*Article*

# The Mental Game of Golf: Understanding Relationships Between Self-Efficacy, Fear of Failure, Competitive State Anxiety, and Flow

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## Abstract

Our purpose in this study was to investigate the relationship between self-efficacy, fear of failure, competitive state anxiety, and flow among elite golfers. We surveyed 375 elite golfers ($N$ = 375; male = 187, female = 188) who were registered with the Korean Sports and Olympic Committee, and we analyzed their survey responses using descriptive statistics, confirmatory factor analysis, correlation analysis, and structural equation modelling. As expected, we found golf self-efficacy (GSE) to be significantly related to fear of failure (FOF). We also found FOF and competitive state anxiety (CSA) significantly related to flow. Finally, we verified a suspected hierarchical or mediating effect in these relationships such that we verified predictive relationships of flow as follows: GSE→FOF→CSA→Flow. These golfers' self-efficacy had a buffering effect of lowering their FOF and CSA in the pathway toward flow. A suggested implication of these findings is that to enhance a golfer's performance by minimizing interfering psychological factors, it is essential to boost their self-efficacy.

## Keywords

golf player, self-efficacy, fear of failure, competitive state anxiety, flow

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## Introduction

Golf success requires a combination of equally crucial physical and mental skills (Swann et al., 2015). The mental aspect of golf performance is complex and multifaceted, with various psychological factors involved (MacNamara et al., 2010), including motivation, self-confidence, focus, and emotional regulation (Swann et al., 2015). One study that has shed light on the mental side of golf performance was conducted by Kang et al. (2022) who explored the relationship between fear of failure, competitive state anxiety, and sport flow in adolescent golfers. Their findings suggested that these mental states played a critical role in determining a golfer's likelihood of experiencing flow, with flow having been characterized as an ideal sport experience. Flow has attracted considerable attention in sports research, due to its association with enhanced athletic performance (Harris et al., 2023).

In sports psychology, sport- and game-specific self-efficacy is one of the most frequently mentioned concepts. Self-efficacy is defined as an individual's belief in their ability to perform a specific task successfully (Bandura et al., 1999). Kang et al. (2022) suggested that fear of failure, and competitive anxiety were directly related to athletic flow, and Bandura's theory of self-efficacy further suggested that athletes' subpar performances could be attributed to their heightened levels of anxiety, possibly stemming in turn from a lack of self-confidence in their personal abilities. Hence, in the current study, we considered self-efficacy in golf to be at the forefront of psychological variables affecting golfers' performances. We inferred that self-efficacy is a crucial construct that directly impacts athletic performance and should be a primary consideration in sports psychology research.

Building on insights gathered from research results reviewed here, we examined the relationships between self-efficacy, fear of failure, competitive state anxiety, and both flow and golf performance. High self-efficacy is positively related to performance and is a key predictor of sport success (Hepler et al., 2021). Golfers with high self-efficacy were found to be more likely to persist in the face of challenges, engage in more deliberate practice, and be less affected by anxiety or stress during competition. Particularly given the individual, versus team, nature of the sport, mental pressure in golf events is known to induce negative cognitive thoughts, including excessive rumination, distractions, and distorted perceptions. Among these aspects of mental pressure, fear of failure is especially prevalent during the long periods of shot preparation prior to hitting the ball (Swann et al., 2017).

Fear of failure is a common anxiety experienced by many athletes, particularly in high-pressure situations (Sagar & Lavallee, 2010). It refers to negative feelings and anxiety experienced when athletes are faced with the possibility of making mistakes, and disappointing themselves or others (Conroy & Elliot, 2004). This mental state can greatly impact golf performance, as it can lead to increased anxiety, and decreased performance (Baumeister & Leary, 1995). Thus, to perform optimally, golfers must manage their fear of failure and minimize its negative impact on their performance. One way that athletes can manage fear of failure is to shift their focus of attention from the

potential outcome or result of their efforts to the performance process. Golfers who concentrate on simply executing each shot separately, to the best of their ability, can reduce their anxiety and better maintain their confidence during competition (Hill et al., 2010). Expert golfers do this by using a series of attentional foci and shift from one focus to the next as they prepare for, execute, and evaluate their shots (Bernier et al., 2011). Furthermore, athletes who possess high self-efficacy can overcome their fear of failure by boosting their confidence in their own abilities and reducing their anxiety (Feltz et al., 2008). Athletes with strong self-efficacy are more likely to take risks, persist in the face of adversity, and perform at their highest level. Therefore, to achieve optimal performance athletes must cultivate a robust sense of self-efficacy and manage their fear of failure. While past research has shown the importance of self-efficacy to optimal performance, it should also be noted that self-efficacy is proportional to a player's skill level.

Recent research on competitive anxiety in elite athletes has identified fear of failure, based on uncertainty about game results, which is the most direct situational factor of relevance to players' anxiety (Lee et al., 2020). Lee et al. (2020) showed a close relationship between fear of failure and competitive state anxiety. Competitive state anxiety refers to golfers' level of stress and nervousness when competing. High levels of competitive state anxiety can negatively impact performance by causing golfers to become so tense and nervous that they decrease their focus on technique, increase muscle tightness, and execute technical skills more poorly (Martens et al., 1990a). On the other hand, low levels of competitive state anxiety can enhance performance by allowing golfers to remain relaxed and focused during competition (Jones & Hanton, 2001; Mellalieu et al., 2009). Individuals with high anxiety who lack confidence in their ability to succeed in certain situations might find it challenging to fully immerse themselves in the flow experience during sports (Csikszentmihalyi, 1990; Jackson et al., 1998; Stavrou & Zervas, 2004). Thus, managing anxiety as a means of developing confidence may be an important strategy for promoting flow and optimal sport performance.

As noted, flow is a psychological state in which individuals become fully immersed and absorbed in an activity, and it has been said to lead to a sense of high enjoyment and optimal performance. According to a review by Harris et al. (2023), flow and performance have been reliably related. More specifically, golfers who experience flow are more likely to perform at their best and are less prone to anxiety or stress during competition (Swann et al., 2012). Additionally, Jackson and Csikszentmihalyi (1999) reported that flow can enhance an individual's self-efficacy, as flow provides a sense of mastery and control. Thus, to increase the likelihood of flow, golfer might focus on their strengths and practice techniques to reduce fear of failure and competitive state anxiety.

In summary, golf performance is not just about physical ability but also involves complex and multi-faceted mental states. Four such critical mental states are self-efficacy, fear of failure, competitive state anxiety, and flow. By understanding the interplay between these mental states, golfers might be able to take actionable steps to improve their mental preparation and golf performance. By developing a strong sense

of self-efficacy, golfers can build confidence, even under challenging circumstances. In turn, addressing and managing their fear of failure can help golfers overcome negative thoughts and emotions that can hinder their performance. Learning to regulate competitive state anxiety can help golfers stay focused and perform at their best under pressure, perhaps even achieving a state of flow to gain optimal performance, in which their skills and abilities align with the challenges they face on the course. By taking steps to improve their mental game, golfers can unlock their full potential and take their performance to the next level. Based on this review, we proposed the following hypotheses within a structural equation analysis:

H1: Elite golfers' Self-Efficacy will negatively predict their Fear of Failure
H2: Elite golfers' Fear of Failure will positively predict their Competitive State Anxiety
H3: Elite golfers' Fear of Failure will negatively predict Flow
H4: Elite golfers' Competitive State Anxiety will negatively predict their Flow
H5: Self-Efficacy will buffer relationships between Fear of Failure, Competitive State Anxiety, and Flow

## Method

### Participants

We recruited 390 elite golf players who were registered with the Korean Sport and Olympic Committee to participate in a questionnaire research study. These participants were selected through purposive sampling, in which we sought to ensure a balanced gender ratio between female ($n$ = 188) and male ($n$ = 187) participants. Table 1 shows descriptive information for these participants. We excluded 15 participants whose responses appeared insincere, either containing missing data or exhibiting a consistent pattern of selecting positive or identical answer choices, that suggested a failure to read survey items.

### Ethical Considerations

Prior to data collection, we obtained approval for this research protocol from our Institutional Review Board (IRB No. 2204/001-008). We provided prospective participants with an explanation of the study's objectives, and we obtained written informed consent from targeted participants before any participants engaged in study completion.

### Procedures

Initially, we administered a preliminary survey to 30 golfers to assess their comprehension of the terminology and meaning of questionnaire items. Following this, we revised the questionnaire to its final version and then conducted the main survey from

**Table 1.** Participant Characteristics.

| Variable | Category | *N* (375) | % |
|---|---|---|---|
| Sex | Male | 187 | 49.87 |
| | Female | 188 | 50.13 |
| Age | Under 17 | 104 | 27.73 |
| | Under 20 | 181 | 48.27 |
| | Under 25 | 61 | 16.27 |
| | Over 25 | 29 | 7.73 |
| Training hours | 2 hours | 30 | 8 |
| | 3 hours | 31 | 8.3 |
| | 4 hours | 30 | 8 |
| | 5 hours | 57 | 15.2 |
| | 6 hours | 227 | 60.5 |
| Golf experience | Less than 3 years | 93 | 24.8 |
| | 4∼6 years | 190 | 50.67 |
| | 7∼10 years | 64 | 17.07 |
| | More than 10 years | 28 | 7.46 |

August 1 to November 30, 2022. To conduct the main survey, three researchers visited the golf course where a relevant tournament was to be played (the Middle and High School Golf Tournament, hosted by the Middle and High School Golf Federation). Also, researchers visited Korea Golf University. Each participant who had signed and informed written consent document was then given a 15–20-minute survey to complete.

## Measures

*Golf Self-Efficacy (GSE).* Within our survey materials, to measure the golfers' self-efficacy we used the Golf Self-Efficacy Inventory (GSEI) developed by Huh and Sul (2017). This is a 10-item short-form questionnaire, with scores measured on a scale of 0%–100% agreement with scale items ranging from 0% (strongly disagree) ∼to 100% (strongly agree). The 10 items included these statements: "I can put the second shot on the green,", "I can send a bunker shot closer to the pin,","I can do a par save," "I can do the green analysis perfectly,","I can do good game making even if the companion obstructs it," "I am confident that I can comfortably enter the ball into the divot,""I am confident that I can send tee shots to the fairway,","I am confident that I can make up for the next hole even if I do not have a good score on the hole," "I can always make aiming constant," and "I can perfect condition management the day before the game." A confirmatory factor analysis (CFA) for the GSE showed the standardized coefficient (factor loading) of each item for the GSE to be .686∼.840, and the model fit was found to be acceptable with, $\chi^2$ and df values of 228.878 and 34 ($p < .001$), Tucker Lewis

Index (TLI) = .913, comparative fit index (CFI) = .934, root mean square error of approximation (RMSEA) = .098, standardized root mean squared residual (SRMR) = .042. The internal consistency value (Cronbach's $\alpha$) of this instrument was .945.

*Fear of Failure (FOF).* To measure the athletes' perceived fear of failure we used the Performance Failure Appraisal Inventory-Revised (PFAI-R) developed by Conroy et al. (2002). This questionnaire consists of a 5-point Likert scale applied to 25 questions (7 questions pertaining to experiencing shame and embarrassment, 4 questions related to devaluing one's self-estimate, 4 questions related to having an uncertain future, 5 questions related to important others losing interest in them, and 5 questions pertaining to upsetting important others). The CFA for FOF measurement revealed a standardized coefficient (factor loading) of each item for the FOF that ranged from .703∼.892, and an acceptable model fit with, $\chi^2$ and df values of 853.655 and 265 ($p < .001$), TLI = .905, CFI = .916, RMSEA = .077, SRMR = .050. The internal consistency values (Cronbach's $\alpha$) of this instrument were .910, .868, .708, .892, and .922.

*Competitive State Anxiety (CSA).* To measure the golfers' competitive state anxiety, we used the Competitive State Anxiety Inventory-2 (CSAI-2) developed by Martens et al. (1990b). This questionnaire consists of a 4-point Likert scale applied to 27 questions (9 questions pertaining to cognitive state anxiety, 9 questions of somatic state anxiety, and 9 questions of a person's state of confidence). The CFA for CSA measurement revealed a standardized coefficient (factor loading) of each item for the CSA that ranged from .664∼.895, and the model fit was acceptable with $\chi^2$ and df values of 1115.497 and 271 ($p < .001$), TLI = .897, CFI = .907, RMSEA = .091, SRMR = .054. The internal consistency values (Cronbach's $\alpha$) of this instrument were .954, .941, and .943.

*Flow.* To measure the golfers' flow state, we used Sport Flow Scale developed by Kwon (2008). This questionnaire consists of a 6-point Likert scale applied to18 questions (3 questions about the antecedent conditions to flow, 4 questions about flow threshold, 6 questions about flow experience, and 5 questions about flow consequence). The CFA for Flow measurement had a standardized coefficient (factor loading) of each item that ranged from .587∼.903, and the model fit was acceptable with $\chi^2$ and df values of 426.005 and 129 ($p < .001$), TLI = .923, CFI = .935, RMSEA = .078, SRMR = .050. The internal consistency values (Cronbach's $\alpha$) of this instrument were .838, .811, .921, and .907.

## Data Analysis

We analyzed the collected data with SPSS 26.0 and AMOS 21.0 software programs, and we employed the following step-wise method:

(a) We analyzed collected data using descriptive statistics and correlation analyses to establish the relationships between the general data characteristics such as

means, standard deviations, skewness, and kurtosis, and their relationships to variables of interest.

(b) We tested the construct validity of the measurement tool by performing confirmatory factor analysis (CFA). Regarding the model fit criteria, we used $\chi^2$, CFI(≥.09), TLI (≥.09), RMSEA (≤.1), SRMR (≤.08) index values, as recommended by Hair et al. (2006). For reliability analysis, we calculated internal consistency analysis using Cronbach's α.

(c) To determine the significance of the mediating effects between variables, we conducted Structural Equation Modeling (SEM), using the maximum likelihood method.

(d) We established α = .05 as the statistical significance level for this study.

## Results

### *Descriptive Statistics and Correlations Between Variables of Interest*

Table 2 presents descriptive statistics and correlations for data from variables of interest. Skewness and kurtosis values were less than 2 in absolute terms, which suggests that the data was distributed normally (Anderson & Gerbing, 1988). In addition, the results of correlation analyses showed that GSE was negatively correlated with FOF (−.403**), CSA (−.401**), SSA (−.385**) and positively correlated with SC (.478**), Flow (.559**). Also, FOF was positively correlated with CSA (.738**), SSA (.627**) and negatively correlated with SC (−.525**), Flow (−.440**). Also, CSA was positively correlated with somatic state anxiety (SSA) (.756**) and negatively correlated with state confidence (SC) (−.639**) and Flow (−.474**). SSA was negatively correlated with SC (−.558**) and Flow (−.431**). Lastly, SC was positively correlated with Flow (.618**).

### *Evaluation of the Measurement Model*

The evaluations of convergent validity and discriminant validity, which were conducted to confirm validity of the measurement model are shown in Table 3. We used three latent variables and one observed variable. To set up the measurement model, we proposed that GSE factors would explain the measurement model with a latent variable. However, for FOF, CSA, Flow factors, we used item parceling that focused on the sub-factors suggested in prior studies. We used this process because if there are too many items, the complexity of the model increases in ways, that can create sample size problems for the model fit and for significance tests for parametric estimation (Kline, 2011).

Table 3 provides information on the construct reliability (CR) and average variance extracted (AVE) of each latent variable. These values were calculated using a multivariate data analysis equation proposed by Hair et al. (2006). The CR values of each latent variable, which ranged from 0.839 to 0.946, exceeded the reference value of 0.70, indicating that these data were reliable. Additionally, the AVE values for each latent

**Table 2.** Descriptive Statistics and Correlations Between Variables of Interest.

| Variable | M | SD | Skewness | Kurtosis | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|---|
| Golf self-efficacy (GSE) 1 | 72.24 | 15.69 | −.621 | .556 | 1 | | | | | |
| Fear of failure (FOF) 2 | 2.53 | 0.86 | .013 | −.603 | −.403** | 1 | | | | |
| Cognitive state anxiety (CSA) 3 | 2.83 | 1.05 | −.119 | −.958 | −.401** | .738** | 1 | | | |
| Somatic state anxiety (SSA) 4 | 2.50 | 0.99 | .181 | −.607 | −.385** | .627** | .756** | 1 | | |
| State confidence (SC) 5 | 3.18 | 0.84 | −.101 | .240 | .478** | −.525** | −.639** | −.558** | 1 | |
| Flow 6 | 3.61 | 0.64 | .006 | .416 | .559** | −.440** | −.474** | −.431** | .618** | 1 |

*Note.* 1: GSE, 2: FOF, 3: CSA, 4: SSA, 5: SC, 6: Flow **$p < .01$.

**Table 3.** Validity of Measurement Model.

| Latent Variable | Observed Variable | SC | CR | AVE |
|---|---|---|---|---|
| Golf self-efficacy (GSE) | GSE1 | .816 | .946 | .639 |
| | GSE2 | .777 | | |
| | GSE3 | .833 | | |
| | GSE4 | .830 | | |
| | GSE5 | .799 | | |
| | GSE6 | .797 | | |
| | GSE7 | .709 | | |
| | GSE8 | .830 | | |
| | GSE9 | .835 | | |
| | GSE10 | .762 | | |
| Fear of failure (FOF) | FOF1 | .807 | .916 | .688 |
| | FOF2 | .777 | | |
| | FOF3 | .845 | | |
| | FOF4 | .881 | | |
| | FOF5 | .834 | | |
| Competitive state anxiety (CSA) | CSA | .921 | .856 | .668 |
| | SSA | .810 | | |
| | SC | .707 | | |
| Flow | Flow 1 | .745 | .839 | .568 |
| | Flow 2 | .806 | | |
| | Flow 3 | .642 | | |
| | Flow 4 | .810 | | |

*Note.* SC = standardizes coefficients, CR = construct reliability, AVE = average variance extracted, α = Cronbach's alpha.

variable, which ranged from 0.568 to 0.688, exceeded the reference value of 0.50, demonstrating that the data had convergent validity. Furthermore, the AVE values were greater than the square of the correlation coefficients (AVE > $\varphi^2$), confirming that the data also had discriminant validity.

## *Structural Equation Modeling (SEM)*

To investigate the relationships between GSE, FOF, CSA and Flow, we conducted an SEM analysis. In this analysis the null hypothesis of no relationships between variables was rejected, $\chi^2$ (205) = 736.587, ($p < .001$), and the model fit for predicting these relationships was a satisfactory fit, with TLI = .902, CFI = .913, and RMSEA = .083 (Table 4).

The results of SEM and each path analysis are shown in Table 5. First, the path coefficient between GSE and FOF was −.457 ($p < .001$), indicating a significant effect (H1 supported). Second the path coefficient between FOF and CSA was .835 ($p < .001$), indicating a significant effect (H2 supported). Third, the path coefficient between FOF and Flow was not statistically significant (b = −.032, $p = .776$) (H3 partially supported). Lastly, CSA was found to have a significant negative effect on Flow (b = −.530, $p < .001$) (H4 supported).

**Table 4.** Goodness of Fit Index of the Mediating Model.

| Item | $\chi^2$ | df | $\chi^2$/df | *p* | TLI | CFI | RMSEA |
|---|---|---|---|---|---|---|---|
| Mediating model | 736.587 | 205 | 3.593 | .000 | .902 | .913 | .083 |

**Table 5.** Path Coefficients.

| Path | *b* |
|---|---|
| GSE→FOF | −.457*** |
| FOF→CSA | .835*** |
| FOF→Flow | −.032 |
| CSA→Flow | −.530*** |

*Note.* ***$p < .001$, b = standardized regression weight.

**Table 6.** Path Coefficients of Total Effects and Indirect Effects for the Mediation Model.

| | | | 95% CI | |
|---|---|---|---|---|
| Path | Total Effect | Indirect Effect | LL | UL |
| GSE→FOF→CSA | −.382 | −.382 | −.468 | −.291 |
| GSE→FOF→CSA→Flow | .217 | .217 | .126 | .310 |
| FOF→CSA→Flow | −.474 | −.442 | −.690 | −.236 |

*Note.* LL = lower limit, UL = upper limit, and CI = Confidence Interval.

We then performed an indirect effect analysis using the bootstrapping method at the 95% confidence interval, which resulted in a significant indirect effect (Table 6). These results showed a mediating effect of FOF on the relationship between GSE and CSA (−.382, $p < .01$, LL = −.468, UL = −.291), verifying the proposed model. Also, we verified other mediating effects in these relationships of the following path analysis: GSE→FOF→CSA→Flow (.217, $p < .01$, lower limit (LL) = .126, upper limit (UL) = .310) (H5 supported). Lastly, we verified the mediating effect in the relationships of FOF→CSA→Flow (−.442, $p < .01$, LL = −.690, UL = −.236). (Figure 1).

## Discussion

In this study we aimed to verify a suspected relationship between Golf Self-efficacy (GSE), Fear of Failure (FOF), Competitive State Anxiety (CSA) and Flow among elite golfers. The most significant outcome was that elite golfers' self-efficacy had a buffering effect of lowering their fear of failure and competitive state anxiety. We found

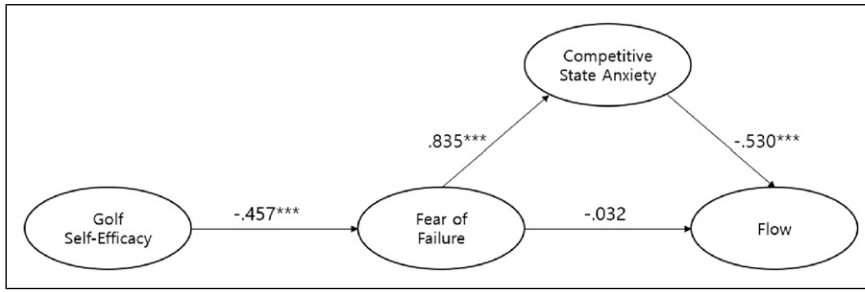


**Figure 1.** Standard Path Analysis of the Structural Equation Model.
*Note.* ***$p < .001$.

GSE to have a negative effect on FOF, meaning that players with high GSE had a low FOF score, which was in line with previous research. There was not enough prior research directly showing how self-efficacy related to fear of failure, but, examining the combined findings of other similar studies (Beattie et al., 2011; Holt, 2013; Martin & Gill, 1991; Passer, 1983), we found our results to be consistent with previous research findings. Self-efficacy refers to an individual's personal conviction or belief in their capability to accomplish a specific outcome or goal in a given situation. Self-efficacy and competence were interlinked, with self-efficacy serving as an indicator of competence in individuals who successfully achieved their tasks and goals (Ormrod, 2006). A FOF in athletes may originate from an inadequate ability to effectively manage and regulate specific circumstances that arise in sports (Conroy & Elliot, 2004). Therefore, a high level of GSE is a leading variable in successful performance, and, importantly, it that can lower FOF.

FOF has been shown by past investigators to increase CSA, meaning that players with a high FOF feel more anxious about their competition status (Taylor et al., 2021). Taylor et al. (2021) explored how FOF variously impacted sports, exercise, and physical activity. Their findings indicated that FOF was a strongly correlated with anxiety during competition, suggesting that FOF affects both physical and cognitive anxiety. Gómez-López et al. (2021) also found that FOF was a primary contributor to competitive state anxiety. Therefore, our results in this study support these prior research findings.

On the other hand, we found a non-significant trend for FOF to negatively effect Flow. Sagar et al. (2009) demonstrated that FOF can have a detrimental impact on one's ability to exercise, and our outcomes may tend to support this investigation by providing an explanation for why FOF can lead to poor performance. If the FOF was high, CSA increased, hindering Flow, which inevitably leads to poor sport performance. Thus, reducing the FOF may positively impact performance because it can decrease CSA and enhance athletes' Flow states.

We found CSA to have a negative effect on Flow. This result means that when a player feels anxious about competition, that anxiety interferes with Flow. These results are in line

with Koehn's (2013) findings that among the sub-factors of CSA in the context of sports competition, cognitive anxiety and physical anxiety were negatively correlated with Flow, and state confidence was positively correlated with Flow. In addition, according to Wiggins and Freeman (2000), athletes with a lower level of anxiety were much more likely to experience Flow than athletes who experienced high intensity anxiety. Hence, our findings aligned with prior research, indicating the importance of reducing competitive anxiety to enable golfers to attain the necessary state of flow for achieving optimal performance. Röthlin and Birrer (2020) found that mindfulness training improved athletes' self-reported Flow experiences and reduced their levels of anxiety during competition. Therefore, our results show that psychological support through psychological skill training can positively affect golfers' performance.

Finally, we verified a mediating effect in the relationships of GSE→FOF→CSA→Flow. According to Sklett et al. (2018), based on their study of skiers, self-efficacy and flow were highly related. In Lee et al. (2021), soccer players' self-efficacy was a leading variable affecting flow. Existing literature on FOF indicated that it had a negative impact on players' performance by reducing their self-confidence and willingness to take risks during the game (Sagar et al., 2010). Moreover, a recent study revealed that having a fear of failing significantly predicted anxiety levels related to sports (Correia & Rosado, 2018). Our study contributed to this understanding by showing that these negative psychological factors affect self-efficacy and thereby affect flow. This result means that increasing GSE may help flow by lowering FOF and CSA. There are many studies on each of these variables separately, but our study comprehensively and simultaneously examined the interrelationships between these variables. Next, we discuss the theoretical and practical implications of these findings.

## *Academic Implications*

The significance of these research findings includes the fact that we used a mixed gender research sample of over 300 Korean golfers who were known as golf powerhouses, and that we focused on both adults and young players. Our study was also meaningful in that we relied on previous studies (Kang et al., 2022) to determine what psychological factors are important for golfers' success, and we studied why such psychological mechanisms occur, and what is necessary to lower the influence negative psychological factors that occur. Several investigators have highlighted the harmful effects of FOF on one's ability to perform (Martin & Gill, 1991; Sagar et al., 2007, 2009, 2010), and we built upon that research by providing an explanation of the process involved in how FOF negatively impacts performance.

## *Practical Implications*

In terms of practical implications, the outcomes of this research provide insight into what mindset golfers should adopt to reach their best performance. This is particularly important, because golf is representative of important psychological aspects of performance. Our research provides a practical approach towards providing

psychological assistance through Psychological Skill Training (PST). Current PST programs comprise several techniques aimed at enhancing specific psychological elements, such as self-confidence and anxiety control. However, our findings demonstrated that various psychological aspects can have a combined impact, making it crucial to consider these points simultaneously in the provision of psychological interventions and helping to set the direction and goals for PST, making our findings significant not just for athletes but also for coaches and parents. Subfactors of FOF include aspects of these psychological factors that may relate to behavior from significant others (parents or coaches). Thus, it is important to comprehend FOF in golf, particularly when examining the circumstances of Korean players who are represented by a golf daddy. In the past decade, Korean women golfers have catapulted to the top of the global professional ranks. The achievements can be traced to golf daddy. Golf Daddy in Korea means parents who are dedicated to discovering and nurturing talent early on (Minhoon, 2010). Just because you have a high FOF does not mean that you cannot immerse yourself in exercise. This is because when the FOF is high, CSA increases, interfering with immersion and negatively affecting performance. Since FOF can arise from the behavior of significant others, it means that the pattern of CSA and Flow may vary, depending on what atmosphere parents or coaches provide.

### *Limitations and Directions for Further Research*

In this study, both youth and adult athletes were included in our participant sample. However, previous research has suggested that the impact of coaching behavior on athletes may differ depending on their age (Nicholls, 2021). Hence, follow-up investigators should classify participants by age and examine whether different age-related patterns emerge. While we studied both youth and adult athletes, previous research has suggested that the impact of coaching behavior on athletes' performance may differ depending on the athletes' ages (Nicholls, 2021). Hence, future investigators might consider classifying participants by age to examine how athletes of varying ages respond to specific interventions designed to affect these psychological factors. It would also be worthwhile to extend this study to athletes in other sports, and, perhaps to contrast team sport with individual sport athletes. Of particular importance, since we utilized a cross-sectional research design that prohibited us from inferring causal relationships between variables, future investigators might use longitudinal designs to help determine causal directions of relationships between these variables of interest.

## Conclusion

In conclusion we examined the relationship between Golf Self-Efficacy (GSE), Fear of Failure (FOF), Competitive State Anxiety (CSA), and Flow. The results showed statistically significant mediating effects in the relationships between GSE→FOF→CSA→Flow, which means GSE had a buffering effect of lowering FOF

and CSA. These findings are significant in that they offer academic validation of, a theoretical model, governing the influence of psychological dimensions" in golf performance. The academic and practical implications of this study include its importance to sports psychology counselors for helping to develop psychological skills and to such significant others as coaches or parents. Future investigators can expand upon these discoveries by overcoming the constraints of the present study, as outlined them in the Limitations section of our Discussion, perhaps by conducting longitudinal research, incorporating more diverse participant samples, and investigating additional moderating factors.

## Author Contributions

The first author designed and performed the analysis and interpretation of data; the second author wrote the manuscript with input from other authors; all authors read and approved the final version of the manuscript. The authors agreed with the order of author presentation.

## Declaration of conflicting interests

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## Data Availability Statement

Access to this research data can be found online at https://doi.org/10.6084/m9.figshare.24064542.v1

## References

Anderson, J. C, & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological bulletin*, *103*(3), 411–423. https://doi.org/10.1037/0033-2909.103.3.411

Bandura, A., Freeman, W. H., & Lightsey, R. (1999). Self-efficacy: The exercise of control. *Journal of Cognitive Psychotherapy*, *13*(2), 158–166. https://doi.org/10.1891/0889-8391.13.2.158

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–529. https://doi.org/10.4324/9780367198459-REPRW57-1

Beattie, S., Lief, D., Adamoulas, M., & Oliver, E. (2011). Investigating the possible negative effects of self-efficacy upon golf putting performance. *Psychology of Sport and Exercise*, *12*(4), 434–441. https://doi.org/10.1016/j.psychsport.2011.02.004

Bernier, M., Codron, R., Thienot, E., & Fournier, J. F. (2011). The attentional focus of expert golfers in training and competition: A naturalistic investigation. *Journal of Applied Sport Psychology*, *23*(3), 326–341. https://doi.org/10.1080/10413200.2011.561518

Conroy, D. E., & Elliot, A. J. (2004). Fear of failure and achievement goals in sport: Addressing the issue of the chicken and the egg. *Anxiety, Stress & Coping*, *17*(3), 271–285. https://doi.org/10.1080/1061580042000191642

Conroy, D. E., Willow, J. P., & Metzler, J. N. (2002). Multidimensional fear of failure measurement: The performance failure appraisal inventory. *Journal of Applied Sport Psychology*, *14*(2), 76–90. https://doi.org/10.1080/10413200252907752

Correia, M. E., & Rosado, A. F. (2018). Fear of failure and anxiety in sport. *Análise Psicológica*, *36*(1), 75–86. https://doi.org/10.14417/ap.1193

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. Harper & Row.

Feltz, D. L., Short, S. E., & Sullivan, P. J. (2008). *Self-efficacy in sport*. Human Kinetics.

Gómez-López, M., Courel-Ibáñez, J., & Granero-Gallegos, A. (2021). Profiles of motivation, fear of failure and anxiety in young handball players: A cross-sectional study. *International Journal of Sports Science & Coaching*, *16*(3), 658–669. https://doi.org/10.1177/1747954120975107

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Pearson Prentice Hall.

Harris, D. J., Allen, K. L., Vine, S. J., & Wilson, M. R. (2023). A systematic review and meta-analysis of the relationship between flow states and performance. *International Review of Sport and Exercise Psychology*, *16*(1), 693–721. https://doi.org/10.1080/1750984x.2021.1929402

Hepler, T. J., Hill, C. R., Chase, M. A., & Feltz, D. L. (2021). Self, relational, and collective efficacy in athletes. In *Essentials of exercise and sport psychology* (pp. 643–663). An open access textbook.

Hill, D. M., Hanton, S., Matthews, N., & Fleming, S. (2010). A qualitative exploration of choking in elite golf. *Journal of Clinical Sport Psychology*, *4*(3), 221–240. https://doi.org/10.1123/jcsp.4.3.221

Holt, L. (2013). *Interpersonal relationships and the association with athlete's motivation, self-efficacy and fear of failure*. Doctoral Dissertation. Ithaca College.

Huh, J., & Sul, J. (2017). Developing golf self-efficacy inventory (GSEI). *Journal of Golf Studied*, *11*(4), 77–87. https://www.earticle.net/Article/A318267

Jackson, S. A., & Csikszentmihalyi, M. (1999). *Flow in sports*. Human Kinetics.

Jackson, S. A., Ford, S. K., Kimiecik, J. C., & Marsh, H. W. (1998). Psychological correlates of flow in sport. *Journal of Sport & Exercise Psychology*, *20*(4), 358–378. https://doi.org/10.1123/jsep.20.4.358

Jones, G., & Hanton, S. (2001). Pre-competitive feeling states and directional anxiety interpretations. *Journal of Sports Sciences*, *19*(6), 385–395. https://doi.org/10.1080/026404101300149348

Kang, S., Lee, D., & Kwon, H. (2022). Verification of the structural relationship among fear of failure, competitive state anxiety and sport flow in adolescent golf player. *Korean Society For The Study Of Physical Education*, *27*(1), 235–247. https://doi.org/10.15831/JKSSPE.2022.27.1.235

Kline, R. B. (2011). *Principles and practice of structural equation modeling (3. Baskı)* (Vol. 14, pp. 1497–1513). Guilford.

Koehn, S. (2013). Effects of confidence and anxiety on flow state in competition. *European Journal of Sport Science*, *13*(5), 543–550. https://doi.org/10.1080/17461391.2012.746731

Kwon, S. (2008). *The Conceptualization of sport flow and the development of its measurement scale*. Doctoral Dissertation. Seoul National University.

Lee, J., Lee, J., & Kang, H. (2020). Literature review on competitive state anxiety in elite athletes. *Korean Journal of Sports Science*, *29*(1), 213–224. https://doi.org/10.35159/kjss.2020.02.29.1.213

Lee, S., Kwon, S., & Ahn, J. (2021). The effect of modeling on self-efficacy and flow state of adolescent athletes through role models. *Frontiers in Psychology*, *12*, Article 661557. https://doi.org/10.3389/fpsyg.2021.661557

MacNamara, Á., Button, A., & Collins, D. (2010). The role of psychological characteristics in facilitating the pathway to elite performance part 1: Identifying mental skills and behaviors. *The Sport Psychologist*, *24*(1), 52–73. https://doi.org/10.1123/tsp.24.1.52

Martens, R., Burton, D., Vealey, R. S., Bump, L. A., & Smith, D. E. (1990a). *Competitive anxiety in sport*. Human Kinetics.

Martens, R., Burton, D., Vealey, R. S., Bump, L. A., & Smith, D. E. (1990b). Development and validation of the competitive state anxiety inventory-2. *Competitive Anxiety in Sport*, *3*(1), 117–190.

Martin, J. J., & Gill, D. L. (1991). The relationships among competitive orientation, sport-confidence, self-efficacy, anxiety, and performance. *Journal of Sport & Exercise Psychology*, *13*(2), 149–159. https://doi.org/10.1123/jsep.13.2.149

Mellalieu, S. D., Hanton, S., & Fletcher, D. (2009). *A competitive anxiety review: Recent directions in sport psychology research* (pp. 1–45). Nova Science Publishers.

Minhoon, L. E. E. (2010). Korean LPGA golfers: Factors of success. *SERI Quarterly*, *3*(1), 94–103.

Nicholls, A. R. (2021). Coaching different populations and providing psychological support to athletes with different needs. In *Psychology in Sports Coaching: Theory and Practice* (3rd Edition). Routledge.

Ormrod, J. E. (2006). *Educational psychology: Developing learners* (5th ed.). Pearson/Merrill Prentice Hall.

Passer, M. W. (1983). Fear of failure, fear of evaluation, perceived competence, and self-esteem in competitive-trait-anxious children. *Journal of Sport Psychology*, *5*(2), 172–188. https://doi.org/10.1123/jsp.5.2.172

Röthlin, P., & Birrer, D. (2020). Mental training in group settings: Intervention protocols of a mindfulness and acceptance-based and a psychological skills training program. *Journal of Sport Psychology in Action*, *11*(2), 103–114. https://doi.org/10.1080/21520704.2018.1557771

Sagar, S. S., Busch, B. K., & Jowett, S. (2010). Success and failure, fear of failure, and coping responses of adolescent academy football players. *Journal of Applied Sport Psychology*, *22*(2), 213–230. https://doi.org/10.1080/10413201003664962

Sagar, S. S., & Lavallee, D. (2010). The developmental origins of fear of failure in adolescent athletes: Examining parental practices. *Psychology of Sport and Exercise*, *11*(3), 177–187. https://doi.org/10.1016/j.psychsport.2010.01.004

Sagar, S. S., Lavallee, D., & Spray, C. M. (2007). Why young elite athletes fear failure: Consequences of failure. *Journal of Sports Sciences*, *25*(11), 1171–1184. https://doi.org/10.1080/02640410601040093

Sagar, S. S., Lavallee, D., & Spray, C. M. (2009). Coping with the effects of fear of failure: A preliminary investigation of young elite athletes. *Journal of Clinical Sport Psychology*, *3*(1), 73–98. https://doi.org/10.1123/jcsp.3.1.73

Sklett, V. H., Loràs, H. W., & Sigmundsson, H. (2018). Self-efficacy, flow, affect, worry and performance in elite world cup ski jumping. *Frontiers in Psychology*, *9*, 1215. https://doi.org/10.3389/fpsyg.2018.01215.

Stavrou, N. A., & Zervas, Y. (2004). Confirmatory factor analysis of the flow state scale in sports. *International Journal of Sport and Exercise Psychology*, *2*(2), 161–181. https://doi.org/10.1080/1612197X.2004.9671739

Swann, C., Crust, L., Jackman, P., Vella, S. A., Allen, M. S., & Keegan, R. (2017). Performing under pressure: Exploring the psychological state underlying clutch performance in sport. *Journal of Sports Sciences*, *35*(23), 2272–2280. https://doi.org/10.1080/02640414.2016.1265661

Swann, C., Crust, L., Keegan, R., Piggott, D., & Hemmings, B. (2015). An inductive exploration into the flow experiences of European Tour golfers. *Qualitative Research in Sport, Exercise and Health*, *7*(2), 210–234. https://doi.org/10.1080/2159676X.2014.926969

Swann, C. F., Keegan, R. J., Piggott, D., Crust, L., & Smith, M. F. (2012). Exploring flow occurrence in elite golf. *Athletic Insight*, *4*(2), 171–186. https://ro.uow.edu.au/sspapers/2428.

Taylor, S., Eklund, R., & Arthur, C. (2021). Fear of failure in sport, exercise, and physical activity: A scoping review. *International Review of Sport and Exercise Psychology*, *16*(2), 1–29. https://doi.org/10.1080/1750984X.2021.1901299

Wiggins, M. S., & Freeman, P. (2000). Anxiety and flow: An examination of anxiety direction and the flow experience. *International Sports Journal*, *4*(2), 78–87.

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