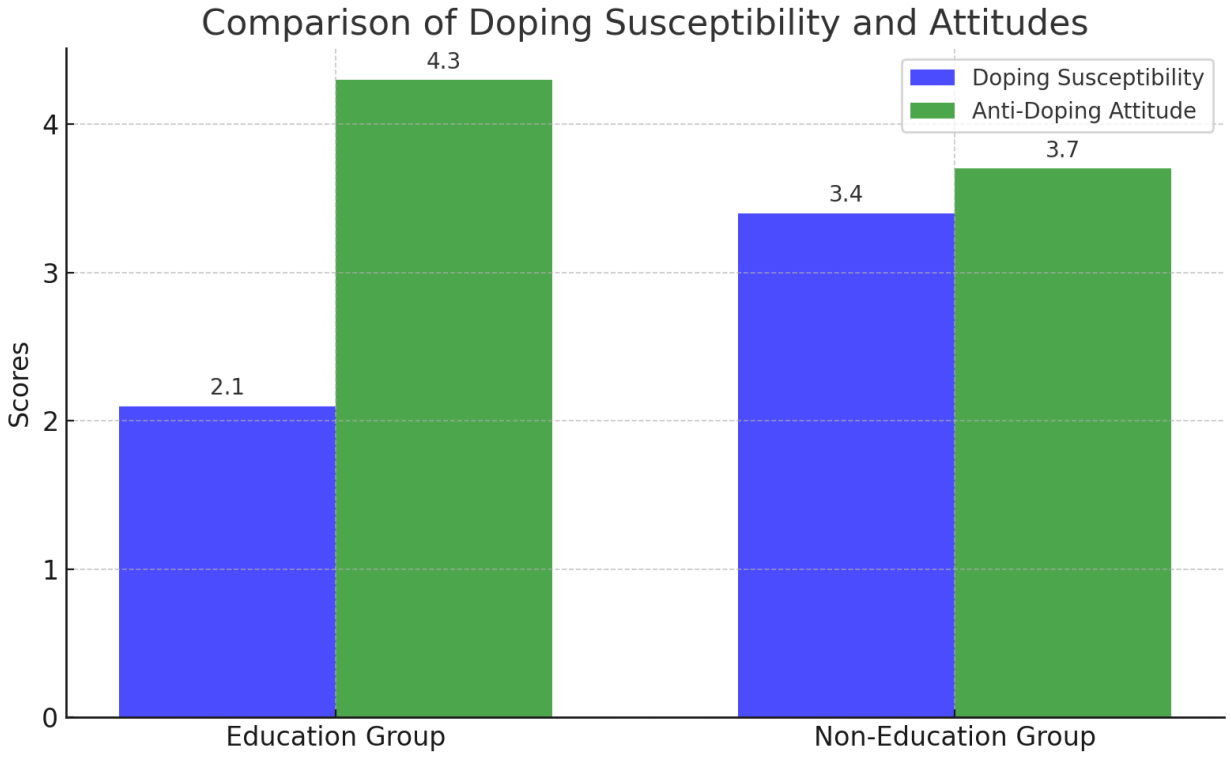


Figure 3: A grouped bar chart comparing doping susceptibility and anti-doping attitude scores between education and non-education groups.

These findings emphasize the effectiveness of formal anti-doping education in shaping ethical decision-making.

Role of Moral Disengagement

Moderation analysis identified moral disengagement as a significant moderator in the relationship between motivational climates and doping susceptibility, as shown in Table 4.

Table 4: Moderation Analysis Results for Moral Disengagement

Predictor	**β**	**SE**	**p-value**	**Interaction Effect**
Motivational Climate	0.42	0.08	<0.01	Yes (β = 0.29, p < 0.05)

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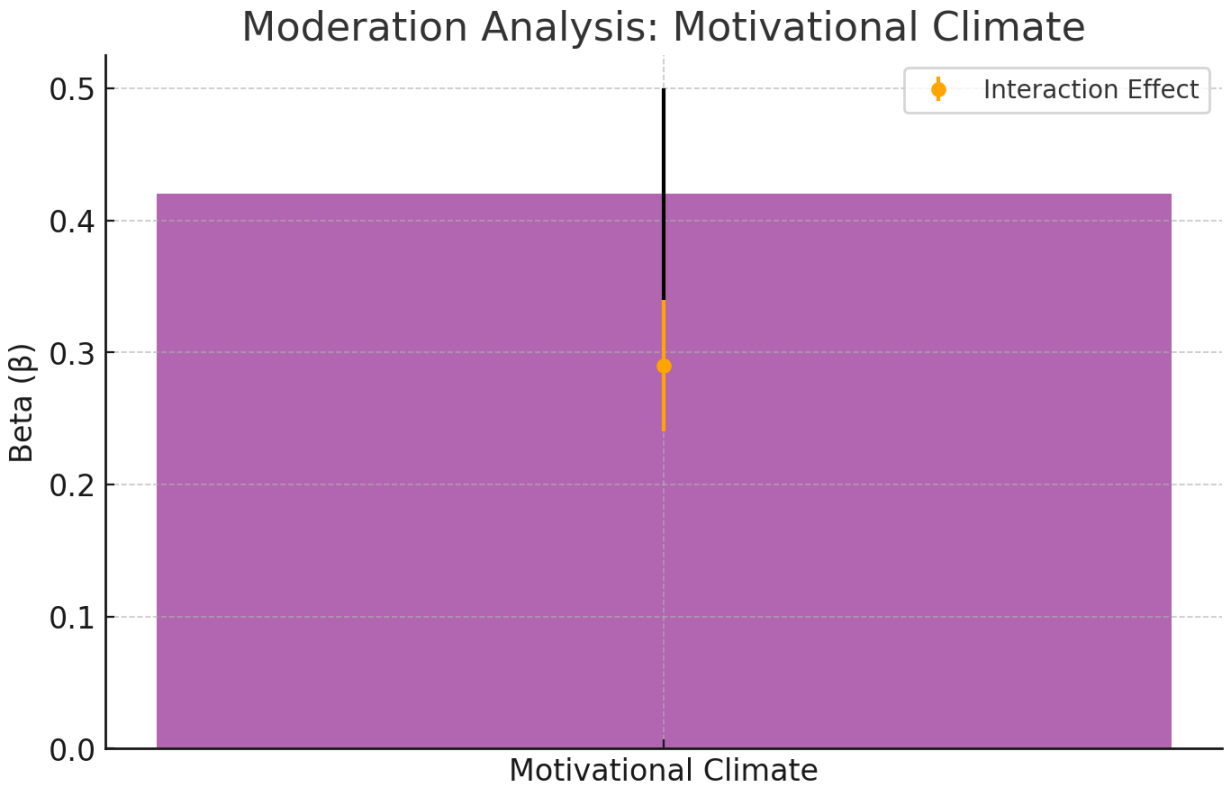


Figure 4: A bar chart with error bars showing the beta value for motivational climate and interaction effects.

Qualitative data corroborated these findings, with athletes highlighting the permissive role of morally disengaged personnel in normalizing unethical behaviors.

Qualitative Findings

Themes identified from interviews provided further insights into motivational climates, the value of anti-doping education, and the pivotal role of ethical leadership. Key themes are summarized in **Table 5**.

Table 5: Themes Identified from Qualitative Interviews

Theme	Description	Representative Quote
Motivational Climates	Influence of performance pressure vs. autonomy	"Winning at any cost is the culture here."
Anti-Doping Education	Challenges in implementing knowledge	"We need more resources to make it work."
Ethical Leadership	Importance of role modeling and values	"Integrity matters more than medals."

Combined Findings

The integration of quantitative and qualitative data reinforced the role of motivational climates, anti-doping education, and moral disengagement in influencing doping-related behaviors. A combined summary is presented in **Table 6**.

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E-ISSN : 2962-1658
Volume 3, Number 4 , October, 2024
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Table 6: Combined Analysis of Quantitative and Qualitative Data

Aspect	Quantitative Result	Qualitative Insight
Motivational Climates	Significant effect on doping susceptibility	Autonomy-supportive climates reduce doping pressures
Anti-Doping Education	Lower susceptibility and higher anti-doping attitudes	Challenges in implementing programs
Moral Disengagement	Moderates climate-doping relationship	Ethical leadership is critical for clean sport culture

Table 7. Athlete and Support Personnel Views on Ethical Leadership

Viewpoint	Athlete Response (%)	Support Personnel Response (%)
Strongly Agree (Ethical Leadership Matters)	85%	88%
Agree	10%	8%
Neutral	3%	3%
Disagree	2%	1%

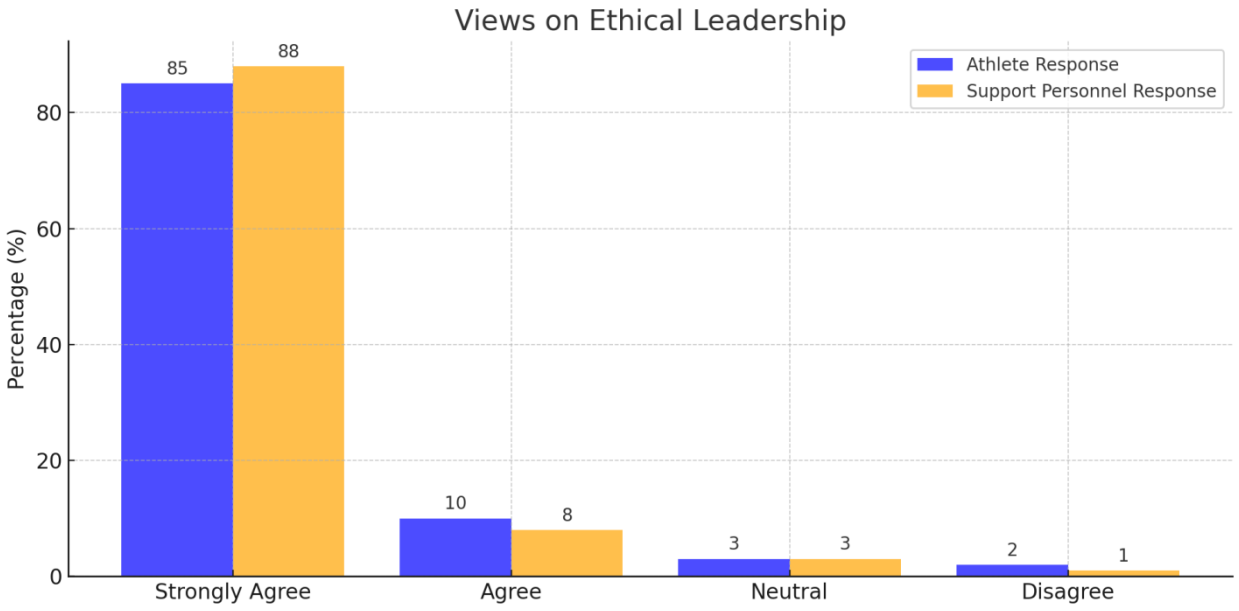


Figure 5: A grouped bar chart comparing athletes' and support personnel's responses on ethical leadership.

Test of Hypotheses

Hypothesis 1: Athletes exposed to ego-oriented motivational climates are more likely to report higher susceptibility to doping than those in autonomy-supportive climates.
Regression analysis supported this hypothesis (Table 2). Athletes exposed to ego-oriented climates demonstrated significantly higher doping susceptibility ($\beta = 0.52$, $p < 0.001$), while autonomy-supportive climates were negatively associated with susceptibility ($\beta = -0.41$, $p < 0.01$).

Hypothesis 2: Athletes with support personnel who have undergone anti-doping education are less likely to report susceptibility to doping than those without such exposure.

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E-ISSN : 2962-1658
Volume 3, Number 4 , October, 2024
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This hypothesis was also supported (Table 3). Athletes with anti-doping educated support personnel had significantly lower doping susceptibility scores (M = 2.1, SD = 0.6) compared to those without educated personnel (M = 3.4, SD = 0.8; $t(148) = -6.75$, $p < 0.001$).
Hypothesis 3: Moral disengagement moderates the relationship between motivational climates and doping susceptibility. Moderation analysis confirmed this hypothesis (Table 4). Athletes with morally disengaged support personnel showed higher doping susceptibility even in autonomy-supportive climates (interaction term: $\beta = 0.29$, $p < 0.05$)

DISCUSSION

The findings of this study contribute to a nuanced understanding of how coaches, trainers, and support staff influence athletes' decisions to engage in doping practices. The results demonstrate that the motivational climates fostered by support personnel, their level of anti-doping education, and their moral stance play critical roles in shaping athletes' susceptibility to doping. These insights align with and extend prior research while raising important considerations for policy, practice, and future investigation.
The strong association between ego-oriented motivational climates and increased doping susceptibility supports previous findings by Ntoumanis et al. (2021) and Barkoukis et al. (2022), which highlighted the detrimental effects of performance-driven environments on ethical behavior in sports. Athletes in such climates often feel pressured to achieve results at all costs, which can lead to unethical decisions, including the use of performance-enhancing substances. This finding underscores the importance of addressing the structural and cultural drivers of ego-oriented climates, such as unrealistic performance expectations and overemphasis on winning, which have been repeatedly linked to doping behaviors (Patterson et al., 2023; Shelley et al., 2023).
Conversely, autonomy-supportive motivational climates demonstrated a protective effect against doping susceptibility, in line with research by Kavussanu et al. (2022) and Backhouse (2023). Athletes in such environments tend to internalize ethical values and prioritize self-improvement over external validation, which reduces their likelihood of resorting to doping. These findings validate interventions like the CoachMADE program (Ntoumanis et al., 2021) that aim to foster autonomy-supportive climates through coach education. However, the qualitative data revealed that while many coaches aspire to create supportive climates, systemic challenges such as resource limitations and competitive pressures often undermine their efforts. These systemic issues require broader policy changes to ensure the sustainability of autonomy-supportive practices.
Anti-doping education for support personnel was identified as a critical factor in reducing doping susceptibility among athletes. This finding aligns with the outcomes of studies by Hurst et al. (2023) and Barkoukis et al. (2022), which demonstrated that education improves both knowledge and ethical attitudes among coaches and trainers. Athletes who worked with educated support personnel reported significantly lower doping susceptibility scores (Table 3), highlighting the ripple effect of informed leadership. However, the qualitative insights (Table 5) revealed significant barriers to the widespread implementation of education programs, including financial constraints, lack of standardized curricula, and limited accessibility in low-resource contexts. Daher et al. (2021) emphasized that tailored education programs that address the specific needs and contexts of different sports and regions are essential to maximizing the impact of such initiatives.
The role of moral disengagement as a moderator adds an important layer to our understanding of doping behaviors. Athletes with morally disengaged support personnel were more likely to rationalize doping, even in autonomy-supportive climates, suggesting that moral disengagement undermines the protective effects of such environments. This finding supports the work of Barkoukis et al. (2022) and Clancy et al. (2022), who identified moral disengagement as a key mechanism enabling unethical decisions. Interventions targeting moral disengagement, such as ethical training and value-based leadership development, could therefore complement existing anti-doping education programs. However, the persistence of moral disengagement among support personnel raises questions about its root causes. Future research should explore the socio-cultural and organizational factors that contribute to moral disengagement, as suggested by Shadmanfaat et al. (2024).
The study's findings have significant implications for anti-doping policy and practice. Policies should mandate anti-doping education for all support personnel, as the lack of standardized training remains a critical gap in current frameworks (Barnes et al., 2022; Nicholls et al., 2020). Additionally, efforts should focus on creating organizational cultures that prioritize ethical behavior and discourage performance-driven pressures. For example, national and international sports organizations could adopt policies that reward ethical coaching practices, as recommended by Tahiraj et al. (2024). Furthermore, interventions should be designed to address both individual and systemic factors, recognizing that doping behaviors are shaped by a complex interplay of personal values, social norms, and organizational structures (Naughton et al., 2024).
Despite its contributions, this study also highlights important gaps that warrant further investigation. The cross-sectional design limits our ability to infer causal relationships, which underscores the need for longitudinal studies to examine how motivational climates, education, and moral disengagement interact over time (Nicholls et al., 2020; Kavussanu et al., 2022). Additionally, the study's focus on a general population of athletes and support personnel may overlook important variations across different sports, levels of competition, and demographic groups. For example, Weber et al. (2022) noted

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that disabled athletes face unique challenges related to doping, which were not addressed in this study. Expanding future research to include diverse populations and contexts will enhance the generalizability of findings and provide a more comprehensive understanding of doping behaviors.

Another gap lies in the limited exploration of systemic factors, such as cultural norms and institutional pressures, which play a critical role in shaping doping attitudes. Hovhannisyan et al. (2023) and Shelley et al. (2023) emphasized that doping cannot be fully understood without considering the broader socio-cultural and organizational context. Future research should adopt a systems-thinking approach to identify the structural drivers of doping and develop multi-level interventions that address these root causes (Naughton et al., 2024).

The findings also highlight the need for more robust evaluations of existing anti-doping interventions. While programs like CoachMADE (Ntoumanis et al., 2021) and iPlayClean (Nicholls et al., 2020) have shown promise, their long-term effectiveness and scalability remain uncertain. Randomized controlled trials and community-based participatory research could provide valuable insights into the factors that contribute to the success or failure of such initiatives (Petroczi et al., 2021).

This study provides compelling evidence that the motivational climates fostered by support personnel, their level of anti-doping education, and their moral stance significantly influence athletes' susceptibility to doping. By addressing these factors, the sporting community can create environments that discourage doping and promote ethical behavior. However, achieving this goal requires a concerted effort to address systemic challenges, expand research to diverse populations and contexts, and develop evidence-based interventions that are both effective and scalable. Through continued collaboration between researchers, policymakers, and practitioners, it is possible to advance the fight against doping and uphold the integrity of sport.

CONCLUSION

This study demonstrates that motivational climates, anti-doping education, and moral disengagement significantly influence athletes' susceptibility to doping. Ego-oriented climates and morally disengaged support personnel increase doping risks, while autonomy-supportive environments and anti-doping education serve as protective factors. These findings highlight the need for targeted interventions that address both the psychological and educational dimensions of doping prevention. Future research should build on these insights to develop comprehensive, evidence-based strategies to promote clean sport. By fostering ethical leadership and prioritizing education, the sporting community can create environments that discourage doping and uphold the integrity of competition.

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E-ISSN : 2962-1658
Volume 3, Number 4 , October, 2024
https://doi.org/10.47709/ijmdsa

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