

Measuring Fear of Failure in Indonesian Athletes: Scale Development and Preliminary Validity Evidence

Yonathan Natanael^{1*}

¹Universitas Islam Negeri (UIN) Sunan Gunung Djati, Indonesia

*Correspondence to: yonathan@uinsgd.ac.id

Abstract: Qualitatively, 15 national-level athletes were found to fear failure in facing a match. The fear experienced by national-level athletes also varies from one another. The importance of measurement of the concept of fear of failure in a competition, this initial study aims to develop a valid and reliable instrument for measuring fear of failure specifically for athletes. The instrument construction method used is a rational/theoretical approach to test construction which describes the internal validity test of an instrument. The instrument developed is the Fear of Failure Scale-16, based on the theory of a figure named David E. Conroy. The participants were 108 national-level athletes from various sports who practised at one of the Sports Centers in Bandung. The data obtained were analyzed using confirmatory factor analysis techniques and the Rasch model. The multidimensional confirmatory factor analysis shows all items are valid for measuring fear of failure. The Rasch model analysis also indicates that all qualified items meet the constraints. The application of the Fear of Failure-16 Scale cannot be generalized, but it is used to describe the condition of athletes before competing.

Keywords: athlete, fear of failure, multidimensional, item fit

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Introduction

In the last ten years, sports matches broadcast live through various media have become a major center of attention in Indonesia, particularly for the general public. Indonesian society can watch various sporting events via television or the internet without having to be physically present at the match location (Abdullah & Puspitasari, 2018). When watching these matches, the Indonesian public naturally desires a sportsmanlike victory from the athletes they support (Maulina, 2018).

However, in reality, many athletes frequently observed by the public experience various forms of fear before competing. Previous research has identified these fears through pre-competition behaviors. For example, in rock climbing athletes, anxiety is manifested through increased frequency of urination or bowel movements when observing spectators filling the venue (Hardiyono, 2020). Another example is seen in *pencak silat* athletes; an interview conducted by Triana et al. (2020) revealed that athletes felt a lack of confidence in their abilities despite having practiced, resulting in an inability to exert their full potential during the match.

Among female softball athletes, the fear experienced is the fear of losing the match, where maintaining the school's reputation serves as the source of this fear (Pradnyaswari & Budisetyani, 2018). Because the athletes' school is well-known for its excellence in softball, the fear intensifies if they lose. In contrast, an interview with a badminton athlete indicated that pre-match fear was characterized by irregular breathing patterns (Uyun, 2020).

A preliminary study was conducted at an athlete training center in Bandung. Based on interviews with fifteen athletes from three sports branches (taekwondo, gymnastics, and wrestling), the researcher identified two primary reasons for pre-match fear. The first is the fear of losing to new athletes or regional-level athletes who are more junior. The second reason, specifically for national-level athletes, is the fear of losing while competing in their home venue.

In psychology, the fear of failure is a known construct. Fear of failure consists of factors that can prevent an individual from realizing their inner potential, though from another perspective, it can also increase motivation to produce better performance levels (Conroy et al., 2002). Essentially, fear of failure is a negative psychological effect that causes a decline in performance for the individual experiencing it (Wikman et al., 2014).

Within highly competitive sports settings, fear of failure is a common source of concern for athletes. Many athletes view winning as the standard of success and losing as a threat. Athletes who fail generally engage in social isolation or avoid stressors. Potential dangers of fear of failure include low self-esteem and low self-confidence. Furthermore, fear of failure has been associated with maladaptive behaviors, such as substance abuse among athletes and school dropout (Correia et al., 2015).

Literature reviews indicate that fear of failure is closely linked to shame. Shame underlies the fear of failure; thus, several studies emphasize that individuals who fear failure also possess high levels of shame (Correia et al., 2015). Principally, fear of failure is supported not only by shame but also by the consequences of failure, including: (a) consequences of not achieving desired goals, (b) receiving punishment due to declined performance, and (c) a decline in social evaluation. These three consequences can lead athletes to become more defensive, manifesting in behaviors such as avoidance, reducing achievement standards, not trying harder, and not exerting maximum effort (Correia et al., 2015).

Previous research also proves that fear of failure can alter interpersonal behavior, performance, and athlete well-being (Correia et al., 2015). Additionally, fear of failure has negative impacts on decreasing intrinsic motivation, increasing perceived stress, and leading to faster burnout (Taylor et al., 2021). In athletes, fear of failure correlates negatively with the hope for success and parental support, while correlating positively with negative self-blame (Taylor et al., 2021).

The measurement of fear of failure was established by Conroy et al. (2002a) through an instrument known as the Performance Failure Appraisal Inventory (PFAI). The PFAI is the most widely used instrument in fear of failure research, having been cited in over 600 studies according to Google Scholar (2021), compared to the Entrepreneurial Fear of Failure (EFF) scale cited by approximately 190 studies (Cacciotti et al., 2017). The PFAI utilizes a multidimensional measurement model assessing: fear of experiencing shame and embarrassment, fear of devaluing one's self-estimate, fear of important others losing interest, fear of having an uncertain future, and fear of upsetting important others.

Regarding psychometric properties, the strength of the PFAI lies in its consistency, with each dimension having reliability values ranging from 0.74 to 0.81, and an overall item reliability of 0.91, which exceeds the 0.70 threshold for good reliability (Mohajan, 2017). Furthermore, the PFAI was tested on 554 participants, aligning with instrument development standards (Cohen & Swerdlik, 2009).

However, the PFAI also has limitations regarding the validity of its developed items. Originally, the PFAI consisted of 41 items, but after Confirmatory Factor Analysis (CFA), only 25 items were found to measure the intended variables. Six items were removed due to conceptual misalignment, one item was problematic in the higher-order model, and the remainder were removed due to inconsistency or measurement errors (Conroy et al., 2002).

Based on previous research, the concept of fear of failure is most frequently utilized within Sports Psychology. Examples include studies by Wikman et al. (2014) on athletes in Denmark, Correia and Rosado (2018) on athletes in Portugal, and Elison and Partridge (2012) on student-athletes in the United States. In Indonesia, studies on fear of failure remain very limited, meaning this research can contribute to filling the existing literature gap. Moreover, the current absence of a fear of failure instrument developed specifically in Indonesia presents a significant opportunity for new instrument construction.

Recognizing the importance of fear of failure measurement tools and their absence in Indonesia, the researcher is interested in developing a Fear of Failure Scale for Indonesian athletes. This tool is intended for early screening to address performance declines caused by the fear of losing. The instrument will be based on the conceptual framework of Conroy et al., where the multidimensionality of fear of failure will be tested to provide novel information regarding the developed scale.

Method

This study employed a survey research design (Goodwin & Goodwin, 2013) integrated with a rational/theoretical approach to test construction (Ruscio, 2015). The survey research design was selected because the participants consisted of the entire population of national-level adolescent athletes at a sports center in Bandung. The rational/theoretical approach was utilized to ensure that the instrument development process was grounded in the rational alignment between the items and the psychological construct being measured. In this approach, items are developed clearly based on the definitions, dimensions, and indicators of the variable, resulting in a cohesive set of items that function as the research instrument. Formal permission to conduct this study was obtained from the management of the Sports Center in Bandung.

The participants of this study were athletes who had previously competed in regional or national championships and were members of a Sports Center in West Java. The participants' ages ranged from 13 to 18 years. This study utilized the entire population of athletes, totaling 108 participants, consisting of 48 females (44.4%) and 60 males (55.6%). Based on interviews conducted by the researcher, the sports disciplines represented include wrestling, gymnastics, taekwondo, weightlifting, judo, archery, *pencak silat*, rowing, karate, and athletics. The selection of participants from this region was informed by data from the 2016 National Sports Week (PON), where athletes from West Java province achieved the record for the highest number of gold medals (Itah, 2016).

Fear of Failure (FF) is conceptualized as a set of factors that can inhibit an individual from realizing their full potential, while simultaneously serving as a motivational driver to enhance performance (Conroy et al., 2002). According to Conroy et al. (2002), the dimensions of fear of failure include: (a) fear of experiencing shame and embarrassment, (b) fear of devaluing one's self-estimate, (c) fear of important others losing interest, (d) fear of having an uncertain future, and (e) fear of upsetting important others. The specific indicators for each dimension are operationalized as follows:

- 1) Fear of experiencing shame and embarrassment: Characterized by anxiety regarding failure and feelings of humiliation when failure is witnessed by others.
- 2) Fear of devaluing one's self-estimate: Indicated by perceptions of inadequate intelligence or talent, and a reluctance to exert effort toward self-improvement.
- 3) Fear of important others losing interest: Manifested as feelings of being undervalued or underestimated by others.
- 4) Fear of having an uncertain future: Indicated by an inability to formulate alternative plans or contingencies.
- 5) Fear of upsetting important others: Comprised of indicators involving the loss of trust from significant individuals and failing to meet the expectations of parents and relatives.

The instrument developed in this study is the Fear of Failure Scale-16 (SFoF-16), based on the aforementioned framework by Conroy et al. The SFoF-16 utilizes a four-point Likert scale ranging from Strongly Disagree (SD), Disagree (D), Agree (A), to Strongly Agree (SA). The scale was designed to describe the psychological condition of athletes as they prepare for competition. The specific items of the SFoF-16 are presented in Table 1. Data collection was conducted using printed questionnaires distributed to the total population of athletes at a sports center in Bandung.

Table 1. *The 16-Item Fear of Failure Scale (SFoF-16) for Athletes*

Variable	Dimension	Item
Fear of Failure	Fear of experiencing shame and embarrassment (F1)	x1 When I lose a match, I feel that I am less valuable.
		x2 When I lose a match, I feel anxious/worried.
		x3 When I lose a match, I worry about being insulted for failing to defeat my opponent.
	Fear of devaluing one self-estimate (F2)	x4 I feel hesitant about my ability to defeat a tough opponent.
		x5 I lack self-confidence when competing against an experienced opponent.
		x6 I find it difficult to further develop my abilities/skills.
		x7 I overtrain in order to defeat my opponent.
	Fear of important other losing interest (F3)	x8 When I lose a match, my abilities are not recognized by others.
		x9 When I lose a match, I am underestimated by others due to my poor performance.
		x10 When I lose a match, I doubt the quality of my self-worth.
	Fear of having an uncertain future (F4)	x11 I am hesitant to compete because my opponent already knows my weaknesses.
		x12 When I lose a match, it is difficult for me to think of alternative plans for my future.
		x13 I constantly change my strategies during a match.
	Fear of upsetting important other (F5)	x14 When I lose a match, I will be criticized by my coach.
		x15 When I lose a match, my parents feel disappointed.
		x16 When I lose a match, my friends become unhappy.

Data were analyzed using Confirmatory Factor Analysis (CFA) to test the multidimensional model via the LISREL software package. Additionally, as a comparative analysis, item fit analysis was conducted using the ConQuest program, as can be seen in Figure 1.

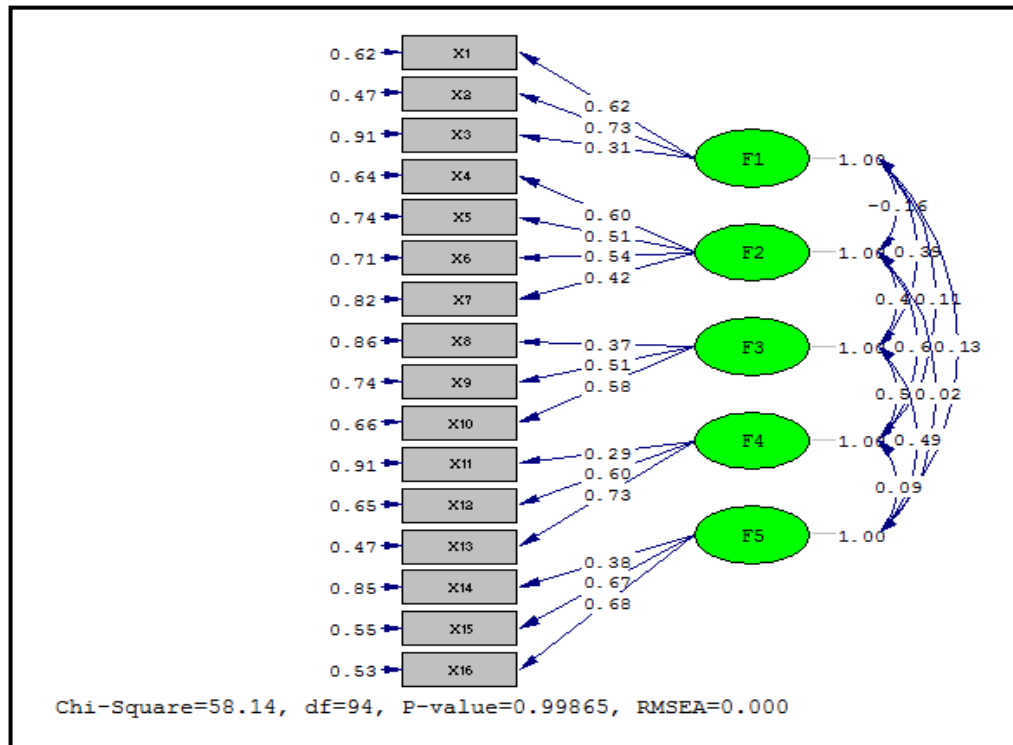


Figure 1. Model Multidimensional SFoF-16

Result and Discussion

Multidimensional Model Testing: Confirmatory Factor Analysis

Following the conceptual framework of fear of failure, Conroy et al. (2002) suggest that a multidimensional model is the most appropriate approach for instrument testing. In this study, Confirmatory Factor Analysis (CFA) was employed to determine whether the multidimensional structure of the SFoF-16 aligns with the theoretical construct under investigation.

The analysis results yielded a Chi-Square value of 58.14 ($p > .05$), an RMSEA of 0.00 ($< .05$), and a Goodness of Fit Index (GFI) of 0.94, indicating that the multidimensional model achieved a good fit. These results confirm that the SFoF-16 possesses a multidimensional structure. The fit threshold used in this CFA was an RMSEA $< .08$ (Ho et al., 2015); the researcher prioritized RMSEA as a criterion because it is considered a highly consistent indicator of model fit. The CFA results (Figure 1) further demonstrated that no measurement errors occurred between items, indicating no significant residual correlations between items in this test.

Based on the CFA results, the reliability of each dimension met the criteria for good reliability, defined as a value $> .70$ (Tanidir et al., 2017). Reliability was assessed using Construct Reliability (CR) values. The reliability coefficients were as follows: Dimension 1 (F1) = 0.83, Dimension 2 (F2) = 0.87, Dimension 3 (F3) = 0.81, Dimension 4 (F4) = 0.85, and Dimension 5 (F5) = 0.85. A summary of the valid items and their respective reliability values is provided in Table 2.

Table 2. Result Analysis CFA model multidimensional

Dimension	CR	VE	No Item	Factor Loading	Error	T-Value	Result
Fear of experiencing shame and embarrassment (F1)	0.83	0.64	x1	0.62	0.19	4.63	Valid
			x2	0.73	0.20	5.06	Valid
			x3	0.31	0.17	2.61	Valid
Fear of devaluing one's self-estimate (F2)	0.87	0.63	x4	0.60	0.16	5.37	Valid
			x5	0.51	0.16	4.51	Valid
			x6	0.54	0.16	4.78	Valid
Fear of important others losing interest (F3)	0.81	0.60	x7	0.42	0.16	3.74	Valid
			x8	0.37	0.16	3.17	Valid
			x9	0.51	0.16	4.41	Valid
Fear of having an uncertain future (F4)	0.85	0.67	x10	0.58	0.17	4.92	Valid
			x11	0.29	0.16	2.60	Considered
			x12	0.60	0.16	5.37	Valid
Fear of upsetting important others (F5)	0.85	0.67	x13	0.73	0.16	6.30	Valid
			x14	0.38	0.16	3.30	Valid
			x15	0.67	0.18	5.24	Valid
			x16	0.68	0.18	5.29	Valid

* CR = Construct Reliability; VE = Variance Extracted

The summary in Table 2 reveals that one item (x11) yielded a factor loading of $< .30$, suggesting that the item may be categorized as having poor discriminatory power (Salsabila et al., 2019). However, further examination shows that the factor loading of 0.29 is extremely close to the acceptable threshold of .30. Consequently, in this study, the researcher denotes item x11 as an item that may be considered for use with caution or retained based on theoretical relevance.

Multidimensional Rasch Analysis

An item fit analysis using the ConQuest program was conducted as a comparative analysis to strengthen the CFA results in determining the quality of the items in the developed SFoF-16. According to Boroel et al. (2017), the criteria for item fit is defined by Outfit Mean Square (MNSQ) values within the range of 0.5 to 1.5.

The results of the item fit analysis demonstrate that all items in the SFoF-16 instrument are categorized as good items. This indicates that each item effectively measures the intended construct, providing evidence of item validity. A summary of the Outfit MNSQ values for each item is presented in Table 3.

The distribution patterns of item difficulty levels and the athletes' fear of failure levels are illustrated in Figure 1 (the Person-Item Map). Furthermore, the reliability estimates derived from the Multidimensional Rasch Model in Table 3 reveal differences in the instrument's consistency compared to the results obtained through Multidimensional Confirmatory Factor Analysis (CFA).

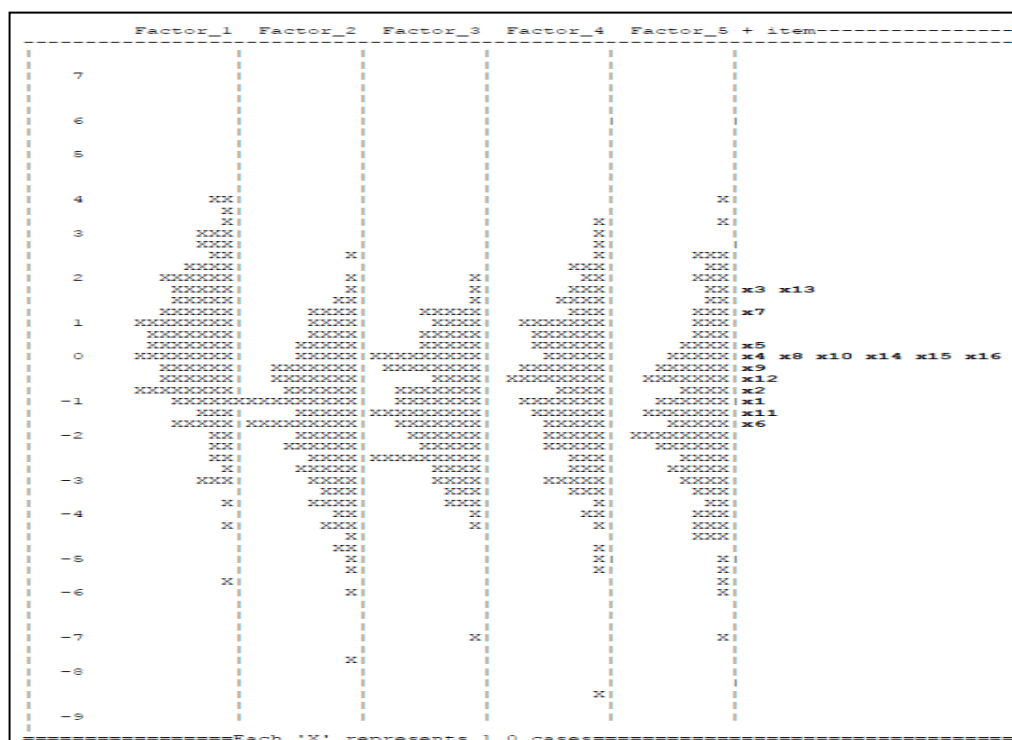


Figure 1. Wright Map Multidimensional

Analysis using ConQuest provided the threshold values, which indicate the accuracy and functioning of the measurement scale used. The SFoF-16 employs a four-point Likert scale. The resulting threshold values, expressed in logits, were: none, -4.254, 0.265, and 3.989.

The threshold values increase monotonically from low to high, signifying that the four-point Likert categories are well-ordered and appropriate for this study. These results align with the criteria established by Linacre (2002), which suggests that the minimum distance between logit values for a rating scale should ideally fall within the 1.4 to 5.0 logit range.

Inter-dimensional Correlations

Yan and Mok (2012) state that multidimensional analysis generates correlation values between distinct dimensions. According to their criteria, correlations between dimensions of < 0.44 generally indicate that a multidimensional testing model is appropriate. The inter-dimensional correlation matrix is presented in Table 3.

The correlation values in this study ranged from -0.087 to 0.700, confirming that the multidimensional model is suitable for the SFoF-16. Notably, the strongest inter-dimensional correlation was observed between Dimension 2 (F2) and Dimension 4 (F4).

Table 3. Inter-dimensional Correlation Matrix

	F1	F2	F3	F4	F5
F1	1				
F2	-0.087	1			
F3	0.545	0.492	1		
F4	0.236	0.700	0.619	1	
F5	0.282	0.058	0.536	0.267	1

This study focused on the development and psychometric evaluation of a newly constructed instrument. All 16 items of the SFoF-16 underwent item readability testing and content validity evaluation by three psychology experts. However, during the Multidimensional Confirmatory Factor Analysis (CFA), it was observed that one of the sixteen items, specifically X11, yielded a value below the established threshold. This indicates a discrepancy between the expert-based content validity results and the statistically derived construct validity results. Such occurrences are consistent with previous research, which highlights the high probability of divergent outcomes between content and construct validity during the development of psychological instruments (Natanael et al., 2022).

Item X11 was categorized as an item to be used with "consideration," meaning it was ultimately retained in the scale. To justify the retention of this item, results from the Rasch model analysis were consulted as a secondary line of evidence. The Rasch analysis confirmed that item X11 met the required fit criteria (item fit). Therefore, through rigorous consideration and the triangulation of statistical methods, item X11 was confirmed to be a functional component of the scale.

The low factor loading of item X11 may also be attributed to the limitations of this study, specifically the sample size. Although the participants included the entire population of national-level athletes at a training center in Bandung, the total sample was limited to 108 individuals. According to the guidelines for testing newly developed instruments, which suggest a participant-to-item ratio of ten-to-one (Cohen & Swerdlik, 2009), the sample size in this study may have influenced the discriminatory power and factor loadings of the instrument.

Another point of discussion is the variation in reliability values observed between the CFA and the Rasch model, as summarized in Table 4 below:

Table 4. Comparison of Reliability: CFA vs. Rasch Model

Dimension	Reliability	
	Multidimensional CFA	Multidimensional Rasch Model
Fear of experiencing shame and embarrassment (F1)	0.83	0.736
Fear of devaluing one's self-estimate (F2)	0.87	0.821
Fear of important others losing interest (F3)	0.81	0.805
Fear of having an uncertain future (F4)	0.85	0.783
Fear of upsetting important others (F5)	0.85	0.773

The comparison table reveals that reliability values vary across dimensions, with the highest reliability observed in Dimension 1 (Fear of Experiencing Shame and Embarrassment). This finding aligns with the preliminary study and observed phenomena, where shame-related fears were the most prevalent concerns reported by athletes. The high degree of fear reported in the initial stages suggests a level of emotional inconsistency; thus, the empirical data strongly reflects the reality observed in the field.

Compared to the original Performance Failure Appraisal Inventory (PFAI) (Conroy et al., 2002), the newly developed SFoF-16 demonstrates superior reliability values despite having fewer items. The SFoF-

16 yielded reliability coefficients across its five dimensions ranging from 0.81 to 0.87, whereas the PFAI reported a range of 0.74 to 0.81.

Conversely, the SFoF-16 exhibited lower factor loadings (0.29 to 0.73) compared to the PFAI (0.46 to 0.87). This discrepancy is likely attributable to the difference in sample sizes; while the PFAI was developed using a sample of 544 participants, the SFoF-16 was limited to 108 participants. Despite this, both instruments achieved a Goodness of Fit Index (GFI) greater than 0.90 (PFAI = 0.97; SFoF-16 = 0.94), indicating that both fulfill the criteria for a well-fitting multidimensional model. The successful model fit of the SFoF-16 suggests that the theoretical framework and measurement model are highly appropriate for the current research context.

The primary implication of this study is that applying the same theoretical framework to different participant populations can yield divergent psychometric properties, particularly regarding reliability and factor loadings. If utilized effectively by athletes and coaches, the SFoF-16 serves as a valid instrument for the early screening of Indonesian athletes prior to competition. The results can be used to assess an athlete's psychological readiness for a match.

Furthermore, this study identified the strongest correlation between fear of devaluing one's self-estimate and fear of having an uncertain future. This suggests a robust link between perceived self-worth and uncertainty. These findings are consistent with previous research indicating that individuals experiencing high levels of life uncertainty often suffer from low self-esteem (Lin et al., 2015). Consequently, it is imperative for athletes to manage excessive fear before a match, as one form of fear can potentially exacerbate other psychological vulnerabilities.

Conclusion

Based on the analysis results, it can be concluded that the SFoF-16 instrument is multidimensional in nature, and the tested items are valid measures of the fear of failure construct. In addition to being valid, the SFoF-16 demonstrates strong reliability across each of its measured dimensions. It is hoped that this preliminary study will serve as a valuable new source of information for the advancement of sports psychology.

The researcher acknowledges that the primary limitation of this study is the relatively small number of participants. Consequently, the findings of the SFoF-16 cannot yet be widely generalized. Further studies with larger participant samples are required to establish broader generalizability. Therefore, it is recommended that future research utilize more advanced analytical techniques, such as Item Response Theory (IRT), and incorporate a larger number of participants to fulfill the rigorous standards of psychological instrument construction.

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