

Prevalence of Pre-Competitive Anxiety Among Female Football Players in Malaysia

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ABSTRACT

*The primary objective of this study was to investigate the prevalence of pre-competitive anxiety (PCA) among female football players, with a secondary focus on examining its correlation with match outcomes, emotional states, and arousal levels. Sixty-seven experienced (6.7 ± 1.3 years) female football players (mean age: 22.9 ± 4.5 years; mean height: 1.58 ± 5.4 cm; mean weight: 54.8 ± 7.2 kg) volunteered for the study. Anxiety levels before matches were assessed using the Sport Competition Anxiety Test (SCAT), while emotional states and arousal levels were measured before, during, and after matches using the Feeling Scale (FS) and Felt Arousal Scale (FAS). All participants completed the SCAT questionnaire, FS, and FAS scales, which were administered via Google Forms to accommodate participants in different locations. Descriptive analysis was employed to assess anxiety levels, and Pearson correlation (*r*) analysis was conducted to explore relationships between these variables. The findings indicated moderate levels of PCA among participants. No significant correlations were observed between SCAT (2.1 ± 0.4) scores and match outcomes (2.0 ± 1.3, *r* = -0.26, *P* > 0.05). However, weak positive correlation was scored in FS (2.3 ± 0.8, *r* = 0.13) and FAS scores (2.9 ± 0.9, *r* = 0.13). This study suggests that while anxiety, arousal, and emotional states play a role, they may have a limited impact on the competitive performance of female football players. Further research is essential to validate these findings and emphasize the significance of addressing pre-competitive anxiety in the Malaysian sports context.*

Keywords: *anxiety, Competitive performance, Emotional States, female, soccer*

INTRODUCTION

Football, also known as soccer, is the most popular sport globally in terms of both participation and viewership (Kunz, 2007). The Fédération Internationale de Football Association (FIFA) reports that football is played in over 200 countries, making it a truly universal sport. Events such as the FIFA World Cup and the Union of European Football Associations (UEFA) Champions League attract billions of viewers, surpassing the audience of any other sporting event (FIFA, 2018). Football is popular due to its simplicity and accessibility, requiring minimal equipment and making it available to people from various socioeconomic backgrounds (Giulianotti, 2012). As football continues to grow in popularity, female football players are also gaining more visibility. The rising popularity of women's

football was evident during the 2023 FIFA Women's World Cup, which saw the tournament expand from 24 to 36 teams (Valenti et al., 2018). A similar trend is observed in Malaysia as more players compete in various leagues and tournaments (Martinez-Lagunas et al., 2014). Nevertheless, athletes of both genders continue to seek ways to optimise football performance through skill development, tactical understanding, physical conditioning, and psychological preparedness, all of which play critical roles in enhancing on-field performance (Ivarsson et al., 2020).

Typically, male players possess superior physical attributes compared to female players due to biological differences in muscle composition, cardiovascular capacity, and hormonal influences. Male athletes generally have higher levels of testosterone, which contributes to increased muscle mass and strength (Mujika & Riberio, 2010). As a result, they tend to demonstrate greater absolute strength, speed, and power on the field, allowing them to perform high-intensity actions such as sprinting, jumping, and tackling more effectively (Lago-Peñas, 2012; Haugen et al., 2018). Studies have shown that male soccer players cover greater distances at high intensities and achieve higher sprinting speeds compared to their female counterparts, which is attributed to differences in anaerobic power and muscle fiber composition (Atan et al., 2014). Despite lower absolute strength levels, female players demonstrate high levels of technical proficiency and tactical adaptability, often compensating for their physical disadvantages with superior ball control, decision-making, and game intelligence (Datson et al., 2017). In addition, female players often exhibit superior flexibility and endurance, which contribute to their unique playing styles. Research suggests that female athletes tend to have greater joint mobility and flexibility due to structural differences in ligaments and tendons, as well as a higher prevalence of type I muscle fibers, which are more resistant to fatigue (Bangsbo, 2014; Vescovi & McGuigan, 2008). This advantage in endurance allows female players to maintain consistent performance levels over extended periods, particularly in aerobic-based activities such as continuous running and midfield play (Bradley et al., 2014).

However, research on female football players and their performance remains scarce. Most studies have primarily focused on male athletes (Okholm et al., 2023), particularly in areas such as physiology, psychology, injury prevention, and recovery (Atan et al., 2023; Atan et al., 2024). This is largely due to factors such as male dominance in professional sports, funding allocations, and the perception that findings from male athletes are more generalizable to all athletes. This has created a gender data gap in including research in psychological factors such as stress regulation, self-confidence, self-efficacy, motivation and anxiety. Given the limited research on female football players, pre-competitive anxiety (PCA) remains one of the underexplored psychological factors despite its well-documented influence on athletic performance. Female athletes may perceive and respond to competitive stress differently (Kozub & Aghazadeh, 2000; Martens et al., 1990). Physiologically, female athletes exhibit distinct stress response patterns, including variations in hormonal markers such as adrenaline and noradrenaline, which may influence how anxiety manifests before competition (Sofian et al., 2009). The lack of female-specific evidence in this area underscores the need to better understand how PCA manifests in women's football players and how it relates to their performance outcomes.

Anxiety is frequently discussed due to its significant influence on sports performance (Mercader-Rubio et al., 2023). In particular, PCA has been shown to impact athletes' focus, confidence, and overall performance on the field (Mercader-Rubio et al., 2023). PCA refers to the feelings of apprehension and nervousness that athletes often experience before a competition, affecting their mental and physical state as they prepare to perform (Madsen et al., 2022). This type of anxiety can manifest as cognitive symptoms, such as worry and self-doubt, or as somatic symptoms, including increased heart rate and muscle tension (Munsif et al., 2019). While a certain level of anxiety can be beneficial in heightening focus and arousal, excessive anxiety can hinder an athlete's ability to perform effectively (Sofian et al., 2009). Previous research has explored the relationship between PCA and soccer performance, revealing mixed findings. Some studies suggest that moderate levels of anxiety can enhance performance by increasing alertness and focus (Martens et al., 1990). However, excessive anxiety has been linked to decreased technical execution, impaired decision-making, and

overall lower performance levels (Woodman & Hardy, 2001). The negative effects of anxiety extend to other sports that require precision and composure. For instance, in archery, research has shown that lower-level archers experience approximately 5% more anxiety than top-level archers. This heightened anxiety contributes to inconsistent shooting performance, as nervousness disrupts fine motor control, steadiness, and concentration, which are the key factors for accurate shooting (Wan Ahmad et al., 2023). These findings highlight the broader impact of anxiety across different sports, emphasizing the need for psychological strategies to help athletes manage anxiety and optimize performance.

Despite increasing research on this topic, a significant gap remains in the literature concerning Malaysian female football players. The Malaysian sports landscape has traditionally prioritized physical conditioning, often overlooking psychological training and support (Abdullah, 2016). Addressing this gap can lead to the development of training and psychological interventions specifically tailored to female athletes. Therefore, this study aims to examine the prevalence of PCA among female football players and explore its correlation with match outcomes, emotional states, and arousal levels. It was hypothesized that there would be a correlation between anxiety level and match outcome, as well as the emotional states during the match play.

METHODOLOGY

Participants

Participants were recruited using a purposive sampling method, which allows the selection of individuals who meet specific criteria relevant to the study objectives. Recruitment was conducted through collaboration with local football clubs, academies, and university teams. Sixty-seven female football players ($N = 67$) gave their consent to participate after being thoroughly informed of the benefits and potential risks of the study. All participants were currently active in training and competition throughout the study time frame. The players had an average of 6.7 ± 1.3 years of training and competitive football experience. The mean age of the participants was 22.9 ± 4.5 years. The height and weight of the participants were 158.3 ± 5.4 m and 54.8 ± 7.2 kg, respectively. This study was approved by the University Ethics Committee.

The Sports Competition Anxiety Test (SCAT)

The Sports Competition Anxiety Test (SCAT) questionnaires were used to assess PCA (Martens et al., 1990). SCAT measures two main components of competitive anxiety: Cognitive Anxiety, which reflects worries and negative expectations about performance, and Somatic Anxiety, which represents physical symptoms such as an increased heart rate or muscle tension. The SCAT consists of 15 items. Each item is rated on a 3-point Likert scale, typically ranging from 1 = no anxiety, 2 = moderate anxiety and 3 = high anxiety. The scores were summed to compute a total SCAT score. SCAT demonstrates acceptable internal consistency, with Cronbach's alpha values typically ranging from 0.70 to 0.85 across various athlete populations (Martens et al., 1990).

Felt Arousal Scale (FAS)

The FAS is a tool designed to measure an individual's level of arousal, specifically in sports and performance contexts (Soylu & Arslan, 2021). The FAS was used to measure perceived arousal. "Arousal" in this scale meant how "worked up" the participants felt. It is a 6-point scale ranging from anchors only at 1 (low arousal) to 6 (high arousal). Svebak (1982) reported that FAS scores were consistent when participants rated their arousal multiple times during similar physical tasks.

Feeling Scale (FS)

The FS was used to measure the feeling or emotions of pleasure or displeasure during exercise sessions (Hardy & Rejeski, 1989). The scale is an 11-point bipolar scale, with anchors provided at 0 (neutral), -5 (very bad) and +5 (very good). Hardy and Rejeski (1989) reported stability of responses when repeated under the same exercise intensity.

Experimental Design

This study employed a quantitative, cross-sectional research design to examine PCA, arousal, and affective states among female football players. Data were collected before the official competition to capture athletes' psychological states in a real competitive context.

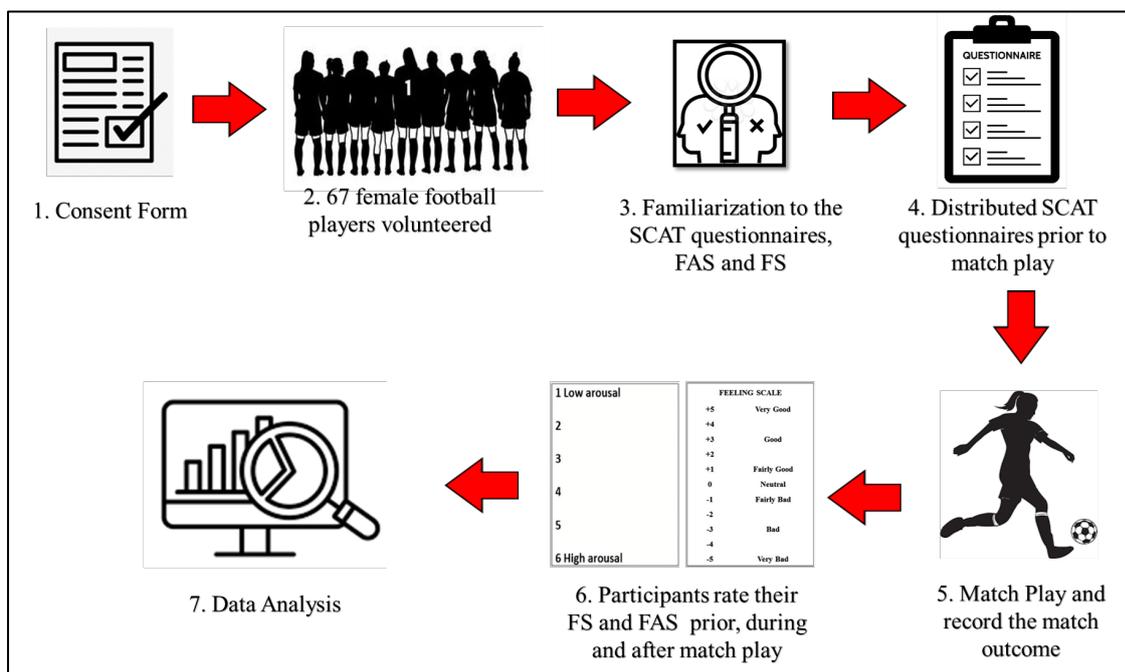


Figure 1: Data Collection Procedure

After getting consent from participants, participants were first briefed via an online video explaining the data collection procedures. The briefing was conducted to explain and familiarise participants with the scales before the administration of the SCAT, FAS, and FS. All participants completed the SCAT form approximately 2 hours before the match play started. It took approximately 5 minutes to complete the form. After the matches, participants filled out the FAS and the FS to identify trends and fluctuations in their anxiety levels and physiological arousal throughout these phases (before, during, and after competition). The SCAT, FAS, and FS were administered via Google Forms to accommodate participants in different locations. Participants were asked to give honest responses in all questionnaires. Since the tournament contained both league (round-robin) and knockout stages, SCAT was administered only once during the league stage. The participants were ranked according to their final position in the tournament.

Statistical Analysis

All data were reported as means \pm standard deviations. Pearson Correlation (r) was used to investigate the correlation between the PCA, match outcome, FAS and FS. The correlations were distributed according to r values, which were classified as very weak (0.0 to 0.2), weak (0.2 to 0

.4), moderate (0.4 to 0.7), strong (0.7 to 0.9) and very strong (0.9 to 1.0). All statistical analyses were performed with SPSS software (version 19.0, SPSS Inc., Chicago, IL) with the level of significance set at $P \leq 0.05$.

RESULTS

SCAT

The mean total SCAT score was 2.1 ± 0.4 , indicating a relatively low level of sport anxiety among the participants. This suggests that, on average, the participants experienced minimal anxiety related to competition, which may indicate a general sense of preparedness and emotional stability. The low variability (as reflected by the standard deviation of 0.4) further emphasizes that the anxiety levels were consistent across the group, with most participants demonstrating similar levels of sport-related anxiety.

Match Outcome

The match outcome score was 2.0 ± 1.3 , indicating a moderate level of performance among the participants. The Match Outcome scores were categorized into four groups:

- a. Group 1: Qualified for the Semi-Final, Quarter-Final, or Knockout stage
- b. Group 2: Bronze medal winners
- c. Group 3: Silver medal winners
- d. Group 4: Gold medal winners

Felt Arousal Scale

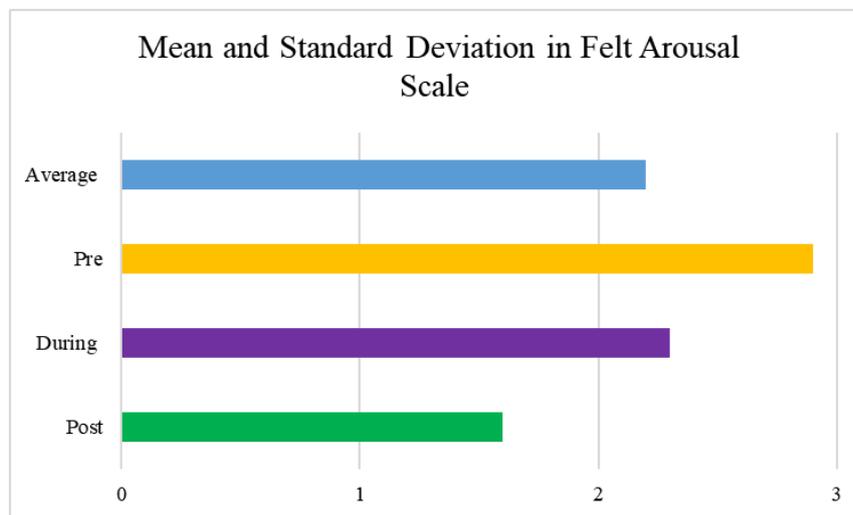


Figure 2: Mean and Standard Deviation of Felt Arousal Scale

The mean FAS score before the competition (FAS pre) was 2.9 ± 0.9 , indicating a moderate level of arousal, suggesting that participants experienced a heightened state of readiness or anticipation. During the competition, the FAS score decreased to 2.3 ± 0.9 , reflecting a slight reduction in arousal as participants engaged in the event. After the competition, the FAS score further declined to 1.6 ± 0.9 , indicating a significant drop in arousal, likely due to the conclusion of the competition and a return to a more relaxed state. Overall, the FAS scores demonstrated a moderate level of arousal across the different competition phases.

Feeling Scale

Figure 3 presents the mean and standard deviation of FS scores across different time points. Before the competition (FS Pre), the mean FS score was 2.9 ± 0.9 , indicating an overall positive affective state as participants prepared for the event. During the competition, the mean FS score dropped to 2.3 ± 1.0 , suggesting a slight decline in positive affect as participants concentrated on their performance. After the competition, the mean FS score further decreased to 1.7 ± 1.0 , reflecting a less positive affective state, possibly due to fatigue or reflection on performance outcomes.

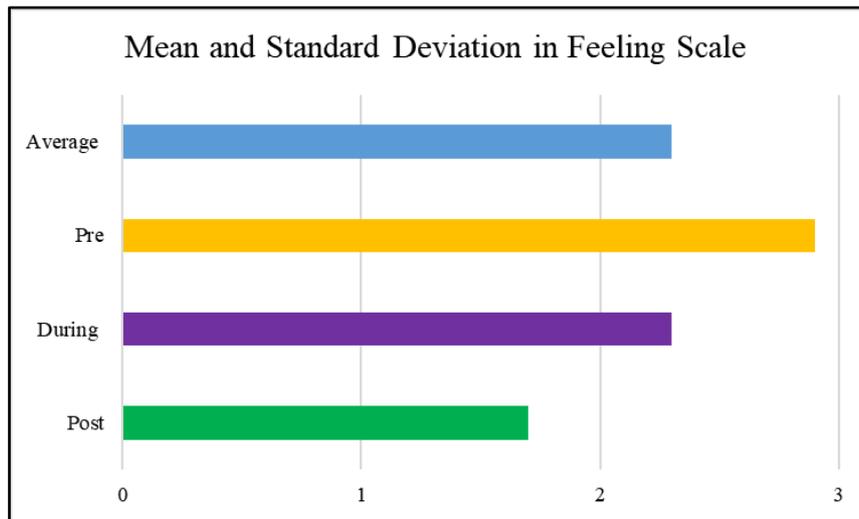


Figure 3: Mean and Standard Deviation of Feeling Scale

Relationship Between Pre-Competitive Anxiety And Match Outcome, FAS And FS

A Pearson product-moment correlation was computed to assess the relationship between the SCAT scores and match outcome scores. The scatter plot shows a negative relationship between Total SCAT and outcome scores ($r = -0.26$, $n = 67$, $P > 0.05$). Within the context of this study, PCA had no meaningful influence on match outcomes.

Meanwhile, there is a weak positive relationship between the SCAT and FAS ($r = 0.13$, $n = 67$, $P > 0.05$). This suggests that higher PCA was only minimally associated with increased arousal before competition. The absence of a significant relationship suggests that athletes in this sample were able to experience anxiety without a corresponding increase in perceived physiological arousal, possibly due to effective coping strategies, competitive experience, or psychological adaptation to match situations.

A similar trend showed in the FS, where the results showed a weak positive relationship ($r = 0.13$, $n = 67$, $P > 0.05$). The weak association suggests that increased PCA did not significantly alter athletes' subjective emotional states, supporting the notion that PCA may not always be detrimental and can be interpreted or regulated differently by athletes.

DISCUSSION

The purpose of this study was to examine the prevalence of PCA among female football players and its relationship with match outcomes, emotional states, and arousal levels. The findings indicate that the participants generally exhibited low levels of sport-related anxiety. Additionally, the correlation analyses revealed weak or non-significant relationships between PCA and match outcome, as well as

PCA and both FAS and FS scores. These findings suggest that in this present study, pre-competitive anxiety had minimal impact on performance outcomes, emotional states, and arousal levels. These results align with previous research suggesting that female athletes, particularly in team sports, may experience lower levels of anxiety or effectively manage it through coping strategies such as goal setting, self-talk, or team support (Martens et al., 1990; Costa et al., 2015; Woodman & Hardy, 2003). However, these findings contrast with other studies reporting moderate to high PCA among female athletes, where heightened anxiety was associated with decreased performance or emotional dysregulation (Craft et al., 2003; Gould et al., 1999). The discrepancy may be explained by differences in competitive level, athlete experience, or contextual factors such as coaching style and team environment. This further supports the notion that the lower PCA observed in the present study may be attributed to the participants' extensive competitive and training experience. All participants had more than five years of training and competition experience, suggesting that they may be better able to manage pre-competition nervousness or have developed their own coping strategies to overcome PCA. Nevertheless, in consensus, research consistently shows that female athletes report higher levels of PCA compared to their male counterparts (Santos et al., 2022). This gender difference has been attributed to several factors, including emotional responsiveness, social and performance expectations, and perceived self-efficacy (Santos et al., 2022).

Furthermore, it is important to highlight that the results may be influenced by the small sample size in this study. With only 67 participants, the study's ability to generalize its findings to a broader female athlete population is limited. A larger sample size could enhance the reliability of the results and provide a more comprehensive understanding of how anxiety impacts performance across different demographics (Atan et al., 2020). Furthermore, the anxiety was assessed at a single point in time, which does not capture its fluctuations before, during, and after competition. Anxiety in female athletes is dynamic and can vary based on factors such as match importance, opponent strength, and personal performance expectations (Woodman & Hardy, 2003). A longitudinal assessment would provide a more comprehensive understanding of how anxiety evolves throughout a competition period. No correlation between SCAT, FAS and FS was recorded. A possible explanation for this outcome is that participants recorded relatively low levels of PCA, which may not have been sufficient to impact their performance.

This study represents an initial attempt to investigate the prevalence of PCA among female football players in Malaysia, an area that remains underexplored in the local sporting context. While psychological factors such as anxiety have been widely studied in elite and male-dominated sports settings, empirical evidence focusing specifically on Malaysian female football players is limited. As a result, baseline data on the extent and nature of pre-competitive anxiety in this population are currently lacking. However, several aspects require further improvement and expansion in subsequent research.

Based on these findings, several recommendations are proposed to strengthen future research. First, increasing the sample size is essential to enhance the statistical power of the analysis, consequently improving the ability to detect significant differences or relationships between PCA and match outcomes. Furthermore, a larger sample would also enhance the generalizability of the findings. In addition, incorporating gender comparisons in future research would offer valuable insights into potential differences in how male and female athletes experience and manage pre-competition anxiety. This present study only collected data over 14 weeks; future research should consider longitudinal studies to track psychological states, including PCA, over extended periods. Monitoring athletes across multiple months or seasons would provide a deeper understanding of how anxiety levels fluctuate over time. Lastly, for further improvement, while online surveys and questionnaires (e.g., Google Forms) provide useful data, they may not fully capture the dynamic nature of pre-competition anxiety, as emotions fluctuate throughout the day. Participants may struggle to accurately report their anxiety levels at the precise moment of competition. To address this limitation, future research should prioritize real-time data collection during actual game situations, using tools such as in-game self-report measures, wearable physiological monitors, or post-game debrief interviews. By

implementing these recommendations, future studies can provide more comprehensive, reliable, and applicable findings to better understand and manage pre-competition anxiety in athletes.

CONCLUSION

Despite these limitations, the study provides important groundwork for further exploration into anxiety and performance in female football players. The findings highlight the need for a targeted, larger sample size and to include other methodologies to investigate PCA in female players. In conclusion, this study found that female football players in Malaysia exhibited relatively low levels of pre-competitive anxiety, which had minimal impact on match outcomes, arousal levels, and emotional states.

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AUTHORS' CONTRIBUTION

Aiman, N.F.M.N. and Atan, S.A. planned the experiments, collected data and performed data analysis. Atan, S.A., took the lead in writing the manuscript.

CONFLICT OF INTEREST DECLARATION

We certify that the article is the original work. The article has not received prior publication and is not under consideration for publication elsewhere. This manuscript has not been submitted for publication, nor has it been published in whole or in part elsewhere. We testify to the fact that all Authors have contributed significantly to the work, validity and legitimacy of the data and its interpretation for submission to Jurnal Intelek.

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