

**Functional Movement Screen Relationship With Futsal Athletes' Anxiety On
Kendal Porprov Team**Nico Armando^{1*}, Ranu Baskora Aji Putra²¹²Faculty of Sports Science, Universitas Negeri Semarang, Semarang, Indonesia**Keywords**

Functional Movement
Screen ; anxiety ;
athlete ; futsal ; SCAT

Abstract

This study was motivated by the importance of the relationship between physical and psychological conditions in futsal athletes, particularly movement quality measured through the Functional Movement Screen (FMS) and athletes' anxiety levels. This study aimed to determine the relationship between FMS scores and anxiety levels among futsal athletes on the Kendal Regency Porprov (Provincial Multi-Sport Games) Team. A quantitative approach with a cross-sectional correlational survey design was employed. The sample consisted of 35 futsal athletes selected using purposive sampling. Movement quality data were collected using the FMS test, while anxiety levels were measured using the Sport Competition Anxiety Test (SCAT). Data were analyzed using the Spearman Rank correlation test following a normality test. Results showed a mean FMS score of 18.29 (very good category) and a mean anxiety score of 19.69 (moderate category). The Spearman correlation test yielded a coefficient of 0.155 with a significance value of 0.372 ($p > 0.05$), indicating no significant relationship between FMS and anxiety levels. It is concluded that movement quality, as measured by FMS, is not significantly associated with anxiety levels among futsal athletes on the Kendal Regency Porprov Team. Further research with larger samples and additional psychological variables is recommended to better understand this relationship.

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INTRODUCTION

High-performance sports are activities that require optimal physical, technical, tactical, and psychological preparation so that athletes can achieve their best performance during training and matches. In recent decades, attention to the factors that influence athlete performance has focused not only on physical aspects but also on psychological aspects, which play a crucial role in athletes' success in achieving achievements. One sport that has high physical and psychological demands is futsal. Futsal is a sport characterized by fast play, limited space for movement, frequent changes of direction, and relatively intense physical contact, thus requiring athletes to be in good physical and mental condition. According to (Fernández-Galván et al., 2024), the most common injuries in futsal athletes are ankle injuries (28.15%), thigh injuries (19.99%), knee injuries (18.41%), and groin injuries (17.26%). The high incidence of these injuries indicates that evaluating the quality of athlete movement is important for injury prevention and improving sports performance.

One method widely used to evaluate the quality of an athlete's movements is the Functional Movement Screen (FMS). The FMS was developed by (Cook, G., Burton, L., & Hoogenboom, 2010) as a screening instrument to assess basic movement patterns related to mobility, stability, balance, and body coordination. Explained that the FMS is an effective tool for identifying movement dysfunction, mobility limitations, stability deficits, and movement asymmetries that have the potential to increase the risk of injury. In addition to its function to identify movement limitations, the Functional Movement Screen is also widely used as an initial screening method in sports because it is able to detect movement imbalances that have the potential to increase the risk of injury and can be the basis for developing injury prevention training programs (Essa et al., 2026). These findings are supported by research (Kiesel et al., 2007), which reported that athletes with lower FMS scores were more likely to experience injury than athletes with higher FMS scores. The FMS can also be used as an indicator of an athlete's physical readiness before training or competition. Therefore, good movement quality is a crucial component in supporting optimal athlete performance.

On the other hand, an athlete's physical condition is closely linked to their psychological state. Athletes with physical impairments or a high risk of injury tend to experience concerns about their abilities during training and competition. One common psychological response is anxiety. Anxiety in sports is characterized by feelings of tension, worry, fear of failure, and fear of injury, which can impact an athlete's performance during a match. Pre-match anxiety is a common psychological response experienced by athletes due to the pressure to perform at their best. High levels of anxiety can affect an athlete's concentration, decision-making, and confidence during a match (Sabri et al., 2026). Research by Reigal et al. (2024) shows that high levels of anxiety are associated with decreased motor control and movement quality in athletes. Furthermore, Reardon et al. (2024) explain that excessive anxiety can increase muscle tension, disrupt concentration, and reduce decision-making ability during competition. These findings demonstrate that the physical and psychological aspects of athletes are two interrelated and inseparable components in the effort to achieve optimal performance.

The relationship between physical and psychological condition has also been demonstrated in various modern sports studies. Athletes with good movement quality are thought to be more physically prepared, which may be related to their psychological state in preparation for competition. Conversely, limited movement and a high risk of injury can create uncertainty about one's physical condition, which ultimately triggers anxiety. (Arderin et al., 2013) showed that psychological readiness is a crucial factor influencing an athlete's success in returning to sport after injury and increasing confidence in facing the demands of competition. Therefore, movement quality, as measured by the FMS, is thought to be related not only to physical aspects but also to the athlete's psychological state, particularly anxiety.

Although extensive research has been conducted on the Functional Movement Screen (FMS), most studies have focused on the relationship between FMS and physical performance and injury risk. Maleki et al. (2025) examined the effect of training programs on improving FMS scores and the relationship between FMS and the physical performance of soccer players. On the other hand, research on athlete anxiety is more focused on performance, motor control, and cognitive function. To date, very little research has specifically examined the relationship

between movement quality measured using FMS and athlete anxiety levels, particularly in futsal. This situation indicates a research gap that requires further investigation.

Based on initial observations conducted on futsal athletes from the Kendal Regency Provincial Sports Week (Porprov) team, it was found that approximately 30% of the athletes had experienced injuries in the past six months, and some athletes reported experiencing decreased self-confidence and anxiety during training and matches. The Kendal Regency Provincial Sports Week (Porprov) futsal team consists of athletes aged 18–20 years who undergo routine training five to six times per week for approximately two hours per session. The high intensity of training and the demands of performance have the potential to increase the risk of injury and psychological stress experienced by athletes. However, the relationship between the quality of athletes' movements and their levels of anxiety has never been specifically studied in this population.

Based on the description, this study is important to determine the relationship between the Functional Movement Screen (FMS) and the anxiety levels of futsal athletes on the Kendal Regency Porprov Team. Theoretically, this study is expected to enrich the study of the relationship between physical and psychological aspects in sports science. Practically, the results of the study are expected to be a consideration for coaches and athletes in developing coaching programs that not only focus on improving physical condition, but also pay attention to the psychological readiness of athletes. The formulation of the problem in this study is whether there is a relationship between the Functional Movement Screen (FMS) and the anxiety levels of futsal athletes on the Kendal Regency Porprov Team. This study aims to determine the relationship between the Functional Movement Screen (FMS) and the anxiety levels of futsal athletes on the Kendal Regency Porprov Team.

METHODS

This study used a quantitative approach with a correlational research design to determine the relationship between the Functional Movement Screen (FMS) and the anxiety levels of futsal athletes. The study was conducted on the Porprov Futsal Team athletes from Kendal Regency, Central Java. Data collection took place during the athletes' preparation for the Provincial Sports Week (Porprov).

The population in this study was all athletes from the Kendal Regency Provincial Sports Week (Porprov) Futsal Team. The sampling technique used purposive sampling, with the criteria being active futsal athletes aged 18–20 years, regularly participating in a training program, having experienced a sports injury in the past six months, and willing to participate as research respondents. Based on these criteria, a sample of 35 athletes was obtained.

This study consisted of two variables: the Functional Movement Screen (FMS) and the athlete's anxiety level. The Functional Movement Screen (FMS) was measured using an instrument developed by (Cook, G., Burton, L., & Hoogenboom, 2010) which consists of seven basic movements, namely deep squat, hurdle step, inline lunge, shoulder mobility, active straight leg raise, trunk stability push-up, and rotary stability. Each movement is given a score of 0–3 so that the total score ranges from 0–21 points.

Table 1. Functional Movement Screen (FMS) Assessment Criteria

Score	Criteria
3	The movement is performed perfectly without compensation.
2	Movement is done with compensation
1	Unable to perform movements properly
0	There is pain when doing movements

Athletes' anxiety levels were measured using the Sport Competition Anxiety Test (SCAT) instrument developed by Martens. The SCAT consists of 15 statements with three response options: rarely, sometimes, and often. Ten items are used in scoring, while the other five are neutral statements. This instrument has been widely used in sports research to measure athletes' anxiety levels before and during competition.

Table 2. SCAT Anxiety Level Categories

Score Range	Category
10-16	Low Anxiety
17-23	Moderate Anxiety
24-30	High Anxiety

Data collection techniques included a Functional Movement Screen (FMS) test and a Sport Competition Anxiety Test (SCAT) questionnaire. All athletes first underwent a researcher-guided FMS measurement and then completed the SCAT questionnaire based on their perceived condition.

Data analysis was performed using descriptive statistics to describe the characteristics of the research data. Before hypothesis testing, the data were tested for normality using the Shapiro-Wilk test. The test results showed that the data were not normally distributed, so the analysis of the relationship between the Functional Movement Screen (FMS) and anxiety levels was performed using the Spearman Rank correlation test. The entire data analysis process was carried out using the IBM SPSS Statistics program version 25 with a significance level of 0.05.

RESULTS AND DISCUSSION

This study involved 35 futsal athletes from the Kendal Regency Provincial Sports Week (Porprov) Team. The data obtained were analyzed to determine the description of the Functional Movement Screen (FMS), the level of anxiety of the athletes, and the relationship between the Functional Movement Screen (FMS) and the level of anxiety of the futsal athletes.

Description of Functional Movement Screen (FMS)

The Functional Movement Screen (FMS) measurements indicate that most athletes have good movement quality. These findings indicate that the majority of athletes have good functional movement quality. The Functional Movement Screen is essentially more appropriate as a screening instrument to identify movement quality and potential injury risk than as a tool to evaluate an athlete's psychological condition (Oktarisa et al., 2023). The description of the Functional Movement Screen (FMS) data can be seen in **Table 3**.

Table 3. Description of Functional Movement Screen (FMS) Scores

Variables	n	Minimum	Maximum	Mean	Std. Deviation
Functional Movement Screen (FMS)	35	13	21	18.29	2,023

Based on **Table 3**, it is known that the Functional Movement Screen (FMS) score of futsal athletes has an average value of 18.29 with a minimum value of 13 and a maximum of 21. The high FMS scores obtained by athletes indicate that most respondents have good mobility, stability, and motor control. These conditions are crucial in futsal because athletes are required to perform various high-intensity movements such as sprinting, rapid changes of direction, acceleration, and deceleration. Good movement quality can help athletes perform more efficiently and support performance during training and matches. The results of this study are in line with research (Alfiani & Setiowati, 2024) Cilegon which states that athletes with high FMS scores tend to have better movement quality and a lower risk of injury than athletes with low FMS scores. The high FMS scores in this study are thought to be influenced by the routine and structured training program carried out during preparation for the Provincial Sports Week (Porprov).

Table 4. Distribution of FMS Categories

FMS category	F frequency	Percentage (%)
Very good	29	82.9%
Good	5	14.3%
High Risk of Injury	1	2.9 %
Total	35	100 %

Table 4 shows that the majority of athletes, 29 (82.9%), were in the very good FMS category. Five athletes (14.3%) were in the good injury risk category, while only one athlete (2.9%) was in the high injury risk category. These results indicate that the majority of futsal athletes on the Kendal Regency Porprov Team have good movement quality.

Description of Athlete Anxiety Levels

The results of anxiety measurements using the Sport Competition Anxiety Test (SCAT) indicate that most athletes fall into the moderate anxiety category. Moderate anxiety is still a common response experienced by athletes before a competition. However, if left uncontrolled, anxiety can reduce concentration, impair motor coordination, and increase the likelihood of technical errors during the match (Dewi et al., 2023). In futsal, anxiety is influenced by various factors, such as competitive pressure, performance demands, and expectations regarding the outcome of the match. These factors can affect an athlete's mental readiness, even if they are in good physical condition (Putra & Pratama, 2025). A description of athlete anxiety data can be seen in Table 3.

Table 5. Description of Athlete Anxiety Levels

Variables	N	Minimum	Maximum	Mean	Std. Deviation
SCAT	35	15	27	19.69	3,104

Table 5 shows that the average athlete anxiety score was 19.69, which falls into the moderate anxiety category. This indicates that athletes still experience anxiety or tension before a match, but it's still within reasonable limits for competitive athletes.

Table 6. Distribution of Athlete Anxiety Categories

Anxiety Category	Frequency	Percentage (%)
Low	4	11.4
Moderate	26	74.3
High	5	14.3
Total	35	100

Based on **Table 6**, it is known that the majority of athletes, 26 (74.3%), were in the moderate anxiety category. Four athletes (11.4%) had low anxiety, while five (14.3%) had high anxiety. These results indicate that the majority of athletes experienced moderate levels of anxiety leading up to the competition.

The moderate levels of anxiety found in this study indicate that athletes still experience psychological stress before a match, but this stress has not yet reached a level that significantly impairs performance. Anxiety in sports is a common response that athletes experience when faced with the pressure of achieving certain achievements. These results align with research by Akhyar & Rumini (2025), who found that athletes with moderate levels of anxiety tended to experience nervousness, worry about the outcome of the match, and physical tension. In the lead-up to a competition, factors such as competition experience, self-confidence, and perception of the opponent's strength can influence the level of anxiety an athlete feels.

The Relationship between Functional Movement Screen (FMS) and Athlete Anxiety

Based on the results of the normality test, the research data were not normally distributed, so the correlation analysis was conducted using the Spearman Rank correlation test. The analysis of the relationship between the Functional Movement Screen (FMS) and athlete anxiety levels was conducted using the Spearman Rank correlation test because the research data were not normally distributed. The results of the correlation analysis can be seen in **Table 7**.

Table 7. Spearman Rank Correlation Test Results

Variables	Correlation Coefficient (r)	Sig. (p)
FMS and Anxiety	0.155	0.372

Based on **Table 7**, the correlation coefficient is 0.155 with a significance value of 0.372 ($p > 0.05$). These results indicate no significant relationship between the Functional Movement Screen (FMS) and the anxiety levels of futsal athletes on the Kendal Regency Porprov Team. The correlation value of 0.155 also indicates that the relationship is in the very low category. The results of this study differ from the research of Tuna and Kurt (2025) who found a relationship between functional movement patterns measured using the Functional Movement Screen (FMS) and levels of injury anxiety in wrestling athletes. The difference in results is thought to be due to the characteristics of the sport, the type of anxiety measured, and differences in the characteristics of the research subjects. In this study, anxiety was measured using the Sport Competition Anxiety Test (SCAT), which focuses on competition anxiety, while Tuna and Kurt's study assessed injury anxiety, which is anxiety related to the possibility of injury during exercise. Therefore, although both used the FMS, the two studies measured different psychological aspects, resulting in dissimilar findings. (Tuna & Kurt, 2025).

The lack of a significant relationship between the Functional Movement Screen (FMS) and athlete anxiety suggests that the quality of movement is not directly related to the level of anxiety experienced by athletes. However, several studies have shown that athletes at higher risk of injury tend to have higher levels of anxiety due to concerns about potential injury or decreased performance during competition (Mitsalina et al., 2025). These differences in results suggest that the relationship between functional movement quality and anxiety may be influenced by other factors, such as competition experience, mental preparedness, and individual athlete characteristics. Anxiety in sports is influenced by various factors, such as competition experience, competitive pressure, self-confidence, social support, the individual's psychological state, and expectations regarding the outcome. Therefore, even if an athlete has good movement quality based on the FMS score, this does not necessarily correlate with low levels of anxiety.

The results of this study align with those of Reardon et al., 2024, which stated that athlete anxiety is more influenced by psychological and environmental factors than purely physical factors. However, these results differ from those of Reigal et al., 2024, which found a relationship between motor control and athletes' psychological well-being. These differences in results may be due to the characteristics of the sample, the sport, the measurement instruments, and the athletes' varying levels of competition.

Theoretically, the results of this study indicate that the Functional Movement Screen (FMS) is more appropriate as an instrument for evaluating movement quality and injury risk than as an indicator of an athlete's psychological state. Practically, coaches still need to consider physical and psychological aspects separately in the athlete development process. Movement quality improvement programs through physical training need to be accompanied by psychological support programs to enable athletes to optimally manage anxiety before competition.

This study has several limitations. The sample size was limited, drawn from only one futsal team, so the results cannot be generalized to a wider population. Furthermore, the subjective nature of the SCAT questionnaire used to measure anxiety allows for differences in respondents' perceptions. Future research should involve a larger sample size and consider other psychological factors such as competition experience, self-confidence, and competitive pressure.

CONCLUSION

Based on the results of research conducted on the Kendal Regency Porprov Futsal Team athletes, it can be concluded that the average score of the athletes' Functional Movement Screen (FMS) was 18.29, indicating that the movement quality was in the good category, while the athletes' anxiety level had an average score of 19.69, which was included in the moderate category. The results of the analysis using the Spearman Rank correlation test showed a

correlation coefficient value of 0.155 with a significance value of 0.372 ($p > 0.05$). These results indicate that there is no significant relationship between the Functional Movement Screen (FMS) and the anxiety level of the Kendal Regency Porprov Futsal Team athletes. Thus, the quality of the athletes' movements based on the FMS measurement is not significantly related to the level of anxiety experienced by the athletes. These findings indicate that athlete anxiety is likely more influenced by psychological factors, competition experience, competitive pressure, and individual conditions than by the quality of the athletes' movements.

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