

A Study of Superstitious Rituals as Predictors of Competitive State Anxiety Among Male and Female Collegiate Athletes



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Abstract:

Introduction: Superstitious rituals are commonly practiced to manage emotions and cope with uncertainty during competitions. These behaviors could affect competitive state anxiety, but evidence regarding the impact among collegiate athletes remains inconsistent. This study aimed to investigate whether superstitious rituals were associated with competitive state anxiety in collegiate athletes and to compare differences between genders.

Methods: In this cross-sectional study, a total of 138 collegiate athletes (98 men and 40 women) completed the Superstitious Rituals Questionnaire and the Revised Competitive State Anxiety Inventory-2 approximately 60 minutes before competition. Correlations between superstitious ritual factors and competitive state anxiety components were analyzed by using Pearson correlation, and predictive contributions to competitive state anxiety were determined by multiple regression. Gender differences were tested by One-way multivariate analysis of variance.

Results: Somatic anxiety was significantly associated with clothing and appearance, prayer, and coach factors ($r = 0.20 - 0.25$; $p < 0.05$). Cognitive anxiety was significantly associated with team rituals, prayer, and coach factors ($r = 0.18 - 0.83$; $p < 0.05$). Self-confidence was significantly correlated with pre-game routines, game-day rituals, team rituals, prayer, and coach factors ($r = 0.18 - 0.32$; $p < 0.05$). Somatic anxiety was mainly influenced by coach factor (6% prediction), while cognitive anxiety and self-confidence could be predicted by team rituals factor (3% and 9%, respectively). Comparison analyses showed a significant difference only in the clothing and appearance factor ($p < 0.05$), with higher scores in males than females.

Discussion: These findings indicate that although superstitious rituals demonstrate limited overall predictive strength, certain ritual dimensions related to team processes and coaching involvement may play a functional psychological role by supporting emotional regulation and enhancing self-confidence in competitive settings.

Conclusion: While superstitious rituals showed minimal overall influence on competitive state anxiety, specific factors were differentially associated with anxiety components and confidence. The observed patterns were largely consistent across genders, suggesting shared coping mechanisms among collegiate athletes.

Keywords: Collegiate athletes, Competition, Competitive state anxiety, Confidence, Superstitious rituals, Gender differences.

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1. INTRODUCTION

Competitive state anxiety is often shaped by external and contextual influences, particularly the motivational climate created by coaches and other social factors surrounding competition. In competitive settings, uncertainty and demanding conditions may heighten psychological stress in athletes and contribute to competitive state anxiety, which may in turn undermine sport performance [1-4]. To mitigate this psychological constraint, athletes often adopt coping strategies to regain a sense of control. One prominent psychological mechanism for regulating competitive state anxiety is the adoption of superstitious rituals. The superstitious rituals can increase confidence, reduce anxiety, and provide athletes with a sense of control over their circumstances [5-7]. Superstitious rituals are defined as repetitive behaviors or actions performed based on beliefs that can influence luck or external factors, despite a lack of causal evidence. In sports, such behaviors ranging from wearing specific lucky clothing and fetish objects to complex pre-game routines may serve an anxiety-relieving function by providing an illusion of control over uncertain outcomes [8, 9]. When integrated into pre-performance practices, these rituals may help athletes stabilize their emotional state and enhance self-confidence and performance [10-12]. Empirical evidence further supports this functional perspective, indicating that athletes with higher anxiety rely more frequently on ritualized behaviors to reduce anxiety and maintain emotional stability. Such rituals are often perceived as supportive for enhancing confidence and a sense of control, which may help regulate pre-competitive arousal and support focused performance in uncertain contexts [13, 15].

The nature of superstitious rituals further varies by skill level, sport type, and cultural background. Previous research has shown that elite athletes tend to adhere to superstitious behaviors more frequently than non-elite athletes, likely due to the higher stakes involved in high-level competition [16, 17]. These behaviors also appear more pronounced in open-skill sports characterized by high unpredictability compared to closed-skill sports with more stable and controllable environments [11, 17].

Concerning gender differences in superstitious rituals, it remains a debated topic in sport psychology, yielding mixed empirical findings. Several studies reported that female athletes engaged in superstitious rituals more frequently than male athletes [13, 14]. However, a study of university athletes found that males predominantly engaged in superstitious behaviors [15]. Recent research also found distinct patterns between genders, as males often used superstitious rituals primarily for confidence enhancement while females reported higher levels of initial competitive anxiety and utilized these behaviors more frequently for emotional regulation and anxiety reduction [12, 16, 17]. These contradictions have highlighted gaps in the literature, particularly evidence in young adult and collegiate populations, where social and cognitive development may influence gender differences in coping with competitive state anxiety.

Importantly, superstitious rituals are deeply embedded in cultural contexts. While European athletes rely on religious gestures or personal routines, Asian athletes often integrate culturally rooted spiritual beliefs [18-22]. Among Asian countries, Thailand is a nation with strong traditions of animism and Buddhism, so Thai athletes often engage in distinct rituals, such as wearing amulets, receiving blessings from monks, or performing specific gestures to consecrate the playing field. However, empirical research on Thai superstitious rituals has largely been limited to sociological or theological reviews of Buddhist scripture, rather than quantitative sport psychology [23]. Recently, there has been a lack of data linking these specific Thai cultural practices to competitive state anxiety and self-confidence in the collegiate sport context. Therefore, this study aimed to examine the associations between superstitious rituals and competitive state anxiety and their predictive influence on competitive state anxiety, and compare differences in these behaviors among Thai collegiate male and female athletes.

2. MATERIALS AND METHODS

2.1. Study Design

This study employed an observational, descriptive cross-sectional design to examine the associations and predictive relationships between superstitious rituals and components of competitive state anxiety among collegiate athletes. Superstitious ritual factors were treated as independent variables, while somatic anxiety, cognitive anxiety, and self-confidence were considered dependent variables. Data were collected at a single time point prior to competition using standardized self-report questionnaires, and the study did not involve any experimental manipulation. As this research is an original observational study, it did not involve a systematic literature search or a review-based methodology.

2.2. Participants

The sample size for this study was calculated by the G*Power 3.1.9.4 package, using the Linear Multiple Regression: Fixed Model, R² Deviation from Zero test. A prior power analysis indicated that, with seven predictive variables, an effect size ($f^2 = 0.15$), a power of 0.85, and an alpha level of 0.05, the minimum required sample size was 115 [12]. To account for potential discrepancies due to incomplete responses, samples were increased by 20%. Accordingly, a total of 138 collegiate athletes (98 males and 40 females), aged 18-20 years, were included in the final analysis. This study was approved by the Thammasat University Ethics Review Sub-Committee, Thailand (COA No. 092/2564), and all participants provided written informed consent before the data collection.

A total of 138 collegiate athletes (aged between 18 - 20 years) were recruited using a purposive sampling method. Participants consisted of 98 males (71.01%) and 40 females (28.99%). All participants were qualified to compete in the semifinal round of the national Thailand University Games 2022 and were recruited into the study between December 2021 and January 2022. Specifically,

participants were included if they were currently enrolled as collegiate athletes and actively participated in their respective sport disciplines, ensuring exposure to a high-pressure competitive environment. Participants were excluded if they reported having acute injuries immediately before the time of data collection. In terms of experience, the majority of participants (86.96%) had 5-10 years of competition experience, while approximately 13% had over 11 years. The participants represented a diverse range of 21 sports, classified according to the Thai National University Games Committee. These included team (64.49%) and individual sports (35.51%). The sport types included futsal (32.61%), football (18.84%), golf (7.25%), athletics (6.52%), volleyball (5.07%), tennis (3.62%), rugby (3.62%), swimming (3.62%), ultimate frisbee (2.90%), fin swimming (2.17%), judo (2.17%), beach volleyball (2.17%), basketball (1.45%), fencing (1.45%), shooting (1.45%), gymnastics (1.45%), karate (0.72%), sepak-takraw (0.72%), sport climbing (0.72%), rowing (0.72%), and chess (0.72%).

2.3. Measures

Information concerning superstitious rituals and competitive anxiety was collected using the superstition questionnaire [8] and the revised competitive state anxiety inventory-2 [24], respectively. Using the methods of the previous study, these questionnaires were provided to all participants approximately 60 min before the start of their competition [4]. This process took approximately 20 minutes and was carried out only once for each participant.

2.3.1. Superstitious Rituals Questionnaire (SRQ)

Superstitious behaviors were measured using the SRQ-Thai version. It was originally developed by Bleak and Frederick [8] and back-translated into Thai and validated by our previous research [25]. This instrument demonstrates acceptable fit indices via confirmatory factor analysis using robust maximum likelihood estimation. The SRQ contains 45 items and is structured into 7 categories: clothing and appearance (17 items), fetish (7 items), pre-game (7 items), game (4 items), team rituals (4 items), prayer (4 items), and coach (3 items). Participants indicated their engagement in a ritual (Yes/No) and rated its perceived effectiveness on a 5-point Likert scale [1 = Not at all effective to 5 = Very effective]. The overall internal consistency was excellent ($\alpha = 0.95$). Subscale reliabilities (α) ranged from 0.63 to 0.91.

2.3.2. Revised Competitive State Anxiety Inventory-2 (CSAI-2R)

Competitive state anxiety was assessed using the Thai version of the CSAI-2R. It was originally developed by Cox *et al.* [24] and back-translated into Thai and validated by Panuthai and Vongaturapat [26], which has demonstrated acceptable model fit. The CSAI-2R consists of 17 items that are characterized by 3 mental aspects, including somatic anxiety, cognitive anxiety, and self-confidence. Somatic anxiety describes the physiological manifestation of anxiety. Cognitive anxiety illustrates the athlete's

experiences in negative expectations and concerns about their performance. Self-confidence indicates the athlete's belief in their ability to be successful. Based on the participant's feelings, each item was scored as not at all (1), somewhat (2), moderately so (3), and very much so (4). The total scores were calculated and interpreted into 3 levels of anxiety and confidence, including low (10-19), moderate (20-30), and high (31-40). The instrument showed high reliability for the total scale ($\alpha = 0.88$) and subscales (Somatic: $\alpha = 0.91$; Cognitive: $\alpha = 0.83$; Self-Confidence: $\alpha = 0.81$).

2.4. Data Collection

Data collection was conducted on-site at the competition venues. Following the protocol established by a previous research [4], questionnaires were administered approximately 60 minutes before the start of the semifinal matches to capture the pre-competitive state accurately. The process took approximately 20 minutes per participant.

2.5. Statistical Analysis

All statistical analyses were performed using R (version 4.3.2) via the RStudio interface (version 2023.12.1). Data normality was assessed using z-values of skewness and kurtosis, with values within ± 3.29 indicating a normal distribution for medium-sized samples ($50 < n < 300$) [27]. Descriptive statistics (means and standard deviations) were calculated to summarize the data. Pearson's correlation coefficients (r) were computed to examine associations among variables and confirm regression assumptions. Correlations below 0.90 and variance inflation factor (VIF) values under 10 indicated acceptable multicollinearity [28, 29]. The correlation coefficient was interpreted according to established guidelines as trivial ($r \leq 0.1$), small ($0.1 < r \leq 0.3$), moderate ($0.3 < r \leq 0.5$), large ($0.5 < r \leq 0.7$), very large ($0.7 < r \leq 0.9$), and almost perfect ($r > 0.9$) [30]. Stepwise multiple regression analyses were conducted to determine the predictive influence of superstitious ritual subscales (independent variables) on components of competitive state anxiety (dependent variables). Model selection was based on statistical significance (p -value), the coefficient of determination (R^2), and minimal multicollinearity. Model performance was further validated using Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and Root Mean Square Error (RMSE), ensuring optimal model fit and parsimony. Additionally, one-way multivariate analysis of variance (MANOVA) examined gender differences in superstitious ritual subscales and competitive anxiety components. Assumptions of multivariate normality and homogeneity of variance-covariance matrices were verified. Effect sizes were reported using partial eta squared [η^2], classified as small (0.01), moderate (0.06), and large (0.14). Statistical significance was set at $p < 0.05$ for all analyses.

3. RESULTS

Descriptive statistics for each subscale of superstitious rituals and competitive state anxiety are presented in

Table 1. Overall, more than 80% of participants reported engaging in at least one factor of superstitious rituals during performance. Regarding the perceived effectiveness of superstitious rituals on performance, response patterns varied across factors. More than half of the participants rated the clothing and appearance factor as not effective. Similarly, nearly 30% of participants reported that the fetish factor was not effective for their performance. Regarding the pre-game factor, the number of participants was nearly equal across 3 levels of responses: not effective (24.64%), sometimes effective (28.26%), and moderately effective (26.09%). Regarding the game factor, about 29.71% of participants rated their responses as moderately effective, and nearly equal numbers reported responses as sometimes effective (23.19%) and often effective (23.91%). About one third of participants (32.61%) rated the team ritual factor as moderately effective. For the prayer factor, nearly equal numbers of participants reported responses as not effective (25.36%) and sometimes effective (26.81%). For the coach factor, there were contrasting results: 25.36% of participants did not use this factor, while 24.64% reported that it was sometimes effective for their performance.

Correlation analyses indicated significant positive relationships between specific superstitious rituals subscales and components of competitive state anxiety ($p < 0.05$). In particular, three factors, including clothing and appearance, prayer, and coach, had small correlations with somatic anxiety ($p < 0.05$). Compared with cognitive anxiety, three factors, including team rituals, prayer, and

coach factors, showed small to moderate correlations ($p < 0.05$). All subscales except clothing and appearance and fetish factors showed small to moderate associations with self-confidence ($p < 0.05$). There were moderate to large positive relationships among all the superstitious ritual factors. Moreover, a very large correlation was observed between somatic anxiety and cognitive anxiety, suggesting a strong association between these two aspects of competitive state anxiety (Table 1).

For stepwise multiple regression analyses, our results met the assumption requirements that all superstitious ritual factors (clothing and appearance, fetish, pre-game, game, team rituals, prayer, and coach) exhibited significantly moderate to large correlations ($r = 0.32 - 0.77$, $p < 0.01$) and VIF ranged between 1.74 - 3.35. These results indicated normality and collinearity, and supported the suitability of conducting multiple regression analysis. From Table 2, the coach factor was the only significant predictor, explaining 5.6% of the variance in somatic anxiety. Moreover, the team rituals factor was found to be the best predictor of cognitive anxiety and self-confidence, explaining 3.1% and 9.5%, respectively. The results from AIC, BIC, and RMSE also confirmed the associations between superstitious rituals and competitive state anxiety. With a small effect of the coach factor and its relatively small percentage of prediction on the somatic anxiety, these findings suggested that other factors related to internal or external locus of control may contribute to changes in an athlete's anxiety state.

Table 1. Relationships between superstitious rituals and competitive state anxiety in collegiate athletes (n = 138).

-	CA	FT	PG	G	TR	PY	C	So_A	Co_A	Se_C	Mean (SD)
CA	1.00										1.03 (0.80)
FT	0.60***	1.00									1.33 (1.22)
PG	0.49***	0.72***	1.00								1.90 (1.17)
G	0.33***	0.49***	0.59***	1.00							2.51 (1.19)
TR	0.32***	0.37***	0.53***	0.71***	1.00						2.59 (1.28)
PY	0.47***	0.59***	0.58***	0.57***	0.61***	1.00					2.04 (1.45)
C	0.47***	0.54***	0.54***	0.59***	0.48***	0.77***	1.00				1.75 (1.59)
So_A	0.20*	0.07	0.17	0.10	0.09	0.23**	0.25**	1.00			19.99 (7.23)
Co_A	0.14	0.06	0.17	0.14	0.20*	0.18*	0.18*	0.83***	1.00		21.93 (6.76)
Se_C	0.05	0.11	0.18*	0.27**	0.32***	0.25**	0.24**	-0.00	-0.02	1.00	29.91 (6.37)

Note: CA = clothing and appearance; FT = fetish; PG = pre-game; G = game; TR = team rituals; PY = prayer;

C = coach; So_A = somatic anxiety; Co_A = cognitive anxiety; Se_C = self-confidence; SD = standard deviation. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Table 2. Multiple regression analyses of the superstitious rituals on competitive state anxiety in collegiate athletes.

Variables		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	β		
So_A	(Constant)	17.997	0.892		20.167	0.000***
	Coach	1.136	0.378	0.250	3.010	0.003**
	R = 0.250, R ² = 0.062, Adjusted R ² = 0.056, p = 0.003**, AIC = 933.86, BIC = 942.65, RMSE = 6.98					
Co_A	(Constant)	19.250	1.296		14.850	0.000***
	Team ritual	1.048	0.450	0.196	2.330	0.021*
	R = 0.197, R ² = 0.039, Adjusted R ² = 0.031, p = 0.021*, AIC = 918.89, BIC = 927.76, RMSE = 6.61					
Se_C	(Constant)	25.803	1.171		22.067	0.000***
	Team ritual	1.590	0.406	0.318	3.917	0.000***
	R = 0.317, R ² = 0.101, Adjusted R ² = 0.095, p = 0.000***, AIC = 893.11, BIC = 901.89, RMSE = 6.02					

Note: So_A = somatic anxiety; Co_A = cognitive anxiety; Se_C = self-confidence;
 B = unstandardized coefficient; Std. Error = standard error of unstandardized coefficient;
 β = standardized coefficient; t = t statistic. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Table 3. Comparisons of superstitious rituals and competitive state anxiety between genders (98 males and 40 females).

Dependent Variable	Male (M $\pm$ SD)	Female (M $\pm$ SD)	F	p	η_p^2
Clothing and appearance	1.12 $\pm$ 0.89	0.88 $\pm$ 0.45	5.013	0.027*	0.036
Fetish	1.33 $\pm$ 1.30	1.32 $\pm$ 1.05	0.001	0.972	0.000
Pre-game	1.97 $\pm$ 1.25	1.74 $\pm$ 0.97	1.074	0.302	0.008
Game	2.58 $\pm$ 1.27	2.34 $\pm$ 0.96	1.176	0.280	0.009
Team rituals	2.69 $\pm$ 1.22	2.33 $\pm$ 1.40	2.362	0.127	0.017
Prayer	2.14 $\pm$ 1.45	1.78 $\pm$ 1.43	1.779	0.184	0.013
Coach	1.82 $\pm$ 1.60	1.59 $\pm$ 1.57	0.583	0.446	0.004
Somatic anxiety	19.50 $\pm$ 7.05	21.18 $\pm$ 7.63	1.527	0.219	0.005
Cognitive anxiety	21.65 $\pm$ 6.92	22.70 $\pm$ 6.62	0.666	0.416	0.007
Self-confidence	30.24 $\pm$ 6.53	29.10 $\pm$ 5.97	0.916	0.340	0.011

Note: M: Mean. SD: Standard deviation. F: F statistic value. p: significance level. η_p^2 : partial eta square. * $p < 0.05$.

For the comparison analyses, Box's M test was checked to ensure the assumption of homogeneity of variances and covariance matrices of the MANOVA. Results showed that there were no significant differences between genders in any aspects of the competitive state anxiety (9.213, $p = 0.162$) and the superstitious ritual factors (55.649, $p = 0.001$), indicating that assumption requirements were met. From the MANOVA results, there were no significant overall effects for the superstitious ritual factors (Wilks' Lambda = 0.922; $F(7,130) = 1.572$; $p = 0.149$; $\eta_p^2 = 0.08$) and the competitive state anxiety components (Wilks' Lambda = 0.981; $F(3,134) = 0.859$; $p = 0.464$; $\eta_p^2 = 0.02$). Then, subsequent ANOVA were analyzed and revealed significant differences in the clothing and appearance factor between genders ($p < 0.05$) (Table 3). These results showed that males had significantly higher scores than females, with a small effect ($p < 0.05$). For other superstitious ritual factors, there were no significant differences between genders. For almost all factors, male athletes reported relatively greater scores than female athletes, except for the fetish

factor, which showed nearly similar engagement in both genders. For the competitive state anxiety, results found no significant differences in any components between genders. It was observed that the females tended to be more prone to somatic anxiety and cognitive anxiety as compared with their male counterparts. Whereas for self-confidence, the male athletes exhibited a marginally higher mean compared to the female athletes.

4. DISCUSSION

4.1. Associations between Superstitious Rituals and Competitive Anxiety

The correlation analyses revealed small to moderate associations between superstitious rituals and all components of competitive state anxiety. Three factors, including clothing and appearance, prayer, and coach, had positive correlations with somatic anxiety. Similarly, team rituals, prayer, and coach factors showed positive associations with cognitive anxiety. Whereas other factors involving clothing, appearance, and fetish were positively correlated with self-confidence. We also found moderate to large

positive relationships between all superstitious ritual factors. Additionally, somatic anxiety and cognitive anxiety showed a strong interrelationship, which is consistent with previous findings in Jiu-Jitsu [31]. These suggest that athletes who experience higher cognitive anxiety also experience increased somatic anxiety. Based on multi-dimensional anxiety theory, athletes have increased their pre-competitive anxiety levels, reaching a peak of somatic anxiety just before the start of a game and decreasing during performance, whereas cognitive anxiety gradually increased approximately 1-2 months before the competition and peaked at its beginning. Previous research also reported alterations in cognitive and somatic anxiety levels in table tennis players during pre-competition until the game finished, showing marked increases early before competition; however, within an hour before the start, somatic anxiety slightly improved while remaining under a debilitating effect, whereas cognitive anxiety progressively increased throughout the game [4]. Regarding the effect of coach-related superstition on somatic anxiety, this was consistent with a previous study in football players, which found that coach-related pre-performance rituals positively correlated with somatic anxiety and worry during competition [7]. From the SRQ, the coach factor involves coaches initiating the superstitious rituals for athletes, such as “the coach is taking a lucky charm to the game” and “encouraging prayer or meditation”. This may be a key factor in enhancing an athlete’s performance, since coaches are responsible for guiding the team and supporting the athletes’ minds. In line with prior research, the personal superstitions of coaches can influence collective team processes [8]. Although the coach factor showed a positive correlation with somatic anxiety, this effect probably occurred only during the pre-competition period [9]. In accordance with the Inverted U theory, it was possible that the somatic anxiety had increased to an optimal level and then decreased to baseline during the game. It might be that when coaches perform certain actions, such as leading a team huddle before a game or following a particular routine leading up to a competition, athletes might feel more control over the game’s outcome, which could lessen somatic anxiety during competition [32].

For the association of the team rituals factor with cognitive anxiety and self-confidence, these findings were consistent with a previous study on football players, as the level of anxiety and worry increased with demands on pre-performance rituals [7]. Team rituals factor involves the actions that athletes perform within a team to build team bonding, such as stacking hands, team cheering, singing, or taking a deep breath together [9]. These ritual actions may help manage emotions, create a sense of unity, and keep the team focused and working towards common goals. It has been found that high-level athletes usually perform team rituals before the game starts and continue throughout the match [33]. A previous study monitored brain activity using electroencephalography and reported that ritual actions could guide goal-oriented performance by regulating the brain’s response to personal failure.

Ritual behaviours are derived from the repetitive practice of well-planned actions so that they become automatic behaviours and act as a calming mechanism to reduce neural responses to performance failure [34]. In competitive situations, athletes may feel uncertain or lack self-confidence, especially in critical situations that trigger cognitive anxiety, such as an inability to concentrate or disrupted attention. Athletes might have performed superstitious rituals that could alleviate these negative expectations about success [35] and provide them with a sense of familiarity, helping them build self-confidence. In addition, ritual behaviors have a significant impact on social relations, which may lessen individual anxiety and build team spirit and collaboration [9]. Therefore, all players and the team could reimagine what goals that they were willing to achieve together.

Various types of superstitious rituals commonly practiced by Thai collegiate athletes could potentially explain why some elements of these rituals did not affect competitive state anxiety. Many Thai athletes believe in the power of spirits and Buddhism, which they integrate into their sports routines. Ritual practices, such as paying respect to spirits or guardian angels, are common because they are believed to increase confidence and provide mental support during competition. Additionally, many athletes wear amulets depicting the Buddha or other sacred symbols as their beliefs for life protection and bringing positive fortune [36]. In Muay Thai, several pre-fight rituals play crucial roles in both psychological preparation and cultural tradition, such as the “Ram Muay,” a ceremonial dance that aids in fighters’ focus [37]. Thus, these practices might be psychological approaches that could reduce anxiety and enhance performance among Thai athletes.

4.2. Gender Differences in Superstitious Rituals and Competitive Anxiety

Our findings found that male athletes reported higher scores on the clothing and appearance factor than female athletes. This coincided with a previous study reporting that male athletes often believed that certain clothes can bring luck, which led to decreased anxiety and improved confidence [11]. Moreover, social norms emphasizing masculinity and physical attractiveness may influence clothing and appearance behaviors. For example, male tennis players adhered to more traditional lifestyles than their female counterparts [15].

In contrast, appearance-related coping strategies appear to operate differently across genders, reflecting distinct associations between appearance management and psychological well-being. In particular, female athletes often prioritize comfort and garment fit, especially in sports that require more revealing attire, as poorly fitting uniforms may undermine body image confidence, heighten competitive anxiety, and contribute to dissatisfaction that influences continued participation and retention in sport [38]. Moreover, these behaviors may be influenced by cultural contexts. Thai athletes’ superstitions and grooming habits are shaped by

traditional and contemporary beliefs [36]. Although there are gender differences in appearance-related superstitions, there were no significant differences in overall superstitious practices among Thai collegiate athletes, with ritual scores largely comparable between genders. This pattern aligns with prior evidence indicating that athletic-specific ritual engagement does not differ significantly by gender, suggesting shared psychological mechanisms for enhancing readiness and reducing competitive anxiety [18]. Both male and female athletes usually performed fetish actions, such as carrying fortunate items, to feel a sense of control and reduce tension. They also performed pre-game rituals in order to enhance focus, such as prayer and listening to music, that may result in reduced anxiety and improve self-confidence [7, 33]. Besides, both genders also engaged in team rituals such as group chants, warm-ups, and pre-game huddles, which possibly enhanced teamwork and confidence [11]. With similar superstitious behaviors in our participants, these findings may align with Thailand's cultural and spiritual context since the country's traditional beliefs do not discriminate between men and women. For example, people generally wear amulets for protection and performance enhancement. Moreover, both male and female athletes usually perform prayer according to religious principles, which reflect the deeply ingrained cultural beliefs in Thailand. With no significant differences in all components of competitive state anxiety between genders, these findings aligned with previous studies in amateur and professional and elite athletes in volleyball [1, 16]. However, we observed that female athletes tended to experience higher levels of somatic and cognitive anxiety, while male athletes exhibited slightly higher self-confidence levels. Moreover, it should be noted that our participants had a moderate level of anxiety, which is a state of general arousal that acts as a preparatory, triggering, and functional factor in helping individuals to cope with stressors.

Overall, the findings of this study contribute to a broader understanding of how superstitious rituals may function as psychological coping mechanisms in competitive sport settings. Although the observed relationships were modest, the results suggest that certain ritual dimensions—particularly those involving team interactions and coaching practices—may support athletes' emotional regulation and self-confidence under competitive pressure. Rather than serving as direct determinants of performance or anxiety, these rituals appear to operate by enhancing perceived control and social cohesion, which are important psychological resources in uncertain performance environments. In this respect, the present findings align with theoretical perspectives emphasizing the symbolic and regulatory functions of rituals in managing anxiety and maintaining focus, and extend prior research by demonstrating these patterns within a collegiate and culturally specific sport context.

5. LIMITATIONS

The current study has some limitations. First, the cross-sectional design precludes the ability to make causal

inferences regarding the relationships between superstitious rituals and components of competitive state anxiety. Longitudinal or experimental studies are needed to further examine the temporal and causal dynamics of these associations. Second, data were collected using self-report questionnaires, which may be subject to response bias and social desirability effects. Athletes may have over- or underreported their engagement in certain superstitious rituals or their anxiety levels. In addition, the use of purposive sampling and the focus on athletes competing in the semifinal round may limit the generalizability of the findings to athletes at different competitive levels. Third, the sample was drawn exclusively from Thai collegiate athletes, and superstitious rituals are known to be culturally embedded. Therefore, caution is warranted when generalizing the findings to athletes from other cultural or religious backgrounds. Finally, the imbalance in gender distribution and the predominance of team-sport athletes may have influenced the observed patterns, suggesting that future studies should include more diverse samples and explore sport-specific and cultural differences using mixed-methods approaches.

CONCLUSION

Our study revealed that superstitious ritual factors were positively associated with competitive state anxiety components among collegiate athletes. Specifically, rituals related to coaching and team practices were associated with somatic anxiety, cognitive anxiety, and self-confidence, although the observed relationships were relatively small in magnitude. Moreover, male athletes showed significantly greater scores in the clothing and appearance factor than female athletes. However, there were no differences in other aspects of the superstitious rituals and the competitive sport anxiety between genders.

Overall, these findings suggest that certain superstitious rituals may play a functional psychological role in competitive sport contexts, particularly in relation to emotional regulation and self-confidence. However, given the cross-sectional design of the study, the results should be interpreted cautiously and do not imply causal relationships. Further research using longitudinal or experimental designs is warranted to better understand the role of superstitious rituals in athletes' psychological preparation and performance.

AUTHORS' CONTRIBUTIONS

The authors confirm their contributions to the paper as follows: S.K., A.T.: Study conception and design; S.K.: Data collection; S.K., A.T.: Analysis and interpretation of results; S.K., S.S.: Draft manuscript. All authors reviewed the results and approved the final version of the manuscript.

LIST OF ABBREVIATIONS

CA	=	Clothing and Appearance
FT	=	Fetish
PG	=	Pre-Game

G	=	Game
TR	=	Team Rituals
PY	=	Prayer
C	=	Coach
So_A	=	Somatic Anxiety
Co_A	=	Cognitive Anxiety
Se_C	=	Self-Confidence

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Human Research Ethics Committee of Thammasat University (Science), Thailand (Approval No. COA 092/2564).

HUMAN AND ANIMAL RIGHTS

All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional committees and with the Declaration of Helsinki principles.

CONSENT FOR PUBLICATION

Not applicable. No identifiable personal information, images, audio-video materials, or individual-level data are included in this study.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of this study are available from the corresponding author [S.K] upon reasonable request.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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