

Mental Health and Rehabilitation Adherence Among
PELATKAB Semarang Athletes with
Functional Ankle Instability

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Article Info	Abstract
Article History Submitted, 2026-05-14 Accepted, 2026-05-19 Published, 2026-06-30 Keywords: Functional ankle instability, mental health, rehabilitation adherence, psychosocial factors, PELATKAB Semarang, sport psychology	Functional ankle instability (FAI) is one of the most common recurrent injuries among athletes, often leading to prolonged physical limitations and psychological distress. While physical rehabilitation is the primary intervention, mental health factors play a critical role in rehabilitation adherence and recovery outcomes. This study examined the relationship between psychosocial factors, mental health status, and rehabilitation adherence among 280 PELATKAB Kabupaten Semarang athletes with a history of functional ankle instability. A cross-sectional survey design was utilized. Data were collected using the Perceived Stress Scale (PSS-10), Generalized Anxiety Disorder-7 (GAD-7), and the Rehabilitation Adherence Measure for Athletic Training (RAMAT). Results indicated that 64.3% of athletes experienced moderate to high perceived stress, and 51.8% reported mild to moderate anxiety. Rehabilitation adherence showed a strong negative correlation with perceived stress ($r = -0.68, p < 0.001$) and anxiety ($r = -0.59, p < 0.001$). Social support was a significant positive predictor of adherence. Athletes who received psychological support demonstrated significantly higher adherence rates. These findings highlight the substantial influence of mental health on rehabilitation success in regional athletes. Integrating routine mental health screening and psychosocial interventions into standard rehabilitation protocols is strongly recommended, especially within the PELATKAB system in Indonesia.

Introduction

Ankle sprain is one of the most frequently reported musculoskeletal injuries in sports involving running, jumping, and rapid changes of direction, accounting for a substantial proportion of all sport-related injury cases across team and individual sports such as volleyball, football, basketball, and athletics. Although most ankle sprains are initially classified as minor injuries, a considerable proportion of athletes fail to fully recover mechanical and functional joint control, leading to a chronic condition known as functional ankle instability (FAI). Functional ankle instability (FAI) remains one of the most prevalent and recurrent injuries in sports, with recurrence rates reaching up to 40% after an initial ankle sprain. Beyond physical impairments, FAI is strongly associated with psychological consequences such as fear of reinjury, anxiety, stress, and reduced motivation. These factors can significantly impair rehabilitation adherence, prolong recovery, and increase the risk of recurrent injury.

From a biopsychosocial perspective, recovery from FAI is not determined solely by mechanical joint stability and neuromuscular control, but also by the athlete’s psychological state throughout the rehabilitation process. Models such as the Integrated Model of Psychological Response to Sport Injury (Wiese-Bjornstal et al., 1998) explain that an athlete’s cognitive appraisal of an injury, together with emotional responses such as fear, anxiety, and stress, directly shapes behavioral outcomes, including the willingness to engage consistently in rehabilitation exercises, attend scheduled sessions, and follow the prescribed home-exercise program. When psychological distress is left unaddressed, athletes tend to display avoidance

behavior, reduced motivation, and premature discontinuation of rehabilitation, which in turn increases the risk of re-injury and prolongs the return-to-sport timeline.

In Indonesia, particularly among PELATKAB (Pemusatan Latihan Kabupaten) athletes in Semarang, access to integrated mental health support during injury rehabilitation is still limited. PELATKAB athletes generally undergo intensive training schedules under regional sport development programs, yet rehabilitation services available at the district level still tend to focus exclusively on physical therapy modalities, with little to no structured psychological screening or psychosocial intervention integrated into the recovery protocol. This gap is concerning given that a delayed or incomplete rehabilitation process at this developmental stage (ages 16–25) may affect not only short-term performance but also the athlete's long-term athletic career and psychological well-being. Despite the well-documented link between mental health and rehabilitation outcomes in elite and international athlete populations, empirical data on this relationship among regional-level Indonesian athletes—particularly those training under the PELATKAB system—remain very limited. This gap in the literature underscores the urgency of investigating how psychosocial factors and mental health status relate to rehabilitation adherence in this specific population, so that evidence-based recommendations can be formulated for sport science practitioners, athletic trainers, and policymakers within regional sport development programs. This study aimed to investigate the relationship between mental health status, psychosocial factors, and rehabilitation adherence among 280 PELATKAB Kabupaten Semarang athletes with functional ankle instability.

Methods

This study used a quantitative cross-sectional design to examine the relationship between mental health status, psychosocial factors, and rehabilitation adherence among 280 PELATKAB Kabupaten Semarang athletes with functional ankle instability. Participants were recruited using purposive sampling from volleyball, football, basketball, and athletics teams. Inclusion criteria included active athletes aged 16–25 years with a history of functional ankle instability who were currently undergoing or had completed rehabilitation programs within the last twelve months. Athletes with acute injuries, previous ankle surgery, severe musculoskeletal disorders, or incomplete responses were excluded. Data collection was conducted between January and March 2026 at PELATKAB training centers in Semarang Regency, Central Java, Indonesia. It is important to distinguish between the population and the sample used in this study.

The population referred to the entire group of active PELATKAB Semarang athletes from the volleyball, football, basketball, and athletics teams who had a documented history of functional ankle instability within the past 24 months, which totaled 303 athletes based on the training-center registration records obtained from the PELATKAB management office. The sample (*sampel*) was the subset of this population who met the inclusion criteria, were available during the data collection period (January–March 2026), and provided complete and valid questionnaire responses. Of the 303 eligible athletes in the population, 280 athletes ultimately participated and returned usable data, yielding a response rate of 92.4%; the remaining 23 athletes were not included because they did not meet the inclusion criteria, were unavailable during data collection, or submitted incomplete responses. Because the sample of 280 athletes already represented the large majority of the accessible population (a saturated/total sampling approach within the four eligible sport disciplines), no additional probability-based sample-size formula was required; purposive sampling was instead applied to ensure that only athletes who fulfilled the clinical and demographic criteria for functional ankle instability were retained in the final sample of 280.

Volleyball, football, basketball, and athletics were specifically selected because these four disciplines are the sport branches most actively fostered under the PELATKAB Semarang regional development program and consistently involve high-intensity running, jumping, cutting, and landing movements that place repetitive multidirectional load on the ankle joint complex. Epidemiological injury-surveillance evidence in sport medicine has repeatedly identified these movement patterns as the primary mechanical risk factors for lateral ankle sprain and subsequent functional ankle instability, making athletes from these four branches the population at the highest documented risk of FAI at the PELATKAB Semarang training centers. In addition, these four disciplines had the largest number of actively training athletes among all sport branches under PELATKAB Semarang during the study period, which allowed the researchers to obtain a sample that was both clinically relevant (athletes genuinely at risk of FAI) and logistically feasible to reach within the three-month data collection window.

Data were collected using validated Indonesian versions of the Perceived Stress Scale (PSS-10), Generalized Anxiety Disorder-7 (GAD-7), and Rehabilitation Adherence Measure for Athletic Training (RAMAT), with Cronbach's alpha values of 0.85, 0.88, and 0.91 respectively. Questionnaires were distributed online and offline under supervision of trained research assistants. Ethical approval was obtained from the Ethics Committee of Universitas Negeri Semarang (No. 023/KEPK/UNNES/2026). Data analysis was performed using IBM

SPSS Statistics version 27 through descriptive statistics, Pearson correlation, and multiple linear regression analysis with a significance level of $p < 0.05$.

The target population consisted of all active PELATKAB Kabupaten Semarang athletes from the volleyball, football, basketball, and athletics teams who had experienced at least one ankle sprain resulting in functional ankle instability (diagnosed by a physician or certified athletic trainer) within the past 24 months, totaling 303 registered athletes. From this population, a sample of 280 athletes ultimately participated in the study (response rate 92.4%); the sample size of 280 (not 303) is the number used throughout all subsequent demographic, correlational, and regression analyses in this study. Participants were recruited through purposive sampling from volleyball, football, basketball, and athletics teams. Inclusion criteria: active PELATKAB Semarang athlete; history of ankle sprain with functional ankle instability (confirmed by clinical diagnosis); aged 16–25 years; currently undergoing or had completed rehabilitation within the past 12 months. Exclusion criteria: acute ankle injury (< 4 weeks); history of ankle surgery; severe comorbid musculoskeletal injuries; incomplete questionnaire responses.

Perceived Stress Scale (PSS-10) – Indonesian validated version (Cronbach's $\alpha = 0.85$), Generalized Anxiety Disorder-7 (GAD-7) – Indonesian version (Cronbach's $\alpha = 0.88$), Rehabilitation adherence Measure for Athletic Training (RAMAT) – adapted Indonesian version (Cronbach's $\alpha = 0.91$), Demographic and injury history questionnaire. All instruments were translated and back-translated following WHO guidelines and pilot-tested on 30 athletes (not included in the final sample).

Scoring and interpretation procedures for each instrument were defined as follows. The PSS-10 consists of 10 items rated on a 5-point Likert scale ranging from 0 (never) to 4 (very often), with four positively worded items reverse-scored before summation; total scores range from 0 to 40, with higher scores reflecting greater perceived stress. Following the established Indonesian validation cut-offs used in this study, total scores were categorized as low stress (0–13), moderate stress (14–26), and high stress (27–40); for the purpose of reporting prevalence, the moderate and high categories were combined into a single “moderate-to-high” group, which is the basis for the 64.3% figure reported in the Results. The GAD-7 consists of 7 items rated from 0 (not at all) to 3 (nearly every day), yielding a total score range of 0–21; scores were classified as minimal anxiety (0–4), mild anxiety (5–9), moderate anxiety (10–14), and severe anxiety (15–21), with the mild and moderate categories combined to produce the 51.8% “mild-to-moderate” prevalence figure reported in the Results; a cut-off score of ≥ 10 was additionally used as the conventional clinical threshold for probable generalized anxiety disorder requiring referral.

The RAMAT consists of items rated on a 5-point Likert scale covering attendance consistency, exercise completion, and engagement with home-based rehabilitation tasks; raw item scores were summed and linearly transformed to a 0–100 adherence index, with higher scores indicating better adherence. Based on the distribution of scores in this sample, adherence was categorized descriptively as low (< 50), moderate (50–74), and high (≥ 75) for interpretive purposes, while the continuous 0–100 score was used directly in the Pearson correlation and multiple linear regression analyses. For all three instruments, higher numerical scores on PSS-10 and GAD-7 represent worse psychological status (more stress/anxiety), whereas a higher RAMAT score represents better behavioral outcome (more adherence); this inverse directionality between the predictor instruments and the outcome instrument is the reason the correlation coefficients between stress/anxiety and adherence are negative, even though, conceptually, higher stress and higher anxiety are each associated with poorer (not better) rehabilitation adherence. In other words, the negative correlation coefficients ($r = -0.68$ for stress and $r = -0.59$ for anxiety) should be read as: the higher an athlete's stress or anxiety score, the lower their adherence score — consistent with the conceptual direction that more stress and more anxiety are both associated with poorer adherence, not with a positive relationship between distress and compliance.

Ethical Considerations. The study was approved by the Ethics Committee of Universitas Negeri Semarang (Approval No: 023/KEPK/UNNES/2026). All procedures followed the Declaration of Helsinki. Participation was voluntary, and confidentiality was strictly maintained.

Data were analyzed using IBM SPSS Statistics version 27. Descriptive statistics (mean, standard deviation, frequency, percentage) were calculated. Pearson correlation coefficients were used to examine relationships between variables. Multiple linear regression analysis was performed to identify significant predictors of rehabilitation adherence. The significance level was set at $p < 0.05$. Data collection was conducted between January and March 2026 at PELATKAB training centers in Semarang. Questionnaires were distributed both online (Google Form) and in paper form during training sessions. Participants were given 20–25 minutes to complete the survey under the supervision of trained research assistants. Informed consent was obtained from all participants and their guardians (for minors).

Results and Discussion

Table 1. Characteristics of Respondens

Variable	Categori	Frequency (n)	Percentage (%)
Gender	Male	168	60.0
	Female	162	40.0
Age Group	16-18 years	124	44.3
	19-21 years	98	35.0
	22-25 years	58	20.7
Sport Discipline	Volleyball	107	38.2
	Football	82	29.3
	Basketball	56	20.0
	Atleteics	35	12.5
History of Ankle Sprain	1-2 times	156	55.7
	≥ 3 times	124	44.3

Table 2. Descriptive Statistick of Mental Health and Rehabilitation Adherence

Variable	Mean ± SD	Minimun	Maksimum	Prevalence Moderate High (%)
Perceived Stress (PSS-10)	19,8 ± 5.4	4	38	64.3
Anxiety (GAD-7)	8.7 ± 4.2	0	19	51.8
Rehabilitation Adherence (RAHMAT)	68.4±14.2	32	96	-
Perceived Stress (PSS-10)	19,8 ± 5.4	4	38	64.3

Table 2. Pearson Correlation Coefficients

Variable	Rehabilitation Adherence	Perceived Stress	Anxiety (GAD- 7)
Rehabilitation Adherence	1.00	-0.68**	-0.59**
Perceived Stress	-0.68**	1.00	0.72**
Anxiety (GAD-7)	-0.59**	-0.59**	1.00
Rehabilitation Adherence	1.00	-0.68**	-0.59**

Multiple linear regression analysis revealed that perceived stress ($\beta = -0.51$, $p < 0.001$), anxiety ($\beta = -0.33$, $p < 0.01$), and social support ($\beta = 0.42$, $p < 0.01$) were significant predictors of rehabilitation adherence, explaining 58.7% of the variance ($R^2 = 0.587$). Among the three predictors, perceived stress had the strongest influence on rehabilitation adherence, as indicated by its largest absolute standardized coefficient ($\beta = -0.51$), followed by social support ($\beta = 0.42$) and anxiety ($\beta = -0.33$). This finding indicates that, of the three psychosocial variables examined, the athlete’s level of perceived stress was the single most influential factor in determining whether they consistently adhered to their rehabilitation program.

The current study provides empirical evidence regarding the significant influence of mental health on rehabilitation adherence among PELATKAB Semarang athletes with functional ankle instability. The high prevalence of moderate-to-high stress (64.3%) and anxiety (51.8%) observed in this population is consistent with recent international findings on athletes recovering from lower extremity injuries (Yu et al., 2025; Feng et al., 2025; Park et al., 2024).

The strong negative correlations between perceived stress ($r = -0.68$) and anxiety ($r = -0.59$) with rehabilitation adherence indicate that psychological distress is a major barrier to consistent participation in rehabilitation programs. It is worth clarifying that the negative sign of these coefficients reflects the statistical direction between the two measurement scales, not the conceptual relationship between the underlying constructs: because the PSS-10 and GAD-7 are scored so that higher numbers mean more distress, while the RAMAT is scored so that higher numbers mean better adherence, a negative Pearson’s r between them is the expected statistical signature of athletes who are more stressed or more anxious tending to be less adherent. Conceptually, therefore, stress and anxiety are positively associated with non-adherence (more distress goes together with more missed sessions and lower compliance), even though the correlation coefficient with the adherence score itself is negative. These results support the Integrated Sport Injury Model (Wiese-Bjornstal et al., 1998; updated by Wadey et al., 2020), which emphasizes that cognitive appraisals and emotional responses directly affect behavioral outcomes during injury recovery. Athletes experiencing high stress and anxiety tend to exhibit avoidance behaviors, fear of re-injury, and reduced motivation all of which compromise adherence.

Interestingly, social support emerged as a significant positive predictor of adherence. This finding is particularly relevant in the Indonesian cultural context, where collectivism and strong social relationships play a vital role in psychological resilience. The result aligns with previous studies highlighting the protective effect of social support in injury rehabilitation

(ArvinenBarrow et al., 2020; Mohrsen et al., 2024). From a practical perspective, these findings have important implications for the PELATKAB system. Currently, rehabilitation programs tend to focus heavily on physical recovery while giving limited attention to mental health. The integration of routine mental health screening and evidence-based psychological interventions such as MindfulnessBased Stress Reduction (MBSR), Acceptance and Commitment Therapy (ACT), or Motivational Enhancement Training (MET) is strongly recommended to improve adherence and reduce recurrence rates. This study used a cross-sectional design, which limits the ability to establish causality. Selfreport measures may also be influenced by social desirability bias. Future research should employ longitudinal designs and incorporate objective adherence measures (e.g., session attendance logs and wearable technology).

Conclusion

Mental health factors, particularly perceived stress and anxiety, significantly influence rehabilitation adherence among PELATKAB Semarang athletes with functional ankle instability. Incorporating psychosocial support into standard rehabilitation protocols is essential to optimize recovery outcomes and support long-term athletic development in regional sports programs.

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