



## Doping Self-Regulatory Efficacy Among Elite Athletes in Nigeria

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*The increasing gains attributed to sports motivate athletes to strive for victory by any means, including doping. This study seeks to ascertain the doping self-regulatory efficacy of elite athletes in Nigeria. The descriptive survey design guided the study with 206 elite athletes (mean = 26.3 years,  $\pm 12.20$ ) from across the six geographical zones of Nigeria voluntarily participating in the study. Athletes signed informed consent, and confidentiality was rigorously maintained after ethical approval was obtained from the Ethical Committee of the University of Ibadan. ANOVA, Pearson ( $r$ ), and Cramer's  $V$  tested all hypotheses for the relationship and the extent of such associations. Findings revealed a strong relationship across age and gender ( $F(3, 202) = 2.74, p = 0.044$ ) when athletes were encouraged to enhance their performance but a weak association with sports category ( $\phi_c = 0.100$ ). Doping self-efficacy indicated a weak-negative correlation with age ( $r = -.066, p = .93, p < .05$ ) but a weak-positive relationship with gender ( $r = .066, p = .3463$ ). The study concludes that athletes in Nigeria demonstrate a high doping self-efficacy in avoiding doping, regardless of stressors.*

*Keywords: banned substance, doping, elite athletes, likelihood to dope, self-regulatory efficacy*

It is imperative to underscore the novelty of our research, which centers on the efficacy beliefs of Nigerian athletes regarding doping. This area has been unexplored, and our study aims to address this significant gap. Doping is the use of any illegal substance that gives athletes an undue advantage in competition. In athletics, it is a complex issue that affects athletes from diverse cultural backgrounds, including Nigerian athletes. It is important to note that individual perspectives may vary within any culture. Athletes social and psychological variables, encompassing cultural appreciation of natural talent, ethical considerations, societal norms (Buckley et al., 2021; Naidoo & Wills, 2016; Nolte et al., 2014; Stoyel et al., 2021), and lack of resources, play a crucial role in their decision-making regarding adherence to the ethical standards of sports (Barkoukis et al., 2019; García-Grimau et al., 2022).

Self-efficacy regulation portrays athletes' control of their attitudes and intentions. Doping self-efficacy regulation of athletes, when understood, helps in understanding their intentions. Ordinarily, a positive athletic environment- with knowledgeable ASPs, seminars, and sensitizations on doping sanctions- should foster a negative attitude towards doping (Backhouse et al., 2015; Kitsantas et al., 2017). Despite the positive environment and existing laws across various countries and federations, there is rarely a sports season not marred with scandals. The likelihood of doping is predicted by athletes' attitudes towards doping, which rely on their self-regulatory efficacy (Ntoumanis et al., 2014; Šukys, 2018).

Literature (Girelli et al., 2020; LaBotz & Griesemer, 2016; Nicholls et al., 2016) revealed that doping is a worldwide public health concern that affects individuals of all ages, particularly the younger generation and that it affects not just top athletes but also those who participate in amateur and recreational sports and occupations that need peak performance. However, a variety of factors contribute to the doping problems in sports today, including financial gain, previous doping incidents, an exaggerated sense of commonality, knowledge, attitude, environmental allure, sponsorship, task difficulty, and injuries (Adegbesan et al., 2023; Blank et al., 2016; Dunn et al., 2020; Lazuras et al., 2010; Woolway et al., 2020).

Primarily, anti-doping education programs aim to change athletes' attitudes toward doping (Lucidi et al., 2017). Therefore, arming oneself with adequate knowledge of the pros and cons of doping early enough results in the ability to either resist or support it. The research focus has been identifying the risk of protective factors against doping behavior or integrating these into preventive measures (Blank et al., 2016; Ntoumanis et al., 2017). However, their intentions (athletes) and belief systems still need to be tapped- especially in developing nations. Low knowledge of crucial anti-doping control systems led to a perceived lack of self-efficacy to collaborate with players on doping-related issues (Adegbesan et al., 2024; Engelberg et al., 2019; Šukys, 2018).

African cultures often emphasize the value of natural talent, hard work in sports, believing that success should be achieved through dedication, discipline, and the development of

inherent abilities. This perspective appreciates athletes who rely on their natural skills and training rather than resorting to artificial means like doping (Adegbesan et al., 2024; Naidoo & Wills, 2016; Nolte et al., 2014). Cheating through doping is seen as a violation of fair competition and a betrayal of the spirit of sportsmanship. Like other regions, African athletes are expected to embody the principles of fair play and integrity (Nolte et al., 2014). Athletic doping can have significant social consequences, especially within African cultures, where sports are viewed as a path to social advancement and a source of inspiration for the youth. If African athletes are found using performance-enhancing drugs, it could tarnish the reputation of the entire African sporting community and discourage future generations from participating in sports (Stoyel et al., 2021). In Nigeria, concerns about doping include cultural infringements, privacy violations, and a potentially compromised testing environment due to the involvement of athlete support staff (ASP). Additionally, traditional doping tests may inflict psychological distress, suffering, and humiliation (Adegbesan et al., 2023). Therefore, when developing global legislation, the peculiarity of athletes, as suggested by earlier stated variables, should be considered, as athletes are not predisposed to the same opportunities.

Adopting legal sanctions embedded in the criminal laws of some developed countries (Australian Crime Commission (ACC), 2013; Westmattelmann et al., 2018) against doping in developing countries like Nigeria, aside from those stated in the World Anti-Doping Code (WADC), could serve as a deterrent for athletes. These laws are considered a more significant deterrent than sports-related sanctions alone (Blank et al., 2021; Sumner, 2017). This was further buttressed by Mallia and colleagues in 2016, who reported that German team athletes resist the social pressure associated with doping use. The revised World Anti-Doping Code (Article 10.6.1) supports a whistleblower policy for athletes to uncover anti-doping rule violations by offering the possibility of reducing the length of their sanctions or even wholly removing them (WADA, 2015). This policy has reduced doping but has insignificant effect among cohesive teams where officials and sponsors support the act, leading to graver sanctions (e.g., the Russian Olympic delegation).

Although athletes' knowledge of doping is essential, assessing their attitudes towards doping is also vital since doping intentions primarily rely on individual values. In the same vein, literature (Girelli et al., 2020; Ntoumanis et al., 2017; Kavussanu & Ring, 2017) identified positive attitudes toward doping, morality, and self-efficacy to resist doping as some of the most potent psychological predictors of doping intentions and behaviors. It is essential to note that these beliefs can vary widely among individual athletes, as their perspectives can be shaped by numerous factors: firsthand experiences, cultural influences, and the broader sporting context (Petróczi & Strauss, 2015; Šukys, 2018). Therefore, their dispositions, precarious events, and conformity or compliance with anti-doping ethics predict the likelihood of using banned substances and the self-regulatory efficacy athletes develop. These findings have significant implications for developing effective anti-doping education programs and formulating anti-doping policies, underscoring the relevance and impact of this research. In the same light, an adverse motivational learning climate has promoted the uptake of illegal PEAs among athletes in

Sub-Saharan countries (Adegbesan et al., 2023; Ruwuya et al., 2022). Similarly, the differences between boys and girls are consistent with previous studies on doping conducted with high school students (Girelli et al., 2020; Lucidi et al., 2017), showing that girls were more efficacious and better able to deal with personal or interpersonal pressure than boys. Nevertheless, there have been several cases of both male and female athletes contravening the anti-doping laws.

Research among elite athletes and para-athletes, non-elite athletes, and non-athletes has demonstrated that the developed attitudes toward doping effectively predict intentions and behavior (Adegbesan et al., 2024; Lazuras et al., 2010; Mallia et al., 2016). The perceived efficacy belief of athletes and their evaluation of behavior that describes athletes doping intentions are well embedded in the Social Cognitive Theory and Theory of Planned Behavior (Ajzen & Fishbein, 2005; Bandura, 1997). These describe how doping indices, and their predisposed capabilities help them avoid or indulge in doping. These indices range from knowledge, economic gains, previous doping infractions, assumption of doping prevalence, and support system. Therefore, in doping contexts, stressors, such as the influence of significant others, peers, and financial gains, may have a significant role concerning the abuse of banned substances (Girelli et al., 2020; Šukys, 2018), as well as individuals' beliefs about their ability to resist them are fundamental.

Although the social cognitive theory's moral disengagement construct predicts that the likelihood of athletes using banned substances is fundamental in describing doping intentions, reports show that some athletes would consider using prohibited PEDs if they would not get caught (Nolte et al., 2014). Moral disengagement is convincing oneself that ethical standards do not apply in a particular context by suspending or deactivating the mechanism of self-condemnation and self-sanction. Self-justification is vital in activating or inhibiting this anti-doping behavior (Kavussanu & Ring, 2017). In the context of doping, moral disengagement refers to a mental rationalization process that permits athletes to reconcile their drug use with moral values, effectively disconnecting their behavior from moral principles and convincing themselves that their actions are justified and ethical (Lucidi et al., 2017). It constitutes a moral conviction for doping, for example, by comparing it with more extremely inhumane actions or when substance use is not perceived as being under the individual's control. That is, athletes do not see doping as against the game's laws due to compliance rather than conformity to them. Therefore, moral disengagement influences athletes' likelihood of using doping substances and depletes their efficacy. On these bases, the researchers sought to investigate the efficacy of doping self-regulation among elite athletes in Nigeria.

## Hypothesis

1. No significant relationship will exist between moderating variables (gender, age, sports category) and elite athletes' doping self-regulatory efficacy.
2. There will be no significant relationship between the likelihood of the use of banned substances and the categorical variables.

## Materials and Methods

### *Design*

A descriptive survey design was adopted for the study. A 13-item validated questionnaire covering the likelihood of taking banned substances (6 items) and confidentiality to avoid using banned substances (7 items) was used to collect data from the respondents. Some items were adopted from the World Anti-doping Agency research package (Naidoo & Wills, 2016), while others emanated from reviewed literature on doping. The test-rest within a week interval was used to determine the reliability ( $\alpha = .86$ ) after consultation with expert psychometricians familiar with professional sports, a sports physician, a sports psychologist, and a health and sports scientist. To mitigate the potential for bias and reflexivity in this study, a multi-faceted approach was employed. Specifically, the research design incorporated random sampling techniques to enhance representativeness, data triangulation through integrating diverse sources and methodologies, and an initiative-taking pilot study to preemptively identify and address potential limitations. Comprehensive training for researchers and research assistants was also provided to ensure a unified understanding of the study's objectives.

Furthermore, to minimize the influence of reflexivity, the research team engaged in systematic self-reflection to acknowledge and set aside personal biases, cultural assumptions, and religious beliefs. Regular peer debriefing sessions, which were designed to facilitate critical examination of emerging findings and included all team members, were conducted. Rigorous cross-validation of results was performed through collaborative analysis. Transparent reporting of methodologies, limitations, and results was ensured to ensure accountability and replicability.

### *Participants*

Two hundred and six (206) male and female elite athletes drawn from all six geographical zones in Nigeria made up the sample for the study. Participation was voluntary admittance after the objective of the survey had been explained to the athletes. The athletes' ages were between 25 and 40 years old, with a mean age of 26.29 years, across five sports: racket games (19), ball games (82), track and field events (36), combat (35), and aquatic sports (34).

### *Data Collection*

The study's objectives were explained to the respondents, after which they were made to fill out consent forms and ensure confidentiality. Due to security challenges ravaging most parts of the country, research assistants were recruited from the locality of the sampled respondents—some debriefing and sensitizations were online based. Permission was also obtained from the

security chiefs in each state, who later provided security operations for research assistants when needed. Data was collected with the help of coaches, trainers, and research assistants after they had been filled in on the objectives and modalities of the study. The face-to-face method was adopted to collect data on the spot to ensure a high return for analysis. The questionnaire was completed. The respondents were approached individually in their training locations across the six geographical zones in Nigeria. The questionnaire was handed over to the athletes to self-complete. Due to the sensitive nature of the questionnaire items, respondents filled out the questionnaires without distraction. Questionnaires were filled in conducive environments. Researchers met respondents at their training grounds and offices, and then calmed down to fill in the items correctly. Translators were also employed to assist athletes with difficulty understanding English.

### ***Ethical Consideration***

Ethical approval was obtained from the Social Science Ethical Committee, University of Ibadan, Ibadan, Oyo state. Participants were made to fill out informed consent forms after the researchers assured them of anonymity. Athletes were free to withdraw from participation at any point during the survey and complete specific questions.

### ***Statistical Analysis***

Descriptive statistics of frequency counts and percentages were used to analyze the respondents' demographic data. ANOVA was used to identify the difference across age, gender, and sport category. Cramer's V Chi-Square Coefficient Contingency was used to determine the extent of the para-athletes' likelihood of taking banned substances and the efficacy of avoiding using banned substances.

## **Results**

*Table 1: Demographic Distribution of Respondents*

Item	Variable	Frequency	Percent (%)	
Gender	Male	149	72.3	
	Female	57	27.7	
Age (years)	20-24 years	17	8.3	Mean age = 26.29 years
	25-29 years	93	45.1	
	30-34 years	81	39.3	
	35-39 years	15	7.3	
Sports Category	Racket games	19	9.2	
	Ball games	82	39.8	
	Track & field events	36	17.5	
	Combat sports	35	17.0	

Aquatic sports	34	16.5
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Table 1 revealed that most respondents (72.3%) were male, while females were few (27.7%). From the table, most (45.1%) of the respondents were in the age range of 25-29 years, while the respondents between 35-39 years were the least (7.3%). The mean age of the athletes was 26.29. Most (39.8%) of the respondents engaged in ball games, while those involved in racket games were the least (9.2%).

*Table 2: Summary of Results on Athletes' Confidence to Avoid Using Banned Substances differentiated by Age, Sport Category, and Gender (n=206)*

S/N	Statements	Age	Sport Category	Gender
Regarding sports, how confident are you in your ability to avoid using banned substances:				
1.	...when most athletes in your sport use them	0.286	0.746	0.625
2.	...when you feel down physically	0.898	0.442	0.359
3.	...when you have been told to improve your performance	0.698	0.639	0.039*
4.	...when pressure to do so by others	0.254	0.738	0.699
5.	....to improve your performance, even if it will not have any adverse side effects	0.871	0.652	0.558
6.	.... before an important competition even when you can get away with it	0.465	0.127	0.235
7.	.... to get results more quickly, even if no one would ever know	0.534	0.820	0.204

Significant at  $p < 0.05^*$

Table 2 shows that there is no significant difference in the efficacy of athletes to avoid using banned substances and the categorical variables existed. However, when the athlete's performances were questioned and told to improve, their performance was significant across gender (0.039,  $p < 0.05$ ).

*Table 3: Summary of association between doping efficacy, and age, sport category and gender*

S/N	Statement	Variable	Cramer's V	Remark
	Regarding sports, how confident are you in your ability to avoid using banned substances:			
1.	...when most athletes in your sport use them	Age	0.161	Strong
		Sport	0.100	Weak
		Category		
		Gender	0.227	Strong
2.	...when you feel down physically	Age	0.144	Moderate
		Sport	0.152	Strong
		Category		
		Gender	0.106	Moderate
3.	...when you have been told to improve your performance	Age	0.117	Moderate
		Sport	0.118	Moderate
		Category		
		Gender	0.192	Strong
4.	...when pressure to do so by others	Age	0.173	Strong
		Sport	0.136	Moderate
		Category		
		Gender	0.174	Strong
5.	....to improve your performance, even if it will not have any adverse side effects	Age	0.141	Moderate
		Sport	0.154	Strong
		Category		
		Gender	0.205	Strong
6.	.... before an important competition even when you can get away with it	Age	0.144	Moderate
		Sport	0.128	Moderate
		Category		
		Gender	0.154	Strong
7.	.... to get results more quickly, even if no one would ever know	Age	0.166	Strong
		Sport	0.142	Moderate
		Category		
		Gender	0.186	Strong

Decision rule: > 0.25-1.00 = Very strong; > 0.15-0.25 = Strong; > 0.10-0.15 = Moderate; > 0.05-0.10 = weak; 0.05 = very weak association

As indicated in Table 3, Cramer's V values indicated a mostly moderate association between athletes' confidentiality and the extent to which they used banned substances with the moderating variables. However, when most athletes in their sports used banned substances, their confidence indicated a weak association (0.100) with the sports category. This indicates that the team's cohesiveness predicted whether teammates would contravene doping laws.

Table 4: Relationship between moderating variables (gender, age, sport category) and elite athlete's efficacy to dope

Model Summary									
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error	Change Statistics				
					R <sup>2</sup> Change	F Change	df1	df2	Sig. F change
1	.198 <sup>a</sup>	.039	.025	.47603	.039	2.742	3	202	.044

a. Predictors: (Constant), Sport Category, Gender, Age

ANOVA <sup>a</sup>						
Model	Sum of Squares	Df	Mean Square	F	Sig.	
Regression	1.864	3	.621	2.742	.044 <sup>b</sup>	
Residual	45.774	202	.227			
Total	47.638	205				

a. Dependent Variable: Doping Efficacy

b. Predictors (Constant): Sport Category, Gender, Age

Coefficient <sup>s</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error				Tolerance	VIF
1	(Constant)	1.861	.165		11.306	.000		
	Age	.101	.046	.157	2.174	.031	.907	1.102
	Gender	.154	.076	.141	2.032	.044	.983	1.017
	Sport Category	-.015	.027	-.040	-.551	.582	.907	1.102

a. Dependent Variable: Efficacy to Dope

The table indicates that there was a significant effect of age, gender, and sport category on efficacy to dope at the  $p < .05$  ( $F(3, 202) = 2.74, p = 0.044$ ), the effect size ( $\eta^2$ ) was 0.03 indicating a low effect. It also indicates that the sports category was the least predictor of doping efficacy among elite athletes ( $t = -.55, p = .58$ ) and was insignificant.

Table 5: Summary of Results on Athletes' Likelihood of Taking Banned Substances differentiated by Age, Sport Category, and Gender

S/N	Statements	Age	Sport Category	Gender
	Regarding sports, what is the likelihood of taking banned substances when the chances of being caught are extremely small:			
1.	.....I will use a performance drug to enhance my recovery from my injury even	0.799	0.429	0.017*

	though I know the substance is illegal or has been banned			
2.	..... because the chance of being caught for the use of a banned drug is small, it is good to use such a drug since it will make me recover faster from any injury	0.530	0.726	0.461
3.	..... are you likely to use banned drugs for your injury recovery	0.152	0.520	0.042*
4.	..... because I want to enhance my performance in the forthcoming competition, I will use a banned drug that will enhance my performance	0.455	0.685	0.377
5.	..... this game/competition is important to me I will engage in the use of banned drugs to enhance my fitness	0.999	0.872	0.841
6.	..... I don't feel I have the necessary fitness for this competition, I may have to use these banned drugs because I know I will not be caught	0.971	0.985	0.360

Significant at  $p < 0.05$ \*

Table 5 indicated a significant difference in the likelihood of taking banned substances and the moderating variables (age, gender, and sports type). Nevertheless, there was a significant difference in the fact that the athletes are likely to use banned drugs for their injury recovery, based on age, even though they know it was banned (0.017,  $p < 0.05$ ).

*Table 6: Relationship between the likelihood of using banned substances and the categorical variables.*

	Correlation	Age	Gender	Likelihood
Age	Pearson	1		
	Correlation			
	Sig. (2-tailed)			
Gender	N			
	Pearson	-.105	1	
	Correlation			
Likelihood	Sig. (2-tailed)	.133		
	N	206		
	Pearson	-.006	.066	1
	Correlation			
	Sig. (2-tailed)	.930	.346	
	N	206	206	

\*Correlation is significant at the 0.05 level (2-tailed)

The table summarized the relationship between variables in the study. The correlation indicated a weak negative correlation between likelihood against age ( $r = -.066$ ,  $p = .93$ ,  $p < .05$ ). A weak positive relationship was obtained between the likelihood to dope and gender ( $r = .066$ ,  $p = .3463$ ).

## Discussion

Athletes' confidence (efficacy) to abstain from taking illegal substances did not differ significantly based on their age, gender, or sport category. The finding that elite athletes in this study refused to use prohibited performance-enhancing drugs despite being exposed to a wide range of supportive circumstances implies that they had a thorough awareness of the Anti-Doping Code, including the harmful consequences and harsh penalties linked to non-compliance. This finding indicates an elevated level of knowledge and awareness among these athletes, which served as a deterrent to doping behavior. This buttresses the study by (Naidoo & Wills, 2016) strongly believing that success should be achieved through dedication, discipline, and the development of inherent abilities. It aligns with research (Westmattmann et al., 2018) that found that German team athletes considered themselves more able to resist social pressure about doping use, which made them develop high doping self-regulatory efficacy and a low likelihood of taking banned substances. This perspective appreciates athletes who rely on their natural skills and training rather than resorting to artificial means like doping (Naidoo & Wills, 2016). This could also indicate that elite athletes from the study were disciplined and joined their chosen career sports by conformity rather than by compliance. This aligns with previous research that, in addition to attitudes, self-regulative efficacy toward doping is effective in predicting doping intentions and self-reported doping use (Lazuras et al., 2010; Mallia et al., 2016; Zelli et al., 2010).

However, findings indicated a significant gender difference ( $0.039$ ,  $p < 0.05$ ), with effect size  $\eta^2 = 0.03$  on athletes' confidence to avoid banned substances when told to improve their performance. This indicates that the feedback from the coach or trainers and the pressure from poor results were negatively interpreted by some athletes, who responded by using banned substances as leeway to improve their performances temporarily. This agrees with the theory of reasoned action (Ajzen, 1991), which states that intentions are predicted by perceptions of stressors and events at the athletes' disposition. Therefore, the likelihood of the use of banned substances and the self-regulatory efficacy the athlete develops is predicted by their dispositions, precarious events, and conformity or compliance with anti-doping ethics (Girelli et al., 2020; Petróczi & Strauss, 2015; Westmattmann et al., 2018). In evaluating the association level between confidence to dope and the categorical variables, results indicated a moderate to strong association with all variables. However, there was a weak association between the sports category ( $\phi_c = 0.100$ ) and athletes' confidence to avoid doping when most athletes in their team used them. This indicates that team members had more confidence in not dope than individual sports. This is the team's cohesiveness that predicted whether teammates would contravene

doping laws. Therefore, moral disengagement influences athletes' likelihood to use doping substances and depletes their efficacy (Kavussanu & Ring, 2017; Lucidi et al., 2017).

Findings on athletes' likelihood of taking banned substances differentiated by age, sports category, and gender showed that there was no significant difference across the categorical variables. This negates the research of (Girelli et al., 2020; Lucidi et al., 2008) who reported differences in the efficacy of girls being better able to deal with personal or interpersonal pressure than boys. This agrees with the theory of planned behavior, which states that an athlete's attitude toward doping involves both positive and negative evaluation of its use, either for performance enhancement or aesthetic reasons (Adegbesan et al., 2024; Ajzen & Fishbein, 2005). However, there was a significant difference in the fact that athletes will use a performance-enhancing drug to enhance the recovery of their injuries even though they knew that the substance was illegal or had been banned based on gender (0.017,  $p < 0.05$ ) and equally a significant difference to use banned drugs for injury recovery based on gender (0.042,  $p < 0.05$ ). These findings indicate that some elite would resort to taking banned substances to quickly recover or avoid injuries so they can always remain in shape and ready for competition. According to previous research, athletes do not see doping as against the laws of the game due to compliance rather than conformity to them (Adegbesan et al., 2023). In addition to attitudes, self-regulative efficacy toward doping is effective in predicting doping intentions and self-reported use (Barkoukis et al., 2019; Girelli et al., 2020; Lazuras et al., 2010; Lucidi et al., 2017)

The test of association of the likelihood to use banned substances, across age and gender indicated a weak association against age ( $\phi_c = 0.108$ ) among younger athletes on the likelihood of using illegal drugs to recover faster from injuries. Commensurately, there was a negative, weak correlation with age ( $r = -.066$ ,  $p = .93$ ,  $p < .05$ ) and a weak positive relationship between the likelihood of doping and gender ( $r = .066$ ,  $p = .3463$ ). This may be because younger athletes naturally recover faster from injuries than older ones, and they have a greater need for oxygen and nutrients by athletes to maintain their relevance in competitions as they age (Ntoumanis et al., 2017). A weak association was also reported with gender ( $\phi_c = 0.093$ ) when they felt the competition was crucial and needed to maintain fitness. There was also a robust association with gender ( $\phi_c = 0.322$ ) on the likelihood of using banned substances even when they knew it was illegal or banned. This finding supports a previous study (Adegbesan et al., 2024) that reported an association between gender and doping possibilities in female Paralympians.

## Conclusion

This research offers an elaborate view on doping practices among professional athletes, exposing a complicated web of awareness, resilience, and adherence to anti-doping laws. The study's athletes were found to have received adequate education on doping and anti-doping regulations. Additionally, they exhibited remarkable efficacy in avoiding the use of banned substances in the face of both internal and external pressures. Some athletes' negative feedback revealed that they were easily swayed to cave in to pressure when their performance was called into question.

Given that the results show a low tendency for doping, they also highlight serious vulnerabilities, especially for female athletes who are more likely to engage in doping-related behaviors. This gender gap calls for attention, indicating that specific interventions and support mechanisms must be developed to address the demands and difficulties faced by female athletes. Furthermore, the increased use of doping by senior athletes to speed up their recuperation from injuries underscores the necessity of re-education campaigns that emphasize the negative effects of doping and anti-doping infractions. Athletes' careers and well-being would be safeguarded, a culture of clean sports would be promoted, and effective doping prevention techniques would be developed by identifying and addressing these issues.

### **Implications of Findings**

The results of this study show that elite athletes, regardless of age, gender, or sport category, have a thorough awareness of anti-doping laws and strong self-efficacy in abstaining from prohibited substances. The tendency for doping is lower in athletes who place a higher value on training and the development of natural talent, and teammates' adherence to anti-doping rules is significantly predicted by team cohesion.

There are noticeable differences between the sexes in terms of confidence to avoid doping: female athletes are more likely to use prohibited substances to heal from injuries, and older athletes are more likely to dope to counteract the negative effects of aging on athletic performance.

Moral disengagement mechanisms impact athletes' propensity to participate in doping behaviors, and self-regulatory efficacy regarding doping behaviors acts as a prominent predictor of doping intentions and self-reported use. Since certain athletes are more susceptible to stress connected to performance than others and would thus engage in doping, educational interventions and re-education focused on the ramifications and repercussions of doping and anti-doping violations are crucial for reducing doping behaviors.

### **Limitations**

The objectives of this study were met. Nevertheless, the following limitations were encountered:

1. The continual rise in insecurity combined with the deplorable roads leading to most states in Nigeria, reduced the number of respondents as some athletes had to relocate. It also led to the prolonged administration and retrieval of questionnaires.
2. These findings from this study were obtained from data from a representative sample of the six geographical areas in the country. The lack of a functional database for athletes hindered the recruitment of a larger number of respondents.

3. Religious and cultural biases still existed in some sampled regions in Nigeria which hindered more females from participating in the study, even after sensitization and recruitment of female research assistants from such backgrounds.

### Suggestions for Further Research

Following the findings of this study, further research is suggested in the following areas:

1. Investigating the prevalence, determinants, and cultural factors influencing doping behaviors among Nigerian and African athletes, including the role of traditional medicine, social norms, and access to resources.
2. Examining the effectiveness of current anti-doping policies, programs, and educational interventions in Nigeria and Africa, and developing culturally sensitive approaches to prevent doping behaviors.
3. Analyzing the impact of governance, corruption, and regulatory frameworks on doping behaviors and anti-doping efforts in Nigerian and African sports and identifying strategies to strengthen anti-doping control and enforcement.

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