THE IMPACT OF ANXIETY, STRESS, AND AGGRESSION ON THE PERFORMANCE OF FEMALE BASKETBALL PLAYERS: THE CASE OF THE ETHIOPIAN BASKETBALL PREMIER LEAGUE

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Abstract

Playing basketball involves many forms of stress, anxiety, and aggression that female basketball players need to be able to achieve the desired performance. It is also important to release any accumulated tension in a way that allows them to become more resilient. The purpose of this study is to examine the impact of psychological factors such as stress, anxiety, and aggression on the game performance of female basketball players. To address this objective, a correlational research design with a quantitative approach was used. The sample consisted of sixty female basketball trainees from four female basketball clubs. The trainees were selected by using purposive sampling. And the four teams were selected using comprehensive sampling to include all female basketball clubs. The researcher used these standard questionnaires of aggression, the Perceived Stress Scale for stress, and the Sports Competition Anxiety Test for anxiety and game performance. A real-time game observation checklist was used, adopted by the researcher to collect data. And the statistical analyses were examined through SPSS version 26 software; the researcher used correlation, regression, independent t-tests, and two-way ANOVA. It is found that the stress, anxiety, and aggression of the trainees are at a moderate level. Where values $p \leq 0.05$ were considered as significant. The result indicated that anxiety, aggression, and stress had a negative correlation with the performance of young female' basketball trainees ($r = -.883$; $p = 0.001$, $r = -.870$; $p = 0.000$, $r = -.782$; $p = 0.001$, respectively). Anxiety is the predictor variable that donates the highest variation of game performance. Based on the results, it was found that there is a strong correlation between anxiety and aggression. It implies that it is essential for female basketball trainees to acquire coping mechanisms to manage stress, anxiety, and aggression efficiently, enabling them to enhance their performance.

Key words: Match analysis; Game performance; Performance indicators; Real-time game observation

1.1 Background of the study.

The impact that coaches have on a player's growth is a crucial component of performance in basketball. Thus, one of the primaries focuses of movement and training sciences is performance analysis. The techniques for match analysis employed in this discipline have steadily developed, and much of the most well-known and inventive recent research (Debanne, 2018). There are immediate applications for the analysis of sports performance metrics. Reference values, as noted (Union et al., 2014) .Can help coaches set measurable goals for performance and training, as well as comprehend team performance variability. They can also be useful in assessing the effectiveness of tactical adjustments and training interventions.

The study explores the impact of stress on sports performance and offers strategies for athletes, coaches, and support groups to improve well-being, providing valuable insights for sports psychology students and coaches (Bali, 2015).The pressure of stress can have effects on basketball athletes, resulting in a decline in performance, higher chances of injury, and mental health concerns. Stress and coping mechanisms are High levels of pre-competitive stress negatively affect performance, particularly when athletes lack adaptive coping strategies(Luís & Pellini, 2019). To counter these impacts, stress management strategies such as relaxation exercises and biofeedback training can be utilized (Kadwe, 2019).

Anxiety is a mental health concern affecting athletes like basketball players. Studies show that female players, regardless of injury, experience anxiety levels. Male players show higher anxiety levels, while injured individuals show higher levels. This affects performance. Anxiety and Performance is a curvilinear relationship exists between somatic anxiety and performance, indicating that moderate levels of anxiety can enhance performance, while excessive anxiety can hinder it (Percibida & En, 2014). And successful female players report lower anxiety levels compared to their less successful counterparts, suggesting that effective anxiety management correlates with better performance outcomes (Szabo & Sciences, 2014).

(Chorot, 2017)Managing anxiety, in women basketball players is vital, for their success and overall performance. It can show up as both physical strains making it important for coaches and sports psychologists to focus on the wellbeing of these players (Kristjánsdóttir et al., 2018). Aggression, a form of behavior, can significantly impact an individual's wellbeing. Understanding its evolution and factors influencing it is crucial for effective mitigation. Studying aggression in basketball players can reveal its prevalence, causes, and potential remedies(Kaur, 2016).Sport psychology is designed to help players compete to the best of their ability. Being able to manage competition-related stress, pressure, anxiety, and Aggressiveness is crucial. Sport science exists to train players with the necessary tools and techniques to manage psychological issues when they emerge. Sport psychologists' works on to make the soft-minded more resilient and the realistic(Kadwe, 2019).

Studies have indicated that the psychological factors of stress, anxiety, and aggression significantly influence sports performance, exhibiting both positive and negative effects. Understanding these dynamics is crucial for athletes and coaches to optimize performance and mental well-being. And the following studies show psychological variables in pair with performance and aggression, performance and anxiety, and performance and stress. (Kristjánsdóttir et al., 2018), (Bali, 2015), (Kadwe, 2019), (Kaur, 2016), (Chorot, 2017) (Szabo & Sciences, 2014), and (Luís & Pellini, 2019). However, this study aims to investigate the

impact of stress, anxiety, and aggression on the game performance of female basketball players because, in my understanding, there has been a lack of research studies on the association of psychological factors and game performance, particularly with stress, anxiety, and aggression. And understanding these factors can help create interventions to help these players overcome these challenges and succeed in their game performance.

According to (Pang et al., 2020) performance profiles can be created using knowledge of performance indicators to predict team psychological behaviors and performance results. Each psychological factor affects sports performance differently, yet some factors are better and more appropriate for some types of games than others (Singh et al., 2016).

Numerous psychological researches have demonstrated the function of psychological traits and their influence on group or individual performance(Business et al., 2020). In order to acquire new skills and perform effectively during training and competition, athletes of all ability levels should be in good physical and mental health (Itoh, 2020).

The psychological- wellbeing of these female basketball players was likely affected by performance outcomes, competition pressure, teammate requirements, and training demands. The purpose of this study is to investigate the psychological factors faced by female basketball club players in the Ethiopian Premier league and how these variables predict their game performance. Existing literature primarily focuses on the male gender group, and overall performance does not show the impact of stress, anxiety, and aggression on game performance. This study aims to fill this gap by specifically addressing female basketball club players in Ethiopia. The purpose of this study is to investigate the impact of stress, anxiety, and aggression on the game performance of female basketball players.

1.2. Research Questions

1) What is the impact of stress on the game performance of female basketball players in Ethiopian premier league?
2) How does anxiety impact the game performance of female basketball players in Ethiopian premier league.?
3) How does aggression affect the game performance of female basketball players in Ethiopian premier league?
4) What is the association between independent variables (anxiety, stress and aggression) and dependent variable (game performance of female basketball players) in Ethiopia?

1.3. General objective:

-To investigating the impact psychological variables stress, anxiety and aggression on female basketball premier league players game performance, in Ethiopia.

1.3.1. Specific Objectives

1. To find out the relationship between stress and game performance among female basketball players in Ethiopian premier league.
2. To identify the relationship between anxiety and game performance among female

basketball players in Ethiopian premier league.

3. To find out the relationship between aggression and game performance among female basketball players in Ethiopian premier league.
4. To Explore the impact of stress, anxiety, and aggression on game performance among female basketball players in Ethiopian premier league.

1.3. Conceptual Framework

The study was surrounded on the following points:

- ✓ To investigate the relationship of psychological factors among stress, anxiety, and aggression in female basketball players game performance.
- ✓ Geographically it is delimited on four female basketball players in Ethiopian premier league specific focus on Hawassa city, Wolkite City, Bahir Dar city and Ethiopian sport Academy.

Regarding measurement tools, this study is used:

- ✓ Aggression questionnaires (Buss & Perry, 1992),
- ✓ Perceived Stress Scale (Cohen et al., 2012),and
- ✓ Sport Competition Anxiety Test (SCAT) (Corcoran, 2016)
- ✓ Real game observation check list to game performance (adopted by the researcher)

1.5. significance of the study

The study provides a deeper understanding of the psychological factors (aggression, anxiety, and stress) and how they are affecting female basketball players performance. It provides concepts on the relationship between game performance and psychological factors, particularly aggression, anxiety, and stress. It is beneficial for coaches, sports and physical education specialists, and teachers to have more knowledge regarding psychological factors. It provides more insight into the field of study and helps the researcher gain more expertise in carrying out follow-up research. The study also aims to provide solutions and reliable information to coaches and other sports stakeholders regarding the relationship between selected psychological factors and female basketball trainees performance. Lastly, this study serves as a foundation for future researchers who are interested in conducting related research in this field.

1.6 Previous Studies on stress, anxiety, aggression, and performance

Research indicates that stress, anxiety, and aggression significantly impact the performance of female basketball players. Successful players tend to report lower pre-competitive anxiety compared to less successful players (Szabo & Sciences, 2014).Happiness was found to be a predictor of successful game involvement, while anger and embarrassment were associated with unsuccessful game involvement(Taylor et al., 2014). Cognitive anxiety has been shown to have a significant negative impact on the performance of both basketball and volleyball

players(Kousar, 2022). However, one study found no significant association between basketball performance and anxiety during the premenstrual phase (Hoover et al., 2017). Factors such as game location can influence players' psychological states, with more positive affect reported before home games compared to away games (Szabo & Sciences, 2014).These findings highlight the complex relationship between stress, anxiety, aggression, and performance in female basketball players, emphasizing the need for coaches to provide supportive environments and coping mechanisms to enhance players' self-confidence and performance.

3. RESEARCH METHODS

3.1. Research Design

The aim is to study the impact of anxiety, stress, and aggression on the performance of female basketball players: the case of the Ethiopian Basketball Premier League. And the study design aims to balance effectiveness of technique with relevance to the study's purpose by setting up parameters for data collection and analysis (Kothari, 2004) .Research that aims to explain the relationship or association between variables and predicting results is known as a correlational study(Creswell, 2021). The researcher employed a descriptive correlational research design. And this kind of design has provided the ability to study the association between variables and explain the relation between variables. The study employed a quantitative approach, depending on the suitability and type of the data, to identify the effect of stress, anxiety, and aggression on game performance and to recommend the appropriate type of psychology to improve game performance.

3.2. The study population

This research was conducted in the Ethiopian basketball premier league, and there is a total of four female basketball teams. These teams are found in Hawassa City Wolkite City, Bahir Dar City, and Ethiopian sport Academy female basketball trainees. These four teams have 25 members/trainees each, and the total population are 100 trainees.

3.3. Data sources

The researcher used two types of data sources: primary and secondary data sources. It helps to investigate the effect of stress, anxiety, and aggression on female basketball players game performance. The primary data sources (first-hand information). The data was collected by using standard questionnaires from the premier league players. Whereas, the game performance data were collected through real-time game observation with the support of seven assistants and the researcher. And the secondary data collected from websites, including related journal articles, books, internet sources, and previous studies on related psychological factors and performance, were used as a source of secondary data.

3.4. Data collection Procedures

3.4.1. Questionnaire

According to (Saini, 2023) , data collection is the process of collecting data aiming to gain an understanding of the research topic and enabling the researcher to find answers to the research questions. It depends on the aim and objectives of the research, because the data was collected through key Standard questionnaires from trainees. The researcher was used these standard questionnaires for aggression, aggression questionnaires.(Buss & Perry, 1992) , for Stress used Perceived Stress Scale (PSS),(Cohen et al., 2012) .and for anxiety the researcher was used sport competition anxiety test(SCAT) (Corcoran, 2016) . and the standard questionnaires were prepared in English and when the time of data collection it was translated into Amharic version based on the respondent's understanding level and clarity of their answer.

3.4.2. Observation check list

Basketball is a game in which setting up a goal is the result of both direct and indirect actions, as well as the use of free spaces and passes However, different goals must be achieved during different phases of the game, which are attack, in which a team attempts to score a goal. Defense, in which a player tries to recover possession and prevent the opposing team from scoring a shot; and. Play maker, in which a player attempts to prevent a goal within the goal area. These dimensions are combined to achieve match success, and they occur in different areas of the field.

3.5. Sampling techniques

In this study, the researcher used a non-probability sampling method, and the comprehensive and purposive sampling techniques were applied. The reason for using purposive sampling was to exclude the five players from each team that were included in the pilot study, and they were not intended to be included the main study. And because of the numbers of female teams are limited in four female basketball clubs and the researcher decided to include all four teams in this study. The researcher used compressive sampling to include all the female basketball premier league teams in Ethiopia.

3.6. Data analysis techniques

The data was gathered, then systematically arranged and inputted into a computer for analysis purposes. And using the Statistical Package for the Social Sciences (SPSS) Version 26, the quantitative data was analyzed. The analysis process encompassed the utilization of descriptive and inferential statistics. The quantitative data experienced examination for frequency, mean, standard deviation, and percentage of occurrence. Various inferential statistics, including regression, Spearman correlation coefficient, independent sample t-test, and two-way ANOVA, were employed to ascertain the mean difference among the four female basketball premier league teams.

3.7. Reliability and Validity of data collection Instruments

The researcher modified the set of questions based primarily on the answers provided by the trainees in the questionnaire that was prepared for them. The models were using those of Aggression, Questionnaires (Buss & Perry, 1992) ,for stress, the Perceived Stress Scale (Cohen et al., 2012) , and the (SCAT) (Corcoran, 2016) for anxiety. The researcher believed that by using these questionnaire approaches, the dependability of the data collected increased, aiding in the understanding of the issue and the identification of a suitable remedy.

3.8. Pilot Study

The researcher conducted a pilot study with twenty female basketball trainees and selected five respondents from each of four teams who did not participate in the final data collection. This is to assess the reliability and validity of the questionnaire using Cronbach's alpha value. The results were determined by whether there is a strong and statistically significant relationship (α) between the responses. Unclear statements were reformulated in order to improve the reliability of the instruments used for data collection prior to the start of the actual research. This information assisted the researcher in determining if the questionnaires are valid and reliable for the selected sample population of trainees.
Reliability tests resulting in an alpha of .7 are generally accepted as having high reliability (Tavakol & Dennick, 2011).

Table 1. Cronbach's alpha coefficient of pilot study

Dependent variable/independent variables	**Cronbach's alpha**	**No of items**
Stress	0.782	10
Anxiety	0.762	15
Aggression	0.854	15
Total	**0.792**	**35**

The above Cronbach's alphas are gathered from 20 respondents towards the pilot test survey before the main research was conducted. Based on this, as we can see from the Cronbach's alpha table above, all variables have an accepted as having high reliability strength of reliability regarding to (Tavakol & Dennick, 2011)which have more than 0.7 reliability Coefficient.

3.9 Ethical Considerations

Research ethics concerns include applying moral principles to study design and execution, deference to respondents and society, resource and research output utilization, and research regulation. Data gathering and questionnaire distribution all heavily depend on ethical issues. The ethical issues surrounding the study must be known to the researcher. The introduction was also included on the first page of the questionnaires. Every prospective participant received information regarding the study's methodology, and the researcher went over the goals and

importance of the investigation. When gathering data and conducting any relevant research, the researcher has had a favorable attitude toward the respondents.

4. RESULTS AND FINDINGS

Introduction

This chapter presents the results and discussion of empirical findings. The research instrument used a questionnaire and a real game observation checklist. This section is divided into subsections such as the response rate, demographic characteristics of respondents, descriptive statistical analysis of research variables, correlation test, normality of data test, multicollinearity, and linearity of data test. Finally, the result was analyzed using descriptive statistics presented first, followed by the inferential statistics models applied with the help of statistical software packages (SPSS) version 27. The descriptive statistics analysis was employed using tables, means, and standard deviations.

4.1. Response Rate

The researcher issued by hand delivery for 80 Female basketball trainees. Based on this, 80 questionnaires out of the 80 issued were returned representing 100% response rate.

4.2. Demographic Profile respondents

This section analyses the, Age, Education level, Project waiting time and Training time.

Table 2: Demographic Characteristics of Respondents

Demographic item	**Classification**	**Frequency**	**Percentage**
Age	18-20 years	60	75
	21-15 years	20	25
	Total	**80**	**100**
Training age (Project waiting time)	One year	46	57.5
	Two years	23	28.7
	Three years	11	13.8
	Total	**80**	**100**
Education level	6^{th}	35	43.8
	7^{th}	27	33.8
	8^{th}	18	22.5
	Total	**80**	**100**
Training frequency per week	Two days per a week	1	1.3
	Three days per a week	79	98.8
	Total	**80**	**100**

The demographic data for age of the respondents revealed that out of 80, three-fourth of respondents was at the age of 18-20 years old 60 (75%). The rest groups 20 (25%) were under the age categories of 21-25 years old.

The researcher sought to find out the qualifications possessed by the respondents by asking them to indicate their level of professional qualification. table 3 shows the majority of the respondents have grade 6th educational background at 35%, followed by grade 7th at (27%) and the rest are grade 8th at (18%).

Table 3 indicates that 57.5% of the respondents had one-year project life in the training center, 25% of the respondents had two years project life in the training center and the rest 11% of the respondents had three years waiting time in the training centers.

This data clearly showed that, training had delivered for three days in a week. This is confirmed by 98.8% of the respondents.

4.1. Descriptive results of the study

Table 3: Descriptive Statistics of the study variables

	N	Minimum	Maximum	Mean	Std. Deviation
Stress	80	1.00	5.00	3.1143	1.2
Anxiety	80	1.00	3.50	2.4469	.70
Aggression	80	1.00	3.50	2.4021	.69

Note: The cut off points are: Low (1 - 2.339), mid (2.34 - 3.669) and High (3.67 - 5) (A. M. Ali et al., 2023) (Basavaraj, 2016)

The cut-off score is the point at which people are grouped based on the measured levels they meet and which aids in the interpretation of these levels (Sarkın, 2019).

The average number of respondents to the variable stress has the highest average or mean number of respondents ($\bar{x}$== 3.11). While the variable aggression has the lowest average or mean number of respondents ($\bar{x}$== 2.4).

The maximum variability of the respondents is occurred to the variable stress with standard deviation (S = 1.24), while the minimum variability of the respondents is occurred to the variable aggression having standard deviation (S = 0.69). Based on the cut-off point the respondents were included in moderate level of stress, anxiety and aggression.

4.5. Inferential statistics

4.5.1. Independent sample t-test

Independent samples t-test is used to compare two groups whose means are not dependent on one another (Gerald, 2018). In terms an independent sample refers to a situation where each groups individual is treated separately. Independent of each other. Independent groups in this study are games (Game 1= Hawassa city vs. Ethiopian sport Academy, Game 2= Wolkite City vs. Bahir Dar city, Game 3= Hawassa city vs. Bahir Dar city, Game 4= Ethiopian sport Academy vs. Wolkite City).

4.5.1.1. Game one Performance (Hawassa city vs. Ethiopian sport Academy)

Table 5: Group Statistics for Game One

	Teams name N	Mean	Std. Deviation	Std. Error Mean
Performance	**Hawassa city 20**	**3.3167**	**.59824**	**.13377**
	Ethiopian sport Academy 20	**3.4167**	**.56777**	**.12696**

Levene's Test for Equality of Variances					
F		Sig.	t	df	**Sig. (2-tailed)**
Performance	Equal variances assumed .060	.808	-.542	38	**.591**
	Equal variances not assumed		**-.542**	**37.897**	**.591**

The first thing to note is the mean values in the Group Statistics ***table 5*** Here one can see that on average Ethiopian sport Academy game performance is to some extent greater than Hawassa city game performance (M= 3.4167 against M= 3.3167).

The question is whether the difference between the two means is big enough so that I can be confident it is not a function of random error. This is where the t test comes into play.

Based on this the above ***table 6*** is reporting F value of .060 and *p*-value of .808. This is not considered as a significant result (standard alpha levels are .05 and .01). Therefore, we can be confident in accepting the null hypothesis that holds there is no difference between Hawassa city and Ethiopian sport Academy game performance.

4.5.1.2 Game Two Performance (Wolkite City vs. Bahir Dar city)

Table 7: Group Statistics for Game Two

	Teams name	N	Mean	Std. Deviation	Std. Error Mean
Performance	Wolkite City	20	3.5167	.60674	.13567
	Bahir Dar city	20	3.3167	.59824	.13377

Levene's Test for Equality of Variances

F		Sig.	t	df	**Sig. (2-tailed)**
Performance	Equal variances assumed .112	.740	1.050	38	**.300**
	Equal variances not assumed		**1.050**	**37.992**	**.300**

As ***table 7*** above indicated that, the mean values of Wolkite City performance is to some extent greater than Bahir Dar city game performance (M= 3.5167 and M= 3.3167 respectively). But whether the difference between the two means is big enough the t test comes into play.
Based on this the above ***table 8*** is reporting that, F value is .112 and *p*-value of .740. This is not considered as a significant result (standard alpha levels are .05 and .01). Therefore, we can be confident in accepting the null hypothesis that holds that there is no difference between Wolkite City and Ethiopian sport Academy game performance.

4.5.1.3. Game Three Performance (Hawassa city vs. Bahir Dar city)

Table 9: Group statistics for Game Three

N	**Teams name**		**Mean**	**Std. Deviation**	**Std. Error Mean**
Performance	**Hawassa city**	**20**	**3.4833**	**.62688**	**.14018**
	Bahir Dar city	**20**	**3.4167**	**.56777**	**.12696**

Table 10. Independent t-test for Game three

Levene's Test for Equality of Variances

F	Sig.	t	df	**Sig. (2-tailed)**

Performance	Equal variances assumed .108	.744	.353	38	**.726**
	Equal variances not assumed		**.353**	**37.633**	**.726**

As ***table 9*** shows above indicated that, the mean values of Hawassa city performance is to some extent greater than Bahir Dar city game performance (M= 3.4833 and M= 3.4167 respectively). But whether the difference between the two means is big enough the t test comes into play. Based on this the above ***table 10*** is reporting that, F value is .108 and *p*-value of .744. This is not considered as a significant result (standard alpha levels are .05 and .01). Therefore, we can be confident in accepting the null hypothesis that holds that there is no difference between Hawassa city and Bahir Dar city game performance.

4.5.1.4. Game Four Performance (Ethiopian sport Academy vs. Wolkite City)

Table 11: Group Statistics for Game Four

Teams name	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Performance	**Ethiopian sport Academy 20**	**3.5167**	**.60674**	**.13567**
	Wolkite City 20	**3.4833**	**.62688**	**.14018**

Table 12: Independent sample t-test for group four

Levene's Test for Equality of Variances

F		**Sig.**	**t**	**df**	**Sig. (2-tailed)**
Performance	**Equal variances assumed .165**	**.687**	**.171**	**38**	**.865**
	Equal variances not assumed		**.171**	**37.960**	**.865**

As *table 11* above indicated that, the mean values of Ethiopian sport Academy performance is to some extent greater than Wolkite City game performance (M= 3.5167 and M= 3.4833 respectively). But whether the difference between the two means is big enough the t test comes into play.

Based on this the above *table 12* is reporting that, F value is .165 and *p*-value of .687. This is not considered as a significant result (standard alpha levels are .05 and .01). Therefore, we can be confident in accepting the null hypothesis that holds that there is no difference between Ethiopian sport Academy and Wolkite City game performance.

4.5.2. Two ways ANOVA

The actual result of the two-way ANOVA namely, whether any of the four training centers is statistically significant is shown in the Tests of Between-Subjects Effects table, as shown below: **Table 13: Two-way ANOVA**

Tests of Between-Subjects Effects

Dependent Variable: Game performance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model .467[a]		**3**	**.156**	**.432**	**.731**	**.017**
Intercept	**943.022**	**1**	**943.022**	**2617.009**	**.000**	**.972**
Training centers	**.467**	**3**	**.156**	**.432**	**.731**	**.017**
Error	**27.386**	**76**	**.360**			
Total	**970.875**	**80**				
Corrected Total	**27.853**	**79**				

a. R Squared = .017 (Adjusted R Squared = -.022)

The *table 13* particular row one can interested in the "training center" row and this is highlighted above. This row informs whether training centers have a statistically significant effect on the dependent variable, "Game performance". It is important to first look at the "training centers" interaction as this will determine how one can interpret their results. One can see from the "Sig." column that it has a statistically insignificant interaction at the $p = .731$ level. We can see from the table above that there was no statistically significant difference in mean interest in (project) training centers between Hawassa city, Wolkeite City, Bahir Dar city and Ethiopian sport Academy ($p = .731$).

4.2. Correlation Analysis

For the purpose of assessing the objectives of the study, spearman correlation coefficient and regression analyses were performed. With the aid of these statistical techniques, conclusions are drawn with regard to the sample and decisions are made with respect to the research questions.

In this study Spearman Correlation Coefficient was used to determine whether there is significant relationship between factors (Stress, Anxiety and Aggression) and Game Performance. To know whether there is a correlation between independent and dependent variables the Spearman correlation coefficient was examined.

To know whether there is a correlation between the variables and what the level is of the linear relationship between the variables, the Spearman correlation coefficient was examined.

The degree and direction of a linear relationship between two variables are indicated by this coefficient. The Spearman Correlation coefficient (r) can vary from -1 to +1, the larger the value, the stronger the relationship. A coefficient +1 indicates a strong positive relationship and a coefficient of -1 indicates a perfect negative relationship. 0 indicates that there is no linear relationship between the variables (Ali & Al-hameed, 2022).

According to Duncan (2004), The results of correlation coefficient may be interpreted as follows. (-1.00 to -0.8] Strong

(-0.8 to -0.6] Substantial
(-0.6 to -0.4] Medium — Negative
(-0.4 to -0.2] Low

(<-0.2) Very Low (1.00 to 0.8] Strong

(0.8 to 0.6] Substantial
(0.6 to 0.4] Medium — positive
(0.4 to 0.2] Low (<0.2) Very Low

Table 14: Inter-correlation between all variables understudy

Stress				Anxiety	Aggression	Performance
	Stress	Coefficient	1.000	.783**	.835**	-.782**
	Anxiety	Coefficient	.783**	1.000	.905**	-.870**
	Aggression	Coefficient	.835**	.905**	1.000	-.883**
	Performance	Coefficient	-.782**	-.870**	-.883**	1.000
		Sig. (2-tailed)	.000	.000	.000	.
		N	80	80	80	80

Correlation is significant at the 0.01 level (2-tailed).

The correlation result of this study shows that, strong and statistically significant positive relationship was found between the independent variables (aggression and anxiety) r=0.905. Whereas, the dependent variable (Game performance) have negative relationship with Aggression and Anxiety ($r = -.883$, $p < .01$ and $r = -.870$, $p < .01$ Respectively) o. While, substantial negative significant relationship was found between the independent variable

(Stress) and dependent variable (game performance) (r = -.782, p <.01). From this investigation it can be distinguished that, the three major variables (stress, anxiety and aggression) have significant and negative relationship with on females' basketball players' performance in the study area.

4.1. Multiple Regression Assumptions

Regression analysis is a statistical technique that investigates the influence of independent variables on the dependent variable. Based on this, multiple regression analysis was employed to investigate the effect of psychological variables stress, anxiety and aggression on female basketball premier league players performance, in Ethiopia. Before going to analyze multiple regressions test results, we need to check the assumptions of multiple regression analysis.

4.1.1. Normality Test

Testing for normal distribution of the dependent variable is another crucial presumption in regression analysis. Normality describes a bell-shaped, symmetrical curve with the highest frequency of scores in the middle paired with smaller frequencies towards the extremes(Meulman & Heiser, 2001). The dependent variable of this study was Game performance. When the dependent variable is not distributed normally regression analysis becomes less effective because it goes against an assumption of the model. Therefore, in our study we used histogram to check normality assumption. The histogram given below shows more or less it satisfies the normality assumption (see Fig 3).

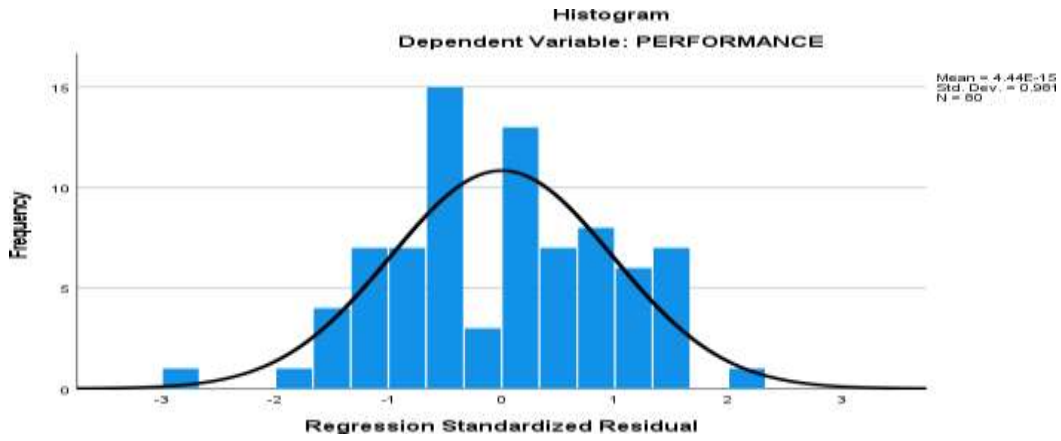

Figure 3: Normality test of Dependent Variable

4.2.1. 4.7.2. Multicollinearity Test

The presence of correlations between the predictors is termed co linearity (for a relationship between two predictor variables) or multicollinearity (for relationships between more than two predictors). In severe cases (such as a perfect correlation between two or more predictors) multi- co linearity can indicate that no unique least squares solution to a regression analysis can be computed, and the variance inflation factor is one known measure of multi-co linearity, although numerous other measures are available. For this study the researcher applied tolerance

and VIF statistics to check multi-collinearity problem. Moreover, in this study none of the variables were VIF exceeds 10 suggesting that no multicollinearity problem (see below table 15).

Table 15: The Multicollinearity Test Distribution Result

Model	Co linearity statistics	
	Tolerance	**VIF**
1 Constant		
Stress	.290	3.445
Anxiety	.159	6.299
Aggression	.129	7.743

4.7.3. Homoscedasticity test

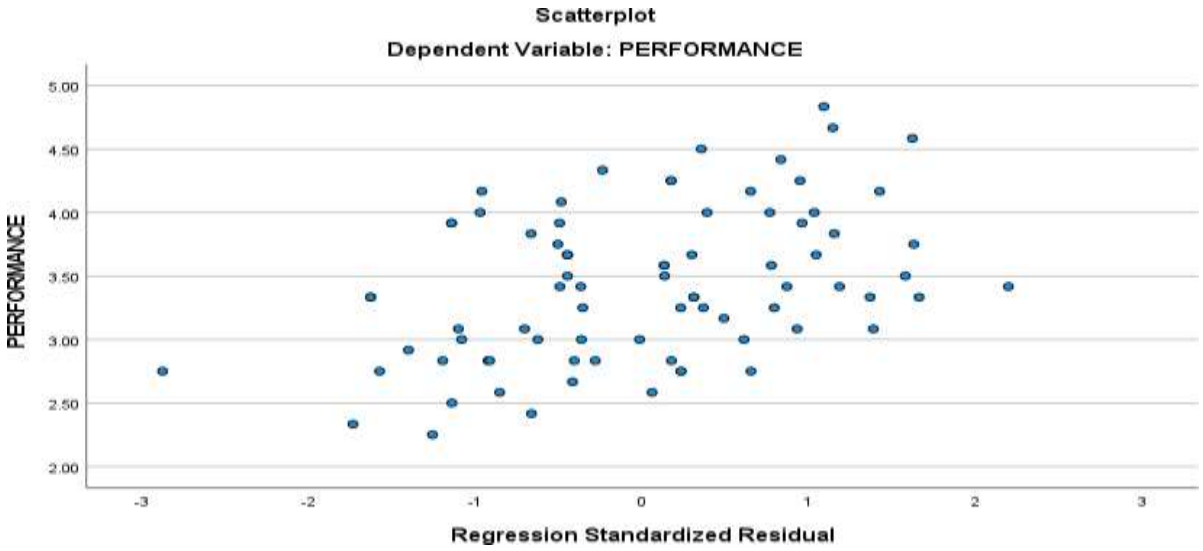

Figure 4: Scatter Plot of Regression of Standardized Residuals

Homoscedasticity errors are generally assumed to have an unfamiliar but finite variance that is constant across all levels of the predictor variables. As we have seen in Figure 4 above, it can be assured that the point is random and to some extent evenly throughout the scattered diagram and no Substantiation of channel- like the shape of points on one side than the other is observed, so no heteroscedasticity in the data is verified.

4.7.4. Linearity Assumptions

The model that shares the response Y to the predictors X1, X2, X3... XN is assumed to be linear in the regression parameters. This means that Standard multiple retrogression can only precisely estimate the relationship between dependent and independent variables if the connections are direct in nature. As in the equation: $Y= \beta 0+ \beta 1X1 + \beta 2X2+ \beta 2X3 \ldots XN$ This

regression equation is still a linear regression equation because Y is modeled as a linear function of the parameters. According to the information in graph 5 below indicated Normal P-P Plots show that this assumption had been met for this study.

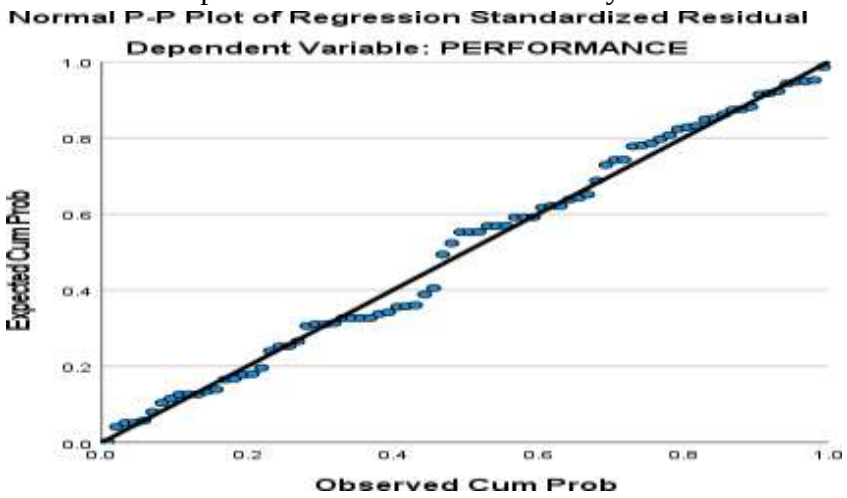

Figure 5: Normal P-P Plot

4.8. Regression Result and Discussion

The regression analysis was used to measure the association between the independent and the dependent variables. Regression tests are used to recognize the ability of each individual independent variable (stress, anxiety and aggression) to predict the dependent variable (game performance).

4.8.1. Regression between independent variables and dependent variable

Table 16: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.908[a]	.825	.818	.25318

a. Predictors: (Constant), Stress, Anxiety and Aggression
b. Dependent Variable: Game Performance

As indicated in table 16 above, the adjusted R Square value represents the explanation of independent variable (Stress, Anxiety and Aggression) over dependent variable (Game Performance). From the model summary, the adjusted R square from the table above showed .818 which means that the independent variables can explain the dependent variable by 81.8%. However, there is 18.2% of the variance remained unexplained in this study.

4.9. ANOVA of Independent and Dependent variable

Table 17: ANOVA of Independent and Dependent Variables

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.981	3	7.660	119.501	.000[b]
	Residual	4.872	76	.064		
	Total	27.853	79			

a. Dependent Variable: Game Performance

b. Predictors: (Constant), Stress, Anxiety and Aggression

In the table 17 above, indicated that ANOVA of the results from the data gathered from the respondents showed a strong positive significant regression for the reason that p=0.000 which is

<0.05. This meant that the listed independent variables have a strong significant influence on the dependent variable in the study area.

4.10. Coefficient of independent on Dependent variable

Table 18: Coefficient of Independent and Dependent Variables

Unstandardized Coefficients			Standardized Coefficients Beta		t	Sig.
Model	B	Std. Error				
1 (Constant)	5.319	.109			48.965	.000
Stress	-.058	.043	-.121		-1.361	.178
Anxiety	-.364	.102	-.430		-3.573	.001
Aggression	-.339	.116	-.392		-2.936	.004

Based on the above ***table 18*** Game performance= 5.319 (Constant) + -.058 (Stress) + -.364 (Anxiety) + -.339 (Aggression)

The p-value for Anxiety is 0.001 which is less than alpha 0.05, its shows that Anxiety was significance to predict Game performance for this study. Aggression also shows significance to predict dependent variable (Game performance) where the p-value for the independent variable was .004 which is less than alpha 0.05. While, Stress result reveal that it was found to be insignificant to predict the dependent variable game performance, since the p-value for this independent variable was 0.178 which is greater than alpha 0.05.

Table 19: Standardized Coefficient of beta table

Independent variables	**Standardized Coefficient beta**	**Ranking**
Stress	-.121	3
Anxiety	-.430	1
Aggression	-.392	2

Based on the above ***Table 19*** shows Anxiety is the predict variables that donate the highest to variation of the dependent variable (Game performance) because of beta value (-.430). This result is supported by (Reigal et al., 2020). Various statistical techniques, such, as regression

and correlation were employed to analyze these connections. The findings indicated a link between stress, anxiety and performance in athletes. Additionally, the study identified factors influencing the relationship, between stress and anxiety These results highlight the need to treat handball trainees. stress and anxiety while putting strategies in place to lessen their negative effects on performance.

Aggression contributes the second greatest to distinction of the dependent variable at beta value (-
.392). It indicates that Aggression is the second strongest exclusive contribution to predict the variation in dependent variable (Game performance). This result is inconsistent or argued by(Kousar, 2022) .The study demonstrated a relationship, between aggression and player performance indicating that positive reinforcement and winning matches positively impact handball players' performance.

Stress is the predictor variable that contributes the lowest to variation of the dependent variable, because beta value is (-.121) is the lowest compared to other predicator variables. This means that Stress make the weakest unique contribution to explain variation in dependent variable when the variance explained by the others predictor variables in the model is control for.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Anxiety and accumulated frustration, as well as aggressive behavior, may result in low game performance, which leads to an unwanted form of conduct in sports. This study finding has demonstrated that there is a strong correlation between the two variables (anxiety with performance and aggression with performance). Thus, it would be important for female basketball players to be able to manage their anxiety as well as aggression and develop effective coping strategies that allow them to deal with the challenges posed by high-risk situations.

Based on the findings the researcher draws the following conclusions:

- ✓ Based on the correlation result, the researcher concluded that the level of stress, anxiety, and aggression increases that affect performance negatively and are associated with the poor game performance.
- ✓ The researcher concluded that the independent variables of stress, anxiety, and aggression had higher positive correlations with each other; it indicates that these psychological conditions frequently interact and may even intensify one another.
- ✓ Based on multiple regression analysis, the high percentage of game performance is predicted by the psychological factors of stress, anxiety, and aggression. The researcher concludes that there may be other factors impacting game performance that were not included in this study.
- ✓ Based on the independent t- test and two-way ANOVA results it indicates there is no significant difference between training centers or projects on game performance. The researcher concludes that the psychological factors study was a more critical determinant of game performance than the training centers (projects) itself.

- ✓ Based on the result of ANOVA of independent and dependent variables indicates the independent variables are statistically significant to explain the variation in dependent variable (Game performance). And the researcher conclude that the independent variables have a strong significant influence on the dependent variable in the study area.

Moreover, the study, through examination of the relationships between stress, anxiety, aggression, and game performance, offers an understanding of how these factors affect game performance outcomes. The researcher concludes these findings can guide the development of strategies and support systems to improve the performance of female basketball players. The implications of this study go beyond Ethiopian premier league female basketball players. It can contribute to discussions in sports psychology. They can also serve as a basis for research on psychological factors affecting female athletes' performance across different sports. By focusing on these elements, coaches, sports psychologists, and players can work together to establish a setting that raises the progression, enhancement, and peak performance of players.

5.2. Recommendations

Accurate performance and psychological measurements are essential to investigate the impact and relationship of psychological factors and the performance of female basketball players. In competition, basketball players can face a great deal of pressure. Which can lead to increased stress and anxiety. Coaches and sport psychologists assist players in managing psychological factors, such as stress, anxiety, and aggression, through techniques like deep breathing, visualization, and muscle relaxation. They also help female basketball players improve performance by boosting confidence, overcoming self-doubt, and facilitating faster injury recovery. This study shows the effect of stress, anxiety, and aggression on the game performance of female basketball trainees. Based on the findings and conclusion of the study, the following recommendations were forwarded.

- ➢ Future research should include a sample of varying sizes to understand the impact of stress, anxiety, and aggression on the performance of female basketball players.
- ➢ Longitudinal studies should be conducted to track conditions over time, providing insights into game performance and coping mechanisms.
- ➢ The researcher suggested that researchers should use other performance measures in addition to game performance measures to assess the impact of psychological factors on player performance.
- ➢ The researchers should have used qualitative methods in addition to quantitative method to investigate the impact of psychological factors on performance in female basketball players.
- ➢ This study has also recommended future research using experimental design, considering other arousal continuum variables such as motivation, goal setting, and imagery to gain more findings on the effect of player performance.

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