



Anxiety Levels Basketball Referees in Java Region During Match Officiating

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Keywords

Anxiety; Basketball
Referee; C and B2
Licenses

Abstract

This study aims to identify the anxiety level of C and B2 license basketball referees in Central Java Province in leading matches. The research method used was quantitative descriptive with a survey approach of 50 referees as a sample. The data collection instrument used the Sport Anxiety Scale-2 (SAS-2) questionnaire which measured three dimensions of anxiety, namely somatic, worry, and concentration disorder. Data were analyzed using descriptive statistics, Independent Sample T-Test, One-Way Anova, and Effect Size (Cohen's d) calculation. The results showed that the overall level of referee anxiety was in the medium category (mean = 29.06). Specifically, the worry indicator was the most dominant dimension (medium category), while somatic anxiety was in the low category. The results of the Independent Sample T-Test showed a strong significant difference between C and B2 license referees (Sig = 0.000), emphasized by the Effect Size (Cohen's d) value of -1.288 which was categorized as a large effect. Furthermore, the Anova One-Way test showed a significant difference in anxiety based on the length of service (Sig = 0.027). The conclusion of this study is that the maturity of experience and flight hours are crucial factors in shaping the mental toughness of referees to minimize cognitive anxiety when leading matches.

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INTRODUCTION

Basketball is one of the most popular and rapidly growing team sports in Indonesia. This game has a fast and dynamic tempo, demanding physical ability, technique, tactics, and teamwork which often triggers physical contact and suddenly changing situations (Riadova et al., 2023). In the context of psychology, basketball is a sport that demands high concentration, emotional control, and the ability to cope with stress (Arifin, 2024). This condition requires an orderly match and in accordance with the rules so that sportsmanship is maintained (Sabag et al., 2023). Therefore, the role of match officials, especially referees, is a crucial factor to maintain sportsmanship and ensure that matches run fairly according to applicable regulations (Xin & Ali, 2025b).

Match officials in the sport of basketball consist of referees and table clerks who each have specific duties and responsibilities (Ghofur & Mulyono, 2022). The referee is the highest decision-maker on the field related to violations, game stoppages, sanctions, and points (Hoffmann et al., 2024). The referee is in charge of officiating the match on the field, enforcing the rules, and making decisions on every violation and game situation (Meikahani & Suherman, 2022). Meanwhile, the table officer is responsible for the recording of scores, match times, player violations, and other administration of the match. Good cooperation between the referee and the table officer is necessary to ensure that the match runs smoothly, fairly and according to the applicable regulations (Xin & Ali, 2025b). Thus, the quality of match equipment is one of the determining factors for the success of organizing basketball matches.

As the main decision-maker on the pitch, referees are not only required to have a deep understanding of the rules of the game (*rules of the games*), but also excellent mental readiness (Gomes et al., 2021). Referees are not allowed to take sides with any team and must treat all participants equally (Kim & Yip, 2020). Referees are often faced with complex and stressful situations, such as crucial decision-making in the final moments of a match (Nova et al., 2021), loud protests from players and coaches (Sors et al., 2021), to the high atmospheric pressure of the spectators. The situation requires the referee to remain calm, objective, and consistent in every decision taken (Karaçam et al., 2023). This extreme pressure condition has the potential to cause anxiety that can affect the referee's concentration, confidence, and accuracy in making decisions (Zhang et al., 2024).

Anxiety in the context of sports is an emotional state characterized by feelings of worry and tension in response to challenging situations. If left unchecked, this anxiety can reduce the quality of referee leadership and interfere with the smooth running of the match. This anxiety triggering factor can be internal, such as the level of experience (flight hours), age, confidence of the referee, and the level of license. As well as external factors, such as the level of competition, the game situation, and intimidation from the match environment (Carter et al., 2024).

In unstable psychological conditions, the referee's ability to process information objectively and quickly can decrease so that the risk of errors in assessing an event on the field (Pizzera et al., 2022). Poor decisions can change the momentum of the game, affect team strategy, and trigger protests from players and coaches (Damrah et al., 2022). In addition, decisions that are judged to be wrong or inconsistent can reduce the respect of players, coaches, and spectators for referee authority (Gendemeh et al., 2025). When that trust weakens, it will be more difficult for the referee to control the match, so the psychological pressure experienced can increase.

Previous studies on referee performance have shown mixed results regarding which factors are most dominant in triggering a decline in the quality of decision-making. Some studies emphasize that extreme physical load is a major trigger for cognitive fatigue that leads to misjudgment (Bloß et al., 2020). However, other studies have shown a conflict of results, where referees with good physical fitness can still make fatal mistakes due to psychosocial pressures, such as spectator noise and intimidation from the bench that distracts attention (Sors et al., 2021). These differences in results suggest that anxiety variables cannot be viewed in isolation, but rather must be mapped specifically between physical (somatic) manifestations and negative (cognitive) thoughts.

Until now, scientific studies on the psychological dynamics of basketball referees in Indonesia, especially in the Central Java region, are still very limited and have not touched on the comparison between levels of licensing in depth. Most referee coaching still focuses on improving regulatory understanding and physical ability, while the mental aspect is heavily touched through systematic research based on field data. There have been no studies that specifically map whether referees with higher licenses (B2) automatically have better mental toughness than referees with basic licensees (C) in dealing with different dimensions of anxiety.

Therefore, this study aims to identify the level of anxiety experienced by C and B2 licensed basketball referees in Central Java while on duty. The focus of this study includes an overview of somatic anxiety (physical symptoms), cognitive concerns, and concentration disorders experienced by referees. The results of this study are expected to provide an empirical basis for the formulation of a more comprehensive referee coaching program by touching on the aspect of mental strengthening, in order to support the creation of more quality and sportive basketball matches.

METHODS

This study uses a quantitative approach with a descriptive method through a survey study. The population taken in this study is all basketball referees who are officially registered and active under the auspices of the Central Java PERBASI Provincial Management which totals 139 referees. The subjects in this study involved 50 C-licensed basketball referees (46%) and 27 B2-licensed referees (54%) who actively led matches. Samples were taken using purposive sampling techniques with inclusion criteria having a C license ($n=23$) or B2 license ($n=27$). The instrument used in the data collection was the *Sport Anxiety Scale-2* (SAS-2) questionnaire, using a likert scale of 1-4. This instrument is designed to measure anxiety in sports situations which includes three main dimensions:

1. Somatic Anxiety: Relates to the body's physical reactions (muscle tremors, physiological reactions, and heart palpitations).
2. Worry: Related to negative thoughts on one's abilities.
3. Concentration Disorder: Relates to difficulty focusing on tasks during matches.

The collected data is analyzed using descriptive statistical calculations, independent sample t-test (based on license level), one-way anova (based on experience level), and effect size assessment. The results of the calculation are then categorized into several levels to provide a comprehensive picture of the referee's psychological condition when leading the match. The categorization will be grouped into four categories to provide a clear picture of the referee's psychological state.

Table 1. Validity Test

Statement	r count	Statement	r count
1	.659	9	.767
2	.495	10	.679
3	.760	11	.846
4	.841	12	.806
5	.724	13	.713
6	.759	14	.876
7	.856	15	.836
8	.861	R table	.279

Based on the results of the validity test, stating the value of r is calculated $> r$ of the table, so that it can be concluded that the statement data is valid.

Table 2. Reliability Test

Cronbach's Alpha	N of Items
.949	15

Dikomentari [RI1]: Gap masih lemah secara teoritis

1. Tambahkan Apa yang belum dikaji? Dan Apa konflik hasil studi sebelumnya?

Dikomentari [HD2R1]:

Dikomentari [RI3]: 1. Tidak ada uji inferensial hanya mean dan prosentase padahal anda menyatakan perbedaan antar kelompok
2. Sampling tidak dijelaskan, tidak ada teknik sampling (random / purposive?) dan justifikasi ukuran sampel
3. Validitas & reliabilitas tidak dilaporkan harusnya ada, harusnya ada Cronbach alpha dan validitas konstruk

Based on the results of the reliability test, Cronbach's alpha value is $0.949 > 0.66$, so it can be concluded that the statement data is valid.

RESULTS AND DISCUSSION

This study was conducted to identify the anxiety level of C and B2 license basketball referees in Central Java Province in leading the match, the researcher collected data with a data collection period of 1 week on March 11, 2026 – March 18, 2026 involving 50 C and B2 license referees in Central Java to collect data on the anxiety level of basketball referees using the Sport Anxiety Scale-2 (SAS-2) instrument. Therefore, this descriptive data provides an overview of the variation in anxiety level scores. The data can be displayed as follows:

Table 3. Overall Anxiety Levels

	Total	License Type		Long Time as a Referee		
		Referee C	Referee B2	1-2 Years	3-4 Years	>4 Years
F	50	23	27	23	11	16
Mean	29.06	34.48	24.44	31.78	30.82	23.94
%	48.4	57.4	40.7	53	51	40
Category	Medium	Medium	Low	Medium	Medium	Low
Std.Deviation	9.458	9.534	6.600	9.918	8.388	7.707

Based on the data in **Table 3.** Overall, the level of anxiety of basketball referees in Central Java is in the medium category or 48.4% with an average score of 29.06 and a standard deviation of 9.458. Then based on the level of referee license, it was in the medium category or 57.4% with an average score of 34.48 and a standard deviation of 9.534 for C license referees and a low category or 40.7% with an average score of 24.44 and a standard deviation of 6,600 for B2 license referees. Then based on the length of time referees have been referees, they are in the medium category or 53% with an average score of 31.78 and a standard deviation of 9.918 for referees who have a license for 1-2 years, the medium category or 51% with an average score of 30.82 and a standard deviation of 8.388 for referees who have a license for 3-4 years, and the low category or 40% with an average score of 23.94 and a standard deviation of 7.707 for referees who have a license of >4 years.

Table 4. Somatic Indicator Anxiety Levels

	Total	License Type		Long Time as a Referee		
		Referee C	Referee B2	1-2 Years	3-4 Year	>4 Years
F	50	23	27	23	11	16
Mean	8.46	10	7.15	8.96	9.27	7.19
%	42.3	50	35	44.8	46.3	39.9
Category	Low	Medium	Low	Medium	Medium	Low
Std.Deviation	2.998	3.162	2.143	3.155	3.133	2.373

Based on the data in **Table 4.** The level of anxiety of basketball referees in Central Java is in the low category or 42.3% with an average score of 8.46 and a standard deviation of 2.998. Then based on the level of license, referees are in the medium category or 50% with an average score of 10 and a standard deviation of 3.162 for C license referees and low categories or 35% with an average value of 7.15 and a standard deviation of 2.143 for B2 license referees. Then based on the length of time referee has been refereeing, it is in the medium category or 44.8% with an average score of 8.96 and a standard deviation of 3.155 for referees who have a license for 1-2 years, the medium category or 46.3% with an average score of 9.27 and a standard deviation of 3.133 for referees who have a license for 3-4 years, and the low category or 39.9% with an average score of 7.19 and a standard deviation of 2.373 for referees who have a license of >4 years.

Table 5. Anxiety Levels Anxiety Indicators

Table 3: Anxiety Levels Anxiety Indicators						
	Total	License Type		Long Time as a Referee		
		Referee C	Refereere B2	1-2 Years	3-4 Year	>4 Years
F	50	23	27	23	11	16
Mean	11.12	12.91	9.59	11.87	12.27	9.25
%	55.6	64.5	47.9	59.3	61.3	46.2
Category	Medium	Height	Medium	Medium	Medium	Medium
Std.Deviation	3.696	3.942	2.707	3.865	3.165	3.235

Based on the data in **Table 5**. The level of anxiety of basketball referees in Central Java is in the medium category or 55.6% with an average score of 11.12 and a standard deviation of 3.696. Then based on the level of referee license, it was in the high category or 64.5% with an average score of 12.91 and a standard deviation of 3.942 for C license referees and medium categories or 47.9% with an average value of 9.59 and a standard deviation of 2.707 for B2 license referees. Then based on the length of time referees have been referees, they are in the medium category or 59.3% with an average score of 11.87 and a standard deviation of 3.865 for referees who have a license for 1-2 years, the medium category or 61.3% with an average score of 12.27 and a standard deviation of 3.165 for referees who have a license for 3-4 years, and the medium category or 46.2% with an average score of 9.25 and a standard deviation of 3.235 for referees who have a license of >4 years.

Table 6. Anxiety Levels Indicators of Concentration Disorders

Table 6: Anxiety Levels Indicators of Concentration Disorders						
	Total	License Type		Long Time as a Referee		
		Referee C	Wasit B2	1-2 Years	3-4 Year	>4 Years
F	50	23	27	23	11	16
Mean	9.48	11.57	7.7	10.96	9.27	7.5
%	47.4	57.8	38.5	54.8	46.3	37.5
Category	Medium	Medium	Low	Medium	Medium	Low
Std.Deviation	3.448	3.188	2.584	3.483	2.687	2.944

Based on the data in **Table 6**. The anxiety level of basketball referees in Central Java is in the medium category or 47.4% with an average score of 9.48 and a standard deviation of 3.448. Then based on the level of referee license, it was in the medium category or 57.8% with an average score of 11.57 and a standard deviation of 3.188 for C license referees and a low category or 38.5% with an average score of 7.7 and a standard deviation of 2.584 for B2 license referees. Then based on the length of time referees have been referees, they are in the medium category or 54.8% with an average score of 10.96 and a standard deviation of 3.483 for referees who have a license for 1-2 years, the medium category or 46.3% with an average score of 9.27 and a standard deviation of 2.687 for referees who have a license for 3-4 years, and the low category or 37.5% with an average score of 7.5 and a standard deviation of 2.944 for referees who have a license of >4 years.

Table 7. Independent Sample T-Test

	Sig. (2-tailed)
Equal variances assumed	0.000
Equal variances not assumed	0.000

Based on the data in **Table 7**. It is known that the Sig. (2-tailed) value is 0.000. Because of the $p < 0.05$ value, it can be concluded that there is a significant difference between the anxiety level of referees C and B2.

Table 8. Anova One-Way Test

Sig.	.027
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Based on the data in **Table 8**. It is known that the sig value is $0.027 < 0.05$, so it can be concluded that the average level of anxiety of referees based on experience level differs significantly.

Table 9. Effect Size

Cohen's d	-1.288
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Based on the data in **Table 9**. The calculation results showed a value of -1.288. Based on Cohen's criteria, this value falls into the category of large effects.

The results showed that the anxiety level of C and B2 license basketball referees in Central Java was overall in the medium category (*mean* 29.06). This indicates that the majority of referees have fairly good emotional control, but there are psychological dynamics that are influenced by specific indicators, license levels, and experience leading matches.

Indicators of concern (*worry*) becomes the most dominant dimension with the value *mean* 11,12 (medium category). This shows that the anxiety experienced by referees in Central Java is more cognitive than physical. Referees tend to worry about the impact of their decisions (*right call*) under the supervision of the coordinator and external pressures such as spectator cheers and protests from the bench. These findings are in line with the research (Mirjamali et al., 2020) which states that fear of misjudgment and performance evaluation has a great effect on referee stress, research (Sors et al., 2021) which states that suppressive spectator noise interferes with the ability of basketball referees with high levels of anxiety to distinguish fouls, and research (Ntasis et al., 2021) which states that a high cognitive load can trigger anxiety, especially when the referee is worried about making a mistake in making a decision. The inability to manage these concerns, especially for referees with high anxiety can interfere with the ability to distinguish the consequences of such external pressures.

In contrast to the cognitive aspect, somatic indicators (physical symptoms) are in the low category (*mean* 8,46). These low physical symptoms such as rapid heartbeat or muscle tension are thought to be the result of careful physical preparation. As licensed referees, they are required to pass periodic physical tests (such as bleep tests), where excellent physical readiness is directly related to the control of the body's autonomic reaction to the stress of the match. Psychologically, referees who are just starting out in their careers tend to view the atmosphere of the match as a threat, which triggers reactions *fight or flight* on the body. However, as the experience of leading a match increases, the body learns to stay relaxed. This is in line with research (Bloß et al., 2020) which states that physical fitness is an important supporting factor in maintaining the mental stability of referees.

Indicators of concentration disorder are in the low to moderate category (*mean* 9.48), which shows that the attention ability of referees in Central Java is quite stable in filtering out distractions. However, there is a significant difference between C license referees (*mean* 11,57) and B2 license referees (*mean* 7,7). C license referees often get stuck on previous mistakes (*dwelling on mistakes*), while the B2 license referee has *next play mentality* better. This informs that concentration is a skill that is honed as the hours of flight increase. Younger or less experienced referees tend to have higher levels of anxiety and stress. This is in line with research (Karaçam et al., 2023) which states that referees who have good mental readiness will be better able to maintain concentration and emotional stability despite being in tense match situations and research (Lima et al., 2022) which states that younger referees have higher levels of anxiety and stress than older referees. In accordance with the theory *Attentional Control Theory*, increased concern will flight hours use working memory capacity, so referees' focus decreases when they think too much about external judgment.

The findings of the Independent Sample T-Test showing a significance value of 0.000 confirmed the existence of a pronounced difference in anxiety between C and B2 license referees. This is confirmed by the acquisition of Cohen's d value of -1.288, which is included in the category of large effects. This figure does not just show a statistical difference, but illustrates the existence of a wide "gap" mentality between the two groups.

In addition to the license level, the variable length of service has also been proven to be a determining factor. The result of the Anova One-Way test with a Sig. value of 0.027 indicates that the experience of flying hours contributes directly to the reduction of anxiety levels. This phenomenon can be explained through the concept of habituation. Referees who have worked for more than 4 years have been repeatedly faced with conflict situations on the field, such as protests from coaches and players or intimidation by spectators. This repeated exposure forms a more effective coping mechanism, so that somatic anxiety responses and concentration disorders can be minimized.

The main weakness in this research article lies in the inequality in the number of samples based on male-dominated sex, so that the generalization of results for female referees is less robust and vulnerable to statistical bias. In addition, the use of the SAS-2 instrument has a risk of social desirability bias where respondents may not be fully informed about their psychological condition, coupled with geographical limitations that only cover the Central Java region so that the results are not necessarily representative of the referee population nationally.

CONCLUSION

Based on the results of research and data analysis on the anxiety level of C and B2 license basketball referees in Central Java Province, several main conclusions can be drawn, namely the overall level of anxiety is in the medium category with an average score of 29.06. This indicates that the majority of referees in Central Java have adequate emotional maturity to deal with pressure on the court.

The somatic anxiety indicator was in the low category (mean 8.46). These findings show that referees have excellent physical readiness, so clinical symptoms such as muscle tension or heart palpitations are not the main obstacles in the task. The worry indicator is the most prominent factor with an average score of 11.12. Referees still often experience cognitive distress in the form of negative thoughts or fear of making wrong decisions (*wrong calls*) as well as concerns about poor judgment from the referee coordinator. The indicator of concentration disorder is in the low category (*mean* 9.48). This shows that in general, referees are able to maintain focus and attention to events on the field despite distractions from the surrounding environment.

This study concludes that even though referees have a superior understanding of the rules and physical conditions, cognitive anxiety remains a major risk factor that can interfere with performance. This condition is most vulnerable to be experienced by young referees with a C license and a working period of less than 2 years. Thus, the maturity of experience and data collection period is proven to be the most crucial aspect in shaping the mental toughness of a basketball referee in Central Java.

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Dikomentari [RI4]: 1.Hasil dan pembahasan bercampur
2.Banyak pengulangan angka
3.license lebih tinggi kecemasan tidak dijelaskan seberapa signifikan?
4.karena physical test → somatic anxiety rendah = Tidak ada data yang mendukung klaim ini
5.

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