Explorando las disparidades de género en la angustia emocional entre los atletas de nivel universitario

Exploring gender-based disparities in emotional distress among university level athletes

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Abstract

Introduction: The mental health of university level athletes is a growing concern, with female athletes facing unique emotional challenges that remain underexplored.
Objective: This study aims to examine gender-based disparities in depression, anxiety, and stress among university-level volleyball, basketball, and handball players to understand sport-specific and gender-specific emotional dynamics.
Methodology: A cross-sectional comparative design was used, involving 60 university athletes (30 males, 30 females) aged 18-25 from LNIPE, Gwalior. Emotional symptoms were assessed using the Depression, Anxiety, and Stress Scales (DASS-42). Independent t-tests and one-way ANOVA were employed to analyze gender and sport differences, with significance set at $p < 0.05$.
Results: Results revealed distinct gender-based patterns: male volleyball players reported significantly higher levels of stress (mean score 24.80) and depression (mean score 17.60) compared to their female counterparts, while female basketball players exhibited greater depression (mean score 17.10) than males. Among handball players, females experienced significantly higher stress levels (mean score 19.70) compared to males.
Discussion: The findings suggest gender-specific emotional responses to competitive sports, possibly influenced by societal expectations, coping strategies, and sport-specific stressors. Volleyball's individual performance components may increase stress for male athletes, while basketball's physical demands might elevate depression levels among females. Handball's continuous play and physical contact likely contribute to elevated stress in female players.
Conclusions: Developing psychological support systems for university athletes can mitigate emotional challenges and optimize performance. Future research should explore longitudinal changes in emotional symptoms and their relationship with competitive dynamics.

Keywords

Anxiety, depression, emotional symptoms, Gender differences, mental health.

Resumen

Introducción: La salud mental de los atletas universitarios es una preocupación creciente, especialmente entre las mujeres, quienes enfrentan desafíos emocionales únicos que han sido poco explorados.
Objetivo: Este estudio busca examinar las disparidades de género en depresión, ansiedad y estrés entre jugadores universitarios de voleibol, baloncesto y balonmano, con el fin de comprender las dinámicas emocionales específicas de género y deporte.
Metodología: Se utilizó un diseño comparativo transversal con 60 atletas universitarios (30 hombres y 30 mujeres) de 18 a 25 años de LNIPE, Gwalior. Los síntomas emocionales se evaluaron mediante la Escala de Depresión, Ansiedad y Estrés (DASS-42). Se realizaron pruebas t independientes y ANOVA unidireccional para analizar diferencias por género y deporte, con un nivel de significación de $p < 0,05$.
Resultados: Los resultados mostraron patrones emocionales diferenciados por género: los jugadores masculinos de voleibol reportaron mayores niveles de estrés (media 24,80) y depresión (media 17,60) en comparación con las mujeres. Por otro lado, las jugadoras de baloncesto mostraron mayor depresión (media 17,10) que los hombres. En balonmano, las mujeres presentaron niveles significativamente más altos de estrés (media 19,70) en comparación con los hombres.
Discusión: Los hallazgos sugieren respuestas emocionales específicas de género en deportes competitivos, influenciadas por expectativas sociales, estrategias de afrontamiento y factores propios de cada deporte.
Conclusiones: Implementar sistemas de apoyo psicológico puede mitigar desafíos emocionales y mejorar el rendimiento de los atletas. Investigaciones futuras deberían explorar cambios emocionales longitudinales y su relación con las dinámicas competitivas.

Palabras clave

Ansiedad, depresión, síntomas emocionales, diferencias de género, salud men

Introduction

Mental health concerns among college students are on the rise, with female student-athletes facing unique challenges that remain understudied (Weber et al., 2023). Despite growing interest and participation in women's sports, research specifically examining the mental health factors affecting female student-athletes is scarce. This knowledge gap is particularly worrying given recent evidence highlighting persistent gender disparities in sport and exercise science research. A study revealed a striking imbalance: while 31% of studies in the field focused exclusively on male participants, only 6% included female-only cohorts. This disparity underscores the urgent need for more comprehensive research on the mental health experiences of female student-athletes (Cowley et al., 2021). Research on depression, anxiety, and stress among female student-athletes is vital, as it significantly affects their overall mental health and well-being (Egan, 2019). It also plays an important role in influencing their athletic performance and participation (Tingaz et al., 2023; Yang et al., 2007). Volleyball, like many sports, typically organizes teams based on both skill level and gender, with separate divisions for men and women. This segregation raises questions about how pre-competition anxiety manifests across different athlete demographics. Research indicates that the experience of competitive anxiety may vary significantly between male and female players (Correia & Rosado, 2019a; Grossbard et al., 2009; Kemarat et al., 2022). These gender-based differences in anxiety responses could be influenced by a complex interplay of biological, psychological, and sociocultural factors. Understanding these nuances is crucial for developing targeted strategies to support athletes' mental well-being and optimize performance across all demographics (Verdaguer et al., 2017). Research indicates that male athletes' self-confidence and cognitive anxiety remain relatively stable before a match, whereas female teams tend to experience an increase in somatic anxiety and a decrease in self-confidence leading up to the game (Correia & Rosado, 2019).

Psychosocial elements include predisposition, environment, personality, and attitudes towards physical activity and sports (Hernández et al., 2014). Several studies suggest that adolescents, regardless of gender, who participate in physical activities both in and outside of school tend to have a more positive self-image than their less active peers. Research clearly shows a positive correlation between adolescents' self-perception of their physical appearance and their participation in physical activity (Gaspar Vallejo & Alguacil Jiménez, 2022; Zapata Velásquez, 2022). The performance of basketball players is significantly influenced by cognitive components, including perceptual and decision-making elements (Zapata Velásquez, 2022). Several investigations have examined the influence of physical fatigue on player performance, indicating that there is a notable decrease in passing accuracy, ball speed, and shooting technique when players experience fatigue in contrast to their performance under non-fatigued conditions (F & M, 2009; Li et al., 2021). In basketball games, athletes operate within vigorous environments that necessitate the activation of psychological mechanisms to fulfill the competitive requirements (Sighinolfi, 2020). Players competing at higher levels typically demonstrate greater commitment, face more challenges, and exhibit higher levels of confidence. Stress creates mental conflict, which can result in physical injuries and potentially end an athlete’s career. Stress can be viewed either as a challenge or an obstacle on the road to success. Handball, being a situational sport, carries a high risk of injury. Athletes involved in extreme sports exhibit a variety of psychological traits, and several factors contribute to their stress resilience (Chrétien et al., 2024; Gupta & McCarthy, 2022).

Volleyball, basketball, and handball are popular team sports at the university level, each with unique physical and psychological demands. While these sports share some common elements, such as teamwork and strategic thinking, they differ in terms of physical contact, court size, and specific skill requirements. These variations may contribute to differences in emotional experiences among athletes (Nixdorf et al., 2016). Gender differences in emotional experiences and expression have been well-documented in the general population (Chaplin, 2015). However, less is known about how these differences manifest in the context of competitive sports, particularly among university-level athletes in specific team sports. Understanding these gender-specific patterns of negative emotional symptoms is crucial for developing targeted interventions and support systems for athletes (Reardon et al., 2019). A report titled "Physical and Sporting Activities: Sports for Adolescent Girls—Needs, Barriers, and Recommendations" highlights gender disparities in sports participation among adolescents in Spain. Conducted by the Polytechnic University of Madrid, MAPFRE Foundation, and COLEF Council, the study surveyed 3,578 students aged 12 to 16. It identifies societal stereotypes, limited female role models,

unequal access to resources, cultural expectations, and a lack of inclusive programs and support as key barriers to girls' participation in physical activities. The report aims to enhance opportunities for adolescent girls by addressing these challenges and understanding their motivations and obstacles (Página Principal, n.d.).

Method

It uses a cross-sectional comparative design to examine the gender differences regarding the prevalence and intensity of the unwanted negative emotional symptoms of university-level volleyball, basketball, and handball players. This study aims to assess and contrast the prevalence and intensity of adverse emotional symptoms experienced by male and female athletes engaged in volleyball, basketball, and handball.

Participants

The study involves three sports- volleyball, basketball, and handball; included 60 university-level athletes from LNIPE, Gwalior, Madhya Pradesh, India. For each sport, 20 athletes with an equal gender ratio of Male and Female has been recruited from university sports teams, ensuring they are actively engaged in their respective sports. All participants were aged between 18 and 25 years and provided written informed consent before the testing procedures. The study adhered to the principles of the Declaration of Helsinki (WMA - The World Medical Association-Declaration of Helsinki, 2013).

Procedure

Instrument

Data will be collected through Depression Anxiety and Stress Scales (DASS-42) by Lovibond, P. F., & Lovibond, S.H. (1995). Participants will complete these questionnaires individually in a quiet, controlled environment, with a researcher present to provide instructions and clarify any questions. The data collection process is expected to take approximately 30–40 minutes.

Data analysis

The data will be analyzed using SPSS version 26. Descriptive statistics will be applied to summarize the results. Independent samples t-tests will be performed to compare the mean scores of negative emotional symptoms between male and female athletes in each sport. Furthermore, a one-way ANOVA, with a significance level of 0.05, will be used to assess the differences in negative emotional symptoms across the three sports for both genders.

Results

The table 1 present the descriptive statistics reveal that male volleyball players exhibit higher levels of depression, anxiety, and stress compared to their female counterparts. Male players have a mean depression score of 17.60, while female players report a lower score of 15.10. Similarly, male players show a higher mean anxiety score of 15.70, compared to 13.80 in female players. Stress levels are notably higher among males, with a mean score of 24.80, whereas female players report a significantly lower stress score of 15.50. These results suggest that male volleyball players may experience more intense emotional responses, particularly regarding stress, than female players.

Table 1. Descriptive Statistics of the Responses on Depression, Anxiety and Stress of Volleyball Players (Males and Females)

Scales	Volleyball Players	Mean	Std. Deviation	Std. Error Mean
Depression	Male	17.60	2.11	.66
	Female	15.10	2.23	.70
Anxiety	Male	15.70	1.76	.55
	Female	13.80	1.47	.46
Stress	Male	24.80	2.39	.75
	Female	15.50	2.01	.63

The table 2 outlines the descriptive statistics for basketball players reveal that female players report higher levels of depression compared to males, with a mean depression score of 17.10, while male players have a lower mean of 15.50. In contrast, male players experience higher levels of anxiety, with a mean score of 16.70, compared to 14.40 in female players. Similarly, male players show slightly higher stress levels, with a mean score of 17.00, while female players report a slightly lower stress score of 15.70. Overall, female basketball players report higher depression, while male players show greater anxiety and stress.

Table 2. Descriptive Statistics of Depression, Anxiety, and Stress Responses among Male and Female Basketball Players

Scales	Basketball Players	Mean	Std. Deviation	Std. Error Mean
Depression	Male	15.50	1.17	.37
	Female	17.10	1.66	.52
Anxiety	Male	16.70	2.00	.63
	Female	14.40	1.34	.42
Stress	Male	17.00	1.88	.59
	Female	15.70	1.05	.33

The table 3 reveals the descriptive statistics for handball players reveal that male players experience slightly higher levels of depression, with a mean score of 16.30, compared to 14.70 for female players. However, female players report higher anxiety, with a mean score of 15.50, compared to 15.30 in males. Notably, female handball players experience significantly higher stress levels, with a mean score of 19.70, whereas male players report a much lower mean of 14.90. Overall, male players show higher depression, while female players experience more anxiety and significantly more stress.

Table 3. Descriptive Statistics of the Responses on Depression, Anxiety and Stress of Handball Players (Males and Females)

Scales	Handball Players	Mean	Std. Deviation	Std. Error Mean
Depression	Male	16.30	1.82	.57
	Female	14.70	1.25	.39
Anxiety	Male	15.30	1.49	.47
	Female	15.50	1.43	.45
Stress	Male	14.90	1.19	.37
	Female	19.70	2.54	.80

The table 4 shows the independent t-test results for male and female volleyball players show significant gender differences in depression, anxiety, and stress levels. Male players report significantly higher depression ($p = 0.01$, mean difference = 2.50) and anxiety ($p = 0.01$, mean difference = 1.90) than female players. The most pronounced difference is in stress levels, with males experiencing significantly higher stress ($p = 0.00$, mean difference = 9.30). Levene's test confirms equal variances for all three variables, validating the t-test results.

Table 4. Levene's Test and t-test Results for Depression, Anxiety, and Stress by Gender in Volleyball

Variable	Levene's Test for Equality of Variances	t-test for Equality of Means	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
	F	Sig.	t	df	Sig. (2-tailed)
Depression	0.02	0.87	2.56	18	0.01
			2.56	17.95	0.01
Anxiety	1.32	0.26	2.61	18	0.01
			2.61	17.44	0.01
Stress	0.18	0.67	9.40	18	0.00
			9.40	17.48	0.00

The table 5 displays the independent t-test results for male and female basketball players reveal significant gender differences in depression and anxiety levels. Female players report significantly higher depression ($p = 0.02$, mean difference = -1.60) and anxiety ($p = 0.00$, mean difference = 2.30) compared to males. Levene's test confirms equal variances for both depression ($p = 0.26$) and anxiety ($p = 0.08$). However, the difference in stress levels between genders is not statistically significant ($p = 0.07$), with females reporting slightly higher stress. Levene's test suggests equal variances for stress ($p = 0.03$), though the result is marginally significant.

Table 5. Levene's Test and t-test Results for Depression, Anxiety, and Stress by Gender in Basketball

Variable	Levene's Test for Equality of Variances	t-test for Equality of Means	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
	F	Sig.	t	df	Sig. (2-tailed)
Depression	1.33	0.26	-2.48	18	0.02
			-2.48	16.21	0.02
Anxiety	3.24	0.08	3.01	18	0.00
			3.01	15.77	0.00
Stress	5.25	0.03	1.90	18	0.07
			1.90	14.16	0.07

The table 6 provides the independent t-test results for male and female handball players reveal significant gender differences in depression, anxiety, and stress. Female players report significantly higher depression levels (p = 0.03, mean difference = 1.60), while male players experience significantly higher anxiety (p = 0.021, mean difference = -1.40) and stress (p = 0.00, mean difference = -4.60) compared to females. Levene's test confirms equal variances for depression (p = 0.09), anxiety (p = 0.12), and stress (p = 0.02), validating the t-test comparisons.

Table 6. Levene's Test and t-test Results for Depression, Anxiety, and Stress by Gender in Handball

Variable	Levene's Test for Equality of Variances	t-test for Equality of Means	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
	F	Sig.	t	df	Sig. (2-tailed)
Depression	3.04	0.09	2.28	18	0.03
			2.28	15.91	0.03
Anxiety	2.53	0.12	-2.53	18	0.02
			-2.53	16.03	0.02
Stress	5.79	0.02	-5.33	18	0.00
			-5.33	11.69	0.00

The table 7 presents the descriptive statistics for male players from volleyball, basketball, and handball teams show differences in depression, anxiety, and stress levels. Volleyball players had the highest mean depression score (17.6), followed by handball players (16.3) and basketball players (15.5). The overall combined depression mean was 16.47, with scores ranging from 14 to 21 across all players. Basketball players had the highest mean anxiety score (16.7), followed by volleyball (15.7) and handball players (15.3). The overall combined anxiety mean was 15.9, with scores ranging from 13 to 20 across players. Volleyball players reported the highest stress levels with a mean score of 24.8, followed by basketball players (17.0), and handball players with the lowest mean (14.9). The overall combined stress mean was 18.9, with a broad range of scores from 13 to 28.

Table 7 Descriptive Statistics of Depression, Anxiety, and Stress Among Male Volleyball, Basketball, and Handball Player

	Mean	Std. Deviation	Std. Error	95% Confidence Interval for mean		Minimum	Maximum
				Lower Bound	Upper Bound		
Descriptive Statistics of Male Players (Volleyball, Basketball and Handball) Depression							
Volleyball	17.60	2.11	.66	16.08	19.11	15	21
Basketball	15.50	1.17	.37	14.65	16.34	14	18
Handball	16.30	1.82	.57	14.99	17.60	14	19
Total	16.46	1.90	.34	15.75	17.17	14	21
Descriptive Statistics of Male Players (Volleyball, Basketball and Handball) Anxiety							
Volleyball	15.70	1.76	.55	14.43	16.96	13	18
Basketball	16.70	2.00	.63	15.26	18.13	14	20
Handball	15.30	1.49	.47	14.23	16.36	13	18
Total	15.90	1.80	.32	15.22	16.57	13	20
Descriptive Statistics of Male Players (Volleyball, Basketball and Handball) Stress							
Volleyball	24.80	2.39	.75	23.08	26.51	20	28
Basketball	17.00	1.88	.59	15.65	18.34	15	20
Handball	14.90	1.19	.37	14.04	15.75	13	17
Total	18.90	4.70	.85	17.14	20.65	13	28

The table 8 presents the analysis of variance (ANOVA) results for male volleyball, basketball, and handball players reveal significant differences in depression and stress, but not in anxiety. The analysis reveals a statistically significant difference in depression levels across the groups (F = 3.65, p = 0.03). The between-groups sum of squares is 22.46, with a mean square of 11.23. No significant difference is found in anxiety levels across the groups (F = 1.66, p = 0.20). The between-groups sum of squares is

10.400, with a mean square of 5.20. A highly significant difference in stress levels exists among the groups (F = 76.132, p < 0.00). The between-groups sum of squares is 544.20, with a mean square of 272.10.

Table 8. ANOVA Table for Data on Depression, Anxiety and Stress in Male Volleyball, Basketball and Handball Players

Variables		Sum of Squares	df	Mean Square	F	Sig.
Depression	Between Groups	22.46	2	11.23	3.65	.03
	Within Groups	83.00	27	3.07		
Anxiety	Between Groups	10.40	2	5.20	1.66	.20
	Within Groups	84.30	27	3.12		
Stress	Between Groups	544.20	2	272.10	76.13	.00
	Within Groups	96.50	27	3.57		

The table 9 presents the post hoc LSD test results reveal significant differences in depression and stress levels among male volleyball, basketball, and handball players, but no significant differences in anxiety levels. Volleyball players had significantly higher depression levels compared to basketball players (mean difference = 2.10, p = 0.01). However, the difference between volleyball and handball players was not significant. Basketball players reported significantly lower depression scores than volleyball players, but there was no significant difference between basketball and handball players. The analysis revealed no notable variations in anxiety levels across the three groups studied. The mean differences between volleyball, basketball, and handball players were not statistically significant. Significant differences in stress levels were observed across all groups. Volleyball players reported significantly higher stress levels than both basketball (mean difference = 7.80, p < 0.001) and handball players (mean difference = 9.90, p < 0.001). Basketball players had significantly higher stress levels than handball players (mean difference = 2.10, p = 0.01), but lower than volleyball players.

Table 9. Post hoc comparison of means using LSD test among male players (Volleyball, Basketball and Handball)

(I) Male Players	(J) Male Players	Mean Difference (I – J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Dependent Variable: Depression						
Volleyball	Basketball	2.10*	.78	.01	.49	3.70
	Handball	1.30	.78	.10	-.3	2.90
Basketball	Volleyball	-2.10*	.78	.01	-3.7	-.49
	Handball	-.80	.78	.31	-2.4	.80
Handball	Volleyball	-1.30	.78	.10	-2.9	.30
	Basketball	.80	.78	.31	-.80	2.40
Dependent Variable: Anxiety						
Volleyball	Basketball	-1.00	.79	.21	-2.62	.62
	Handball	.40	.79	.61	-1.22	2.02
Basketball	Volleyball	1.00	.79	.21	-.62	2.62
	Handball	1.40	.79	.08	-.22	3.02
Handball	Volleyball	-.40	.79	.61	-2.02	1.22
	Basketball	-1.40	.79	.08	-3.02	.22
Dependent Variable: Stress						
Volleyball	Basketball	7.80*	.84	.00	6.06	9.53
	Handball	9.90*	.84	.00	8.16	11.63
Basketball	Volleyball	-7.80*	.84	.00	-9.53	-6.06
	Handball	2.10	.84	.01	.36	3.83
Handball	Volleyball	-9.90	.84	.00	-11.63	-8.16
	Basketball	-2.10	.84	.01	-3.83	-.36

The table 10 present the descriptive statistics for female volleyball, basketball, and handball players reveal variations in depression, anxiety, and stress levels. Basketball players reported the highest mean depression score (17.1), followed by volleyball players (15.1) and handball players (14.7). The overall mean depression score for all players was 15.63. Scores ranged from 12 to 20 across all players. Handball players had the highest mean anxiety score (15.5), followed by basketball players (14.4) and volleyball players (13.8). The overall mean anxiety score for all players was 14.3, with scores ranging from 12 to 17. Handball players exhibited significantly higher stress levels, with a mean score of 19.7, compared to volleyball players (15.5) and basketball players (15.7). The overall mean stress score for all players was 16.97, with scores ranging from 12 to 24.

Table 10 Descriptive Statistics of Female Players (Volleyball, Basketball and Handball) Depression

	Mean	Std. Deviation	Std. Error	95% Confidence Interval for mean		Minimum	Maximum
				Lower Bound	Upper Bound		
Descriptive Statistics of Female Players (Volleyball, Basketball and Handball) Depression							
Volleyball	15.10	2.23	.70	13.50	16.69	12	19
Basketball	17.10	1.66	.52	15.91	18.28	15	20
Handball	14.70	1.25	.39	13.80	15.59	13	17
Total	15.63	2.00	.36	14.88	16.38	12	20
Descriptive Statistics of Female Players (Volleyball, Basketball and Handball) Anxiety							
Volleyball	13.80	1.47	.46	12.74	14.85	12	17
Basketball	14.40	1.34	.42	13.43	15.36	12	17
Handball	15.50	1.43	.45	13.74	15.65	13	17
Total	14.30	1.39	.25	13.77	14.82	12	17
Descriptive Statistics of Female Players (Volleyball, Basketball and Handball) Stress							
Volleyball	15.50	2.01	.63	14.05	16.94	12	18
Basketball	15.70	1.05	.33	14.94	16.45	14	17
Handball	19.70	2.54	.80	17.88	21.51	16	24
Total	16.96	2.73	.49	15.94	17.98	12	24

The table 11 reveals the analysis of variance (ANOVA) results for female volleyball, basketball, and handball players indicate. There is a statistically significant difference in depression levels among the groups ($F = 5.32$, $p = 0.01$). The between-groups sum of squares is 33.06, with a mean square of 16.53. No significant differences are found in anxiety levels across the groups ($F = 1.08$, $p = 0.35$). The between-groups sum of squares is 4.20, with a mean square of 2.10. A highly significant difference in stress levels is observed among the groups ($F = 14.47$, $p < 0.001$). The between-groups sum of squares is 112.26, with a mean square of 56.13.

Table 11. ANOVA Table for Data on Depression, Anxiety and Stress in Female Volleyball, Basketball and Handball Players

Variables		Sum of Squares	df	Mean Square	F	Sig.
Depression	Between Groups	33.06	2	16.53	5.32	.01
	Within Groups	83.90	27	3.10		
Anxiety	Between Groups	4.20	2	2.10	1.08	.35
	Within Groups	52.10	27	1.93		
Stress	Between Groups	112.26	2	56.13	14.47	.00
	Within Groups	104.70	27	3.87		

Table 12. Post hoc comparison of means using LSD test among Female players (Volleyball, Basketball and Handball)

(I) Female Players	(J) Female Players	Mean Difference (I – J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Dependent Variable: Depression						
Volleyball	Basketball	-2.00*	.78	.01	-3.61	-.38
	Handball	.40	.78	.61	-1.21	2.01
Basketball	Volleyball	2.00*	.78	.01	.38	3.61
	Handball	2.40*	.78	.00	.78	4.01
Handball	Volleyball	-.40	.78	.61	-2.01	1.21
	Basketball	-2.40*	.78	.00	-4.01	-.78
Dependent Variable: Anxiety						
Volleyball	Basketball	-.60	.62	.34	-1.87	.67
	Handball	-.90	.62	.15	-2.17	.37
Basketball	Volleyball	.60	.62	.34	-.67	1.87
	Handball	-.30	.62	.63	-1.57	.97
Handball	Volleyball	.90	.62	.15	-.37	2.17
	Basketball	.30	.62	.63	-.97	1.57
Dependent Variable: Stress						
Volleyball	Basketball	-.20	.88	.82	-2.00	1.60
	Handball	-4.20*	.88	.00	-6.00	-2.39
Basketball	Volleyball	.20	.88	.82	-1.60	2.00
	Handball	-4.00*	.88	.00	-5.80	-2.19
Handball	Volleyball	4.20*	.88	.00	2.39	6.00
	Basketball	4.00*	.88	.00	2.19	5.80

The table 12 presents the post hoc LSD test results for female volleyball, basketball, and handball players show significant differences in depression and stress levels, but not in anxiety. Volleyball players had significantly lower depression scores compared to basketball players (mean difference = -2.00, $p = 0.01$). Basketball players had significantly higher depression scores than both volleyball (mean difference = 2.00, $p = 0.01$) and handball players (mean difference = 2.40, $p = 0.005$). No significant difference in

depression scores between volleyball and handball players. The analysis revealed no significant differences in anxiety levels across the groups analyzed. The differences between volleyball and basketball players, volleyball and handball players, and basketball and handball players were not statistically significant. Volleyball players had significantly lower stress levels compared to handball players (mean difference = -4.20, $p < 0.001$), but not compared to basketball players (mean difference = -0.20, $p = 0.82$). Basketball players had significantly lower stress levels compared to handball players (mean difference = -4.00, $p < 0.001$). Handball players reported significantly higher stress levels compared to both volleyball (mean difference = 4.20, $p < 0.001$) and basketball players (mean difference = 4.00, $p < 0.001$).

Discussion

This paper explores gender differences in depression, anxiety, and stress in three athletics activities at the university level, including volleyball, basketball, and handball. It has been suggested recently to focus on developing the performance indicators (Govindasamy et al., 2024). It shows some interesting patterns for these sports, thus demonstrating how interactions among gender and emotional well-being of athletics competitors may have complex pathways. For instance, males at all levels of volleyball competition report more levels of depression, anxiety, and stress than females. This finding aligns with research by Schaal et al. (2011), who found that male athletes in some sports exhibited higher rates of anxiety disorders than their female counterparts (Schaal et al., 2011). A remarkable finding is that male volleyball players experience significantly higher levels of stress than their counterparts (mean difference = 9.30, $p < 0.05$). This may have to do with coping strategies or the perceived pressures in relation to achieving what is expected of an athlete, according to Nicholls et al. (2007) who stressed this in their work on gender differences in athlete stress and coping (Nicholls et al., 2007). Interestingly, the trend seen in volleyball players was somewhat reversed for basketball players. Female basketball players reported significantly higher levels of depression compared to their male counterparts (mean difference = -1.60, $p = 0.02$). This aligns with the general population pattern, where females tend to report higher rates of depression (Albert, 2015). However, male basketball players still demonstrated higher levels of anxiety (mean difference = 2.30, $p = 0.007$). The absence of a significant difference in stress levels between genders among basketball players suggests that this sport may have unique stressors affecting both genders similarly. In handball, the pattern of gender differences was mixed: males reported significantly higher levels of depression (mean difference = 1.60, $p = 0.03$), while females experienced notably higher stress levels (mean difference = -4.60, $p < 0.05$). These findings underscore the need for sport-specific analyses to understand gender differences in emotional well-being among athletes. The elevated stress levels in female handball players may be linked to factors like societal expectations or variations in team dynamics, as suggested by Hampel and Petermann (2006) in their study on gender differences in stress perception and coping strategies (Hampel & Petermann, 2006).

The diverse patterns of gender differences observed in these three sports highlight the complexity of emotional well-being in athletic environments. These results reinforce the idea that gender differences in negative emotional symptoms are not consistent across sports and may be shaped by factors specific to each sport, team dynamics, and individual coping strategies (Hoar et al., 2010). The findings also emphasize the need for customized mental health interventions for athletes. As noted by Reardon et al. (2019) in their extensive review of mental health among elite athletes, sport psychologists and team managers should take these gender-specific vulnerabilities into account when creating support systems and interventions (Reardon et al., 2019).

This study also investigated the differences in depression, anxiety, and stress levels among male university players in volleyball, basketball, and handball. The ANOVA and post hoc analyses revealed interesting patterns that enhance our understanding of sport-specific emotional experiences in male athletes. The ANOVA results indicated significant differences in depression levels among male athletes across the three sports ($F = 3.65$, $p = 0.03$). Post hoc comparisons showed that volleyball players had significantly higher depression scores than basketball players (mean difference = 2.10, $p = 0.01$). These findings are consistent with previous research indicating that the prevalence and severity of depressive symptoms can differ among various sports. For example, Wolanin et al. (2015) found that athletes in individual sports reported higher rates of depression compared to those in team sports (Wolanin et al.,

2015). Although volleyball is a team sport, it includes more individual performance moments (such as serving and spiking) compared to basketball, which may contribute to higher depressive symptoms. The elevated depression scores among volleyball players might also be linked to the sport's inherent characteristics. Schaal et al. (2011) discovered that aesthetic sports are associated with higher rates of depression, and while volleyball is not purely an aesthetic sport, its elements of timing and coordination may heighten performance pressure (Schaal et al., 2011). Moreover, Gulliver et al. (2015) reported that factors such as injuries, performance pressures, and the physical demands of training can contribute to depressive symptoms in athletes (Gulliver et al., 2015). The specific physical demands and injury risks linked to volleyball may contribute to the observed differences. Interestingly, the ANOVA results indicated no significant differences in anxiety levels among male athletes across the three sports ($F = 1.66$, $p = 0.2$). This implies that, despite the distinct characteristics of these sports, the overall anxiety experienced by male athletes may be similar. This finding is somewhat unexpected, as previous research has frequently identified sport-specific differences in anxiety levels. For instance, Ramis et al. (2017) noted variations in competitive anxiety across various sports, with some team sports exhibiting lower anxiety levels compared to individual sports (Ramis et al., 2017). The absence of significant differences in our study may be attributed to the common experiences of competitive pressure and performance expectations shared among team sports at the university level. According to Rice et al. (2016), the prevalence of anxiety symptoms in elite athletes is comparable to or even exceeds that of the general population, suggesting that the demands of high-level competition may be a key factor, regardless of the specific sport involved (Rice et al., 2016). Furthermore, Pluhar et al. (2019) noted that team sport athletes often experience similar levels of anxiety related to social evaluation and team dynamics, which could explain the consistent anxiety levels observed across volleyball, basketball, and handball in our study (Pluhar et al., 2019). The most significant differences were found in stress levels among male athletes across the three sports ($F = 76.13$, $p < 0.001$). Post hoc comparisons indicated that volleyball players experienced significantly higher stress levels than both basketball and handball players, with basketball players also reporting higher stress than handball players. These findings support the idea that different sports create varying levels of stress for athletes. Nicholls et al. (2007) discovered that the type of sport greatly affects the stressors athletes face and their coping strategies (Nicholls et al., 2007).

The notably higher stress levels in volleyball players might be attributed to the unique demands of the sport. For instance, Kilic et al. (2017) reported that volleyball players experience high levels of physical and psychological stress due to the explosive nature of the game and the constant need for quick reactions and decision-making (Kilic et al., 2017). The lower stress levels seen in handball players are noteworthy and deserve further exploration. It's possible that factors like the continuous flow of play in handball, which facilitates a more shared responsibility among team members, may help reduce perceived stress.

This study also explored the differences in depression, anxiety, and stress levels among female volleyball, basketball, and handball players at the university level. The ANOVA and post hoc analyses revealed interesting patterns that enhance our understanding of sport-specific emotional experiences in female athletes. The ANOVA results showed significant differences in depression levels among female athletes across the three sports ($F = 5.32$, $p = 0.01$). Post hoc comparisons indicated that basketball players reported significantly higher depression scores compared to both volleyball players (mean difference = 2.00, $p = 0.01$) and handball players (mean difference = 2.400, $p = 0.005$). These findings support earlier research suggesting that the prevalence and severity of depressive symptoms can differ among various sports and may be influenced by specific factors related to each sport. For example, Wolanin et al. (2015) found that female athletes in certain sports reported higher rates of depression, potentially due to factors like performance pressure, training intensity, and competition levels (Wolanin et al., 2015). The higher depression scores in basketball players could be related to the nature of the sport itself. Gulliver et al. (2015) reported that factors such as injuries, performance pressures, and the physical demands of training can contribute to depressive symptoms in athletes (Gulliver et al., 2015).

The specific physical demands and injury risks associated with basketball might play a role in the observed differences. Moreover, Nixdorf et al. (2016) found that athletes in team sports with a strong individual performance component (like basketball) may experience higher levels of depression due to increased pressure for individual performance within the team context (Nixdorf et al., 2016). Interestingly, the ANOVA results showed no significant differences in anxiety levels among female athletes across the three sports ($F = 1.08$, $p = 0.35$). This suggests that despite the varying nature of

these sports, the overall anxiety experienced by female athletes might be similar. This finding is consistent with some previous research. For example, Pluhar et al. (2019) noted that team sport athletes often experience similar levels of anxiety related to social evaluation and team dynamics, which could explain the consistent anxiety levels observed across volleyball, basketball, and handball in our study (Pluhar et al., 2019). However, this result contrasts with other studies that have found sport-specific differences in anxiety levels. Ramis et al. (2017) reported variations in competitive anxiety across different sports, with some team sports showing lower levels of anxiety compared to individual sports (Ramis et al., 2017) The lack of significant differences in our study might be explained by the shared experiences of competitive pressure and performance expectations across team sports at the university level. As suggested by Rice et al. (2016), the prevalence of anxiety symptoms in elite athletes is comparable to or higher than the general population, indicating that high-level competition itself might be a significant factor regardless of the specific sport (Rice et al., 2016). Significant differences were observed in stress levels among female athletes across the three sports ($F = 14.47$, $p < 0.001$). Post hoc comparisons revealed significantly higher stress levels in handball players compared to both volleyball (mean difference = 4.20, $p < 0.001$) and basketball players (mean difference = 4.00, $p < 0.001$). These findings are consistent with the notion that different sports impose varying levels of stress on athletes.

Nicholls et al. (2007) found that the type of sport significantly influenced the stressors experienced by athletes and their coping strategies (Nicholls et al., 2007). The significantly higher stress levels in handball players may be linked to the specific demands of the sport. Eklund and Defreese (2015) noted that the physical requirements, time commitments, and performance expectations associated with certain sports can contribute to elevated stress levels (Eklund & DeFreese, 2015). The continuous gameplay in handball, characterized by high intensity and frequent physical contact, may lead to increased stress levels. The lower stress levels observed in volleyball and basketball players are intriguing and merit further exploration. It's possible that the more structured nature of these sports, which includes clear breaks between points or quarters, contributes to lower perceived stress. This is consistent with findings by Kristiansen et al. (2012), who observed that the structure and rhythm of certain sports can affect athletes' stress experiences (Kristiansen et al., 2012). These findings emphasize the need for sport-specific strategies in mental health support for female athletes. While anxiety levels seem to be consistent across sports, the notable differences in depression and stress levels indicate that customized interventions may be required. Future research should investigate the underlying factors that contribute to these sport-specific variations. Exploring elements such as training routines, competition frequency, injury rates, and pressures unique to each sport could yield valuable insights into the observed trends. Moreover, longitudinal studies that track how these emotional symptoms change throughout a competitive season could provide a more thorough understanding of female athletes' mental health trajectories in various sports.

Conclusions

This study therefore brings to light the complex interplay of gender and emotional well-being among university-level athletes who participate in volleyball, basketball, and handball. The difference in patterns of levels of depression, anxiety, and stress varied remarkably from sport to sport and from gender to gender. Higher depression and stress levels were shown by male athletes as compared to basketball players and handball players, which highlighted the specific pressures related to demands put upon volleyball players. Conversely, basketball players had higher levels of anxiety compared to other male athletes, whereas the level of anxiety overall was identical across sports, therefore reflecting unified competitive stress. A significant difference between stress in volleyball and handball highlights the different stressors of each sport. Emotional symptoms presented by female athlete's revealed varied patterns. Basketball players scored significantly higher on the depression scale than volleyball and handball players. This is in line with general trends reported in the population at large. In contrast, handball players reported the highest stress scores, perhaps because the participants perceived handball to involve more intense and continuous activity. Anxiety levels were comparably uniform across sports for women; this would suggest that competitive pressures impact anxiety in an undifferentiated manner regardless of sport. These findings would suggest a need for sport-specific mental health interventions aimed at tackling the challenges these athletes face in this kind of

environment. Tailored support systems can then create an acceleration for managing gender-related vulnerabilities further to optimize psychological well-being in competitive sports. Future studies should then further delve into what influences these emotional differences and how they change during the course of a competitive season. The dynamics in question being understood in this manner shall help us serve athletes well, in keeping their mental health along with their athletic performance.

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