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The Impact of Smoking on the Mental Health of male Athletes Participating in Official Competitions

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Abstract: This study aimed to examine the impact of smoking on mental health among male athletes in Setif in 2025. A total of 139 athletes randomly selected from various official sports events participated in this study. The sample included 29 smokers and 110 nonsmokers, reflecting the typically lower prevalence of smoking in athletic populations. Mental health was assessed using the 28-item version of the Goldberg and Williams scale, translated by Wadi (1999), which measures four key dimensions: severe depression, anxiety and insomnia, psychosomatic health, and social functioning effectiveness. The scale demonstrated good internal consistency, with Cronbach's alpha values ranging from 0.724 to 0.783 across subscales. Normality of the data was evaluated using the Shapiro-Wilk test, which indicated that most variables deviated from a normal distribution, particularly among nonsmokers. Therefore, the Mann-Whitney U test was used for group comparisons. The results revealed significant differences in severe depression, anxiety, insomnia, and total mental health scores, with non-smokers consistently achieving higher scores than smokers. No significant differences were observed in the effectiveness of psychosomatic and social functioning. This study recommends increasing awareness of the mental health risks of smoking among athletes, particularly regarding mood and sleep. It also suggests that coaches and sports organizations should adopt stricter anti-smoking policies and provide support for athletes who smoke. Further research with a larger and more balanced sample is required to confirm these findings.

Keywords: mental health, Smoking, athletes, competitive, sports

Introduction

Mental health is considered a fundamental determinant of an individual's competence and ability to adapt to the demands of daily life. Its significance is even greater in athletic settings where athletes face high levels of physical and psychological pressure and are required to maintain balanced performance and sustained psychological stability. Mental health plays a key role in regulating emotions, motivating drivers, and supporting concentration and communication. Thus, it is a critical factor in determining both athletic performance and psychological well-being, especially among athletes participating in high-level official competitions.

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Despite advances in physical and psychological preparation methods, many athletes continue to suffer from psychological disorders, such as anxiety, depression, mood disorders, and psychosomatic health issues (Gouttebarge et al., 2019; Runacres & Marshall, 2024). Among the behavioral factors and lifestyle patterns that affect mental health, smoking is a common harmful behavior among athletes (Ferenczi & Lenténé, 2022). A study by Osullivan et al. (2021) revealed that the smoking rate among a sample of 546 athletes was 16%, while Chagué et al. (2024) reported that nearly 64.9% of smokers smoked within two hours of exercise. Evidence suggests that competition-related pressures, injuries, performance stress, and personal problems may lead athletes to adopt negative coping mechanisms such as smoking. Knettel et al. (2023) indicated that lower religious and spiritual coping was associated with a higher likelihood of alcohol use and risky drug-related behaviors, while smoking is sometimes used as a means to alleviate stress and anxiety, or as an illusory aid to concentration. Mündel (2017) noted that nicotine use is particularly high among athletes, especially in team sports, potentially for reasons related to motivation, anxiety reduction, or even social habits.

Nevertheless, such behaviors negatively impact physical capacity, psychological resilience, and overall health. Smoking undermines the physiological efficiency of elite athletes and impairs respiratory functions (Aydin, 2023; Đorđević Šaranović et al., 2019a). Psychologically, it also affects athletes' ability to control their emotions. Yazici and Mergan (2022) found that athletes who smoke or consume alcohol exhibit higher levels of anger and aggression. Additionally, smoking can adversely affect the core cognitive function of athletes. It has been reported that tobacco-using athletes may experience impairments in executive functions, which are crucial for strategic decision-making and performance in multidisciplinary sports (Wang et al., 2024).

Although several studies have highlighted the prevalence of smoking and its individual effects, a knowledge gap remains regarding the in-depth understanding of the impact of smoking on mental health indicators (such as freedom from major depression, anxiety and insomnia, psychosomatic health, and the effectiveness of social functioning), particularly among athletes participating in official competitions who are exposed to unique pressures that may interact differently with smoking behavior. This phenomenon constitutes a significant health problem in sports because of the negative impact of smoking on athletes (Asar et al., 2025). In light of the above, the problem addressed in this study emerges from the need for a deeper understanding of the extent to which smoking affects the mental health of this group and to determine whether there are statistically significant differences between smoking and non-smoking athletes across various dimensions of mental health. This study aims to investigate the extent to which smoking affects the mental health of athletes participating in official competitions.

Methodology

Participants

The study sample consisted of 139 male athletes who were randomly selected from various official sports events held in Setif in 2025. The participants had a mean age of 23 years and an average training experience of 6 years. Of the 166 distributed

questionnaires, 27 incomplete responses were excluded, resulting in a final validated sample of 139 completed questionnaires as it is showed in table 1.

It is noteworthy that the number of smokers in the study sample was considerably lower than that of non-smokers. This distribution can be attributed to the specific characteristics of the sample, which consisted exclusively of the athletes. Numerous studies have shown that athletes are generally less likely to engage in smoking behaviors than the general population, primarily because of the negative impact of smoking on physical performance, endurance, and overall health. Sports participation is often associated with greater health awareness and a stronger commitment to maintaining optimal physiological functioning, which may discourage smoking (Agaku et al., 2015; Đorđević Šaranović et al., 2019b; Xiaogang et al., 2021). Additionally, the influence of coaches and the sporting environment plays a significant role in deterring tobacco use. Coaches frequently advise athletes about the detrimental effects of smoking on performance, and some sports programs have strict policies against tobacco use. Notably, many coaches consider tobacco use grounds for suspension, which helps reduce smoking rates among athletes(Cohen, 1993). Consequently, the lower prevalence of smoking among athletes in this study is expected and consistent with previous literature, reflecting the health-conscious lifestyles typically adopted by those involved in competitive sports.

Table 1. Research participants

		N	Percentage
Gender	Individual	59	42,44
	Team	80	57,55
Type	Individual	59	42,44
	Collective	80	57,55
Smoking	Smokers	29	20,68
	Non-Smokers	110	79,13

Tools

The Mental Health Scale

This scale was developed by Goldberg and Williams and is considered to be one of the most widely used instruments for assessing mental health. The scale is available in four versions; in this study, the 28-item version was used, based on the translation by Wadi (1999). This version comprises four dimensions (Wadi, 1999). The scale consists of six positive and 15 negative items. The respondents selected answers that were applicable to them from among the three alternatives. For the positive items, the responses were scored as follows: “Always” (3), “Sometimes” (2), and “Never” (1). Scoring was reversed for the negatively worded items. Accordingly, the total score ranged from 21 to 63, with a score of 21 indicating low mental health and 63 indicating high mental health as showen in table 2.

Table 2. Distribution of positive and negative items across mental health dimensions

Dimension	Positive Items	Negative Items	Total Items
Severe Depression	\	21, 22, 24, 25, 26, 27, 28	7
Insomnia and Anxiety	\	8, 9, 16, 17, 23	5

https://doi.org/10.30892/gss.2302-135

Psychosomatic Health	1	2, 4, 5, 6	5
Social Functioning Effectiveness	11, 12, 14, 18	\	4
Total	5	16	21

Psychometric proprieties

Internal consistency validity and correlation coefficients were assessed between each dimension score and the total score on the Mental Health scale, as shown in Table 3.

Table 3. Internal consistency and item-total correlations for mental health scale dimensions

	Items	Correlation Coefficient	Cronbach's Alpha
Freedom from Severe Depression	7	,859**	,724
Freedom from Anxiety and Insomnia	5	,747**	,754
Psychosomatic Health	5	,723**	,774
Social Functioning Effectiveness	4	,653**	,783
Total score	21	/	0,93

The table displays item-total statistics for the mental health scale dimensions. The corrected item-total correlation values for the subscales ranged from 0.548 to 0.799, indicating moderate-to-strong associations between each dimension and the overall scale. This suggests that all dimensions contribute meaningfully to the construct being measured, and the values for Cronbach's alpha if items are deleted are within an acceptable range (0.724 to 0.783), demonstrating that removing any single dimension would not substantially improve the overall internal consistency of the scale. These results support the reliability and coherence of the instrument, confirming that each dimension is integral to the internal consistency of the scale. Overall, the findings provide evidence for the satisfactory reliability of the scale and justify retaining all the dimensions in the final measurement model.

Statistical analysis

All statistical analyses were performed using SPSS version 26. The internal consistency of the mental health scale and its subscales was evaluated using Cronbach's alpha coefficients and corrected item-total correlations, confirming satisfactory reliability across all dimensions. The normality of the distribution for each mental health dimension was assessed using the Shapiro-Wilk test. Descriptive statistics were calculated to summarize the sample characteristics and mental health scores. For inferential analysis, the Mann-Whitney U test was used to compare mental health dimensions and total scores between smokers and nonsmokers.

Result

Before conducting inferential statistical analyses, the distribution of the data for each dimension of mental health was assessed to determine the extent to which it conformed to the normal distribution. This is also presented in the table.

Table 4. Normality test results (Shapiro-Wilk) for mental health dimensions among smokers and non-smokers

Dimension / Variable	Group	Shapiro-Wilk	df	Sig.	Distribution
Freedom from Severe Depression	Smokers	0.902	28	0.013	Non-normal
	Non-Smokers	0.772	110	0.000	Non-normal
Freedom from Anxiety and Insomnia	Smokers	0.941	28	0.120	Normal
	Non-Smokers	0.966	110	0.006	Non-normal
Psychosomatic Health	Smokers	0.926	28	0.049	Non-normal
	Non-Smokers	0.917	110	0.000	Non-normal
Social Functioning Effectiveness	Smokers	0.895	28	0.009	Non-normal
	Non-Smokers	0.901	110	0.000	Non-normal
Total Mental Health Score	Smokers	0.931	28	0.064	Normal
	Non-Smokers	0.943	110	0.000	Non-normal

Table 4 present the results of the Shapiro-Wilk test for normality across the main mental health dimensions among smokers and non-smokers. The findings indicate that the majority of the variables deviate from a normal distribution, particularly among non-smokers, where all dimensions except "Freedom from Anxiety and Insomnia" and "Total Mental Health Score" yielded significant results (p 0.05), indicating approximately normal distributions for these variables within this subgroup. These results highlight the heterogeneity in the distribution of mental health scores across smoking status and underscore the necessity of employing non-parametric statistical methods for subsequent group comparisons. The observed deviations from normality, especially among non-smokers, may reflect the underlying variability in mental health outcomes associated with smoking behavior, further justifying the use of robust statistical approaches in the analysis.

Despite the noticeable difference in group sizes (29 smokers vs. 128 non-smokers), the Mann-Whitney U test remains statistically appropriate, as this non-parametric test does not require equal group sizes and is robust to such imbalances. Furthermore, the sample size of the smaller group met the minimum requirements for robust statistical analysis, ensuring sufficient power to detect meaningful differences. This distribution reflects the real-world prevalence of smoking among athletes rather than a methodological bias (Bindak, 2014; MacFarland & Yates, 2016; Nachar, 2008).

Table 5. Mann-Whitney U test results for mental health dimensions among smokers and non-smokers

Dimension	Group	Mean Rank	U	Sig
Freedom from Severe Depression	Smokers	47.32	919	0.001
	Non-Smokers	75.15		
Freedom from Anxiety and Insomnia	Smokers	40.93	740	0.000
	Non-Smokers	76.77		
Psychosomatic Health	Smokers	59.30	1254.5	0.120
	Non-Smokers	72.10		
Social Functioning Effectiveness	Smokers	61.88	1326.5	0.246
	Non-Smokers	76.45		

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Table 5 summarizes the results of the Mann-Whitney U test comparing mental health dimensions between smokers and non-smokers. The findings reveal statistically significant differences in the dimensions of "Freedom from Severe Depression" (U = 919, p = 0.001) and "Freedom from Anxiety and Insomnia" (U = 740, p < 0.001), with non-smokers exhibiting substantially higher mean ranks than smokers. These results suggest that non-smokers experience lower levels of severe depression, anxiety, and insomnia than their smokers. In contrast, no significant differences were observed between the two groups in the dimensions of "Psychosomatic Health" (U = 1254.5, p = 0.120) and "Social Functioning Effectiveness" (U = 1326.5, p = 0.246), indicating that smoking status did not appear to significantly impact these aspects of mental health among the studied athletes. Overall, the results highlight the selective negative effects of smoking on certain psychological dimensions, particularly those related to mood and sleep, whereas other aspects of psychosomatic and social functioning remain relatively unaffected.

Table 6. Mann-Whitney U test results for mental health scores among smokers and non-smokers

Variable	Group	Mean Rank	U	Sig.
Mental Health	Smokers	42.18	775	0.000
	Non-Smokers	76.45		

Table 6 presents the results of the Mann-Whitney U test comparing the overall mental health scores between smokers and nonsmokers. The analysis revealed a statistically significant difference (U = 775, p < 0.001), with non-smokers exhibiting a substantially higher mean rank (76.45) than that of smokers (42.18). This finding indicates that non-smokers reported better overall mental health than their smoking counterparts. The significant disparity underscores the detrimental impact of smoking on general mental health status among the athletes studied, further highlighting the importance of preventive strategies and targeted interventions to reduce smoking and promote psychological well-being in this population as showed in figure 1.

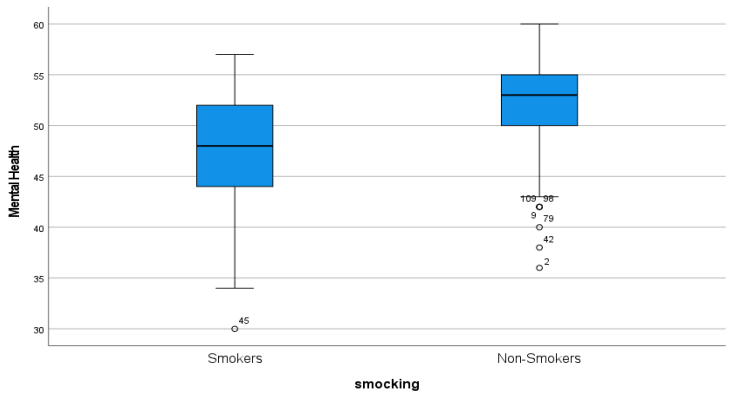

Figure 1. Comparison of mental health scores between smokers and non-smokers among

Discussion

This study aimed to investigate the impact of smoking on various dimensions of mental health in professional athletes. This research focused on four main dimensions of mental health: freedom from severe depression, freedom from insomnia and anxiety, psychosomatic health, and the effectiveness of social functioning. The Mann-Whitney U test was used to compare these dimensions between smoking and non-smoking athletes. The analysis revealed variability in the effects of smoking across different dimensions. While non-smoking athletes demonstrated statistically significantly higher mean ranks in the dimensions of "freedom from severe depression" and "freedom from insomnia and anxiety" than smokers, the results did not show statistically significant differences in the dimensions of "psychosomatic health" and "effectiveness of social functioning." These findings provide valuable insights into the differential effects of smoking on various aspects of mental health among semi-professional athletes, which will be discussed and interpreted in greater depth in the subsequent sections.

The results indicated statistically significant differences in the dimensions of freedom from severe depression and freedom from insomnia and anxiety, with non-smoking athletes recording substantially higher mean ranks than their smoking counterparts did. This advantage among non-smokers can be attributed to the well-documented negative psychological effects of nicotine, which are associated with changes in neurotransmitter levels related to mood and emotional stability, such as serotonin and dopamine. Nicotine leads to marked changes in specific brain regions associated with behavior and emotions (Pascual et al., 2009; Richard et al., 2024). Although dopamine release is temporarily enhanced, creating a reward-like effect, withdrawal causes sharp mood fluctuations and exacerbates anxiety and depression. Furthermore, smoking may contribute to worsening the symptoms of depression and anxiety disorders. Altun (2021) indicated a significant and clear association between nicotine dependence and depression, anxiety, and psychological distress, whether through direct physiological effects or otherwise. Additionally, smoking may exacerbate feelings of social isolation, guilt, or reduced self-esteem among athletes. Previous studies have shown that individuals experiencing severe social isolation were more than five times more likely to smoke compared to those who were not isolated, while avoiding isolation reduced the risk of smoking and thus lowered depression (Copeland et al., 2017). Smoking also has a negative impact, manifesting as insomnia, which, in turn, affects sleep quality among athletes. Smoking has a detrimental effect on sleep quality and architecture, increases the likelihood of sleep disorders, and heightens brain arousal at night, leading to fragmented and shallow sleep (Grigoriou et al., 2024). These factors negatively affect athletes' psychological well-being.

In contrast, the results did not reveal statistically significant differences in the dimensions of psychosomatic health and effectiveness of social functioning. Although nonsmokers had higher mean ranks, the differences did not reach statistical significance, suggesting that the impact of smoking on these dimensions may be weak or indirect. This may be attributed to the lifestyle patterns of athletes. Wang and Geng (2019) indicated that lifestyle had a significant positive effect on both physical and

https://doi.org/10.30892/gss.2302-135

mental health among athletes. Moreover, it can be inferred that regular physical exercise, even among smokers, contributes to enhanced psychosomatic health and social functioning. Maintaining a lifelong habit of regular physical activity supports a healthier life and better quality of life (ALMutlaqah et al., 2024). Additionally, and proper nutrition plays an important role in promoting and maintaining psychosomatic health, as a balanced diet is essential for bodily health, supporting growth, strengthening immunity, protecting against chronic diseases, and improving mental health, particularly in children and adolescents (Deif & Lawlor, 2022; Fadhilah, 2024).

These findings are consistent with those of Monshouwer et al. (2021), who indicate a potential causal link between smoking and the development of psychological disorders, particularly mood and anxiety disorders, across the general population. Furthermore, smoking has other markedly negative side effects on athletes' health, diminishing their physical capacity and athletic performance (Xiaogang et al., 2021). This occurs through detrimental effects on vital bodily systems, such as pulmonary function, the cardiovascular system, and the nervous system. Supporting this, Pepera and Panagiota (2021) demonstrated that smoking negatively affects cardiovascular efficiency, even among physically active athletes.

Additionally, smoking athletes often exhibit higher rates of social isolation, feelings of guilt, and lower self-esteem, especially in sports. Matsuyama and Tabuchi (2024) found a clear association between tobacco use and social isolation, revealing that smokers experienced significant social disconnection over time. Moreover, smoking has psychological effects on athletes by reducing their psychological well-being (Barros et al., 2015). This is attributed to the influence of nicotine on norepinephrine and serotonin secretion, both of which are linked to mood regulation in athletes. As noted by Knight (2000), nicotine and cigarette smoke affect key neurotransmitters associated with depression and psychological well-being, such as dopamine (which is responsible for reward and motivation) and serotonin (which regulates mood).

Conclusion

This study demonstrated that smoking has a selective negative impact on certain mental health dimensions among male athletes, particularly on aspects related to severe depression, anxiety, and insomnia. The findings revealed that non-smokers consistently scored higher on measures of mental health than their smoking counterparts, while no significant differences were observed in psychosomatic health or social functioning effectiveness. The lower prevalence of smoking among the athletes in this sample reflects both the health-conscious nature of this population and the influence of sports environments and coaching staff. These results underscore the importance of addressing smoking behaviors within athletic communities to promote overall mental well-being. Based on the study's findings, it is recommended to enhance awareness initiatives regarding the mental health risks associated with smoking among athletes, with a particular emphasis on mood and sleep quality. Additionally, coaches and sports organizations should be encouraged to implement stricter antismoking policies and provide targeted psychological support and

counseling for athletes who smoke. Future research should include larger and more balanced samples of smokers and non-smokers to validate and generalize these results further.

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