

Enhancing rehabilitation adherence in Ethiopian footballers: A contextual analysis of psychological and socioeconomic factors

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ABSTRACT

Background: Physical injury rehabilitation in football is strongly influenced by psychological factors. In Ethiopia, a lack of culturally tailored psychosocial strategies may hinder rehabilitation adherence. **Objective:** This study investigated psychological factors associated with injury recovery among professional and semi-professional Ethiopian footballers to establish an initial exploratory, hypothesis-generating framework for under-resourced athletic contexts. **Method:** A convergent parallel mixed-methods design included quantitative data from an exploratory sample of $N = 50$ players who sustained an injury requiring at least 4 weeks of physical rehabilitation during the 2024–2025 competitive seasons and qualitative interviews with a purposive subsample ($n = 10$). Because of the observational cross-sectional design, purposive recruitment, small sample, self-report measures, and limited qualitative component, the findings do not support causal conclusions or broad generalization. **Results:** Adherence correlated positively with motivation ($r = .42, p < .01$) and self-confidence ($r = .38, p < .05$) and negatively with fear of reinjury ($r = -.50, p < .01$). The regression model was significant, $F(4, 45) = 8.83, p < .001, R^2 = .44$, adjusted $R^2 = .39$. Fear of reinjury had the largest negative association with adherence ($B = -0.46, SE = 0.13, \beta = -.40, 95\% \text{ CI } [-0.72, -0.20], p = .001$). Motivation ($B = 0.31, SE = 0.11, \beta = .35, 95\% \text{ CI } [0.09, 0.53], p = .006$), self-confidence ($B = 0.23, SE = 0.10, \beta = .28, 95\% \text{ CI } [0.03, 0.43], p = .025$), and psychological support ($B = 0.16, SE = 0.07, \beta = .22, 95\% \text{ CI } [0.02, 0.30], p = .028$) were positively associated with adherence. Three qualitative themes emerged: (a) spiritual resilience versus initial fatalism, (b) informal collectivist community support mitigating perceived institutional isolation, and (c) economic anxieties underpinning kinesiophobia. **Conclusion:** Psychological factors were associated with adherence and were embedded in local socioeconomic and cultural contexts. The study offers the preliminary interpretive concept of *socioeconomic kinesiophobia*, which requires independent validation. **Recommendations:** Sports organizations could explore low-cost, culturally grounded interventions whose feasibility, acceptability, safety, and effectiveness should be examined in co-designed, adequately powered studies.

Keywords: injury rehabilitation; rehabilitation adherence; sports psychology; motivation; fear of reinjury; cultural competence; exploratory case study.

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INTRODUCTION

Football is the most popular sport in Ethiopia, commanding massive community engagement and driving the professionalization of local athletics. However, the high intensity, frequent contact, and competitive nature of the modern game expose players to substantial injury risks. Globally, elite footballers sustain an average of 6 to 10 injuries per season, dominated by muscle strains, ligament tears, and contusions (Ekstrand et al., 2011). In developing football landscapes like Ethiopia, limited medical infrastructure and demanding pitches can exacerbate these injury rates, making effective rehabilitation pipelines vital for career longevity and team success.

Proper injury rehabilitation aims not only to restore physiological baselines such as strength, flexibility, and proprioception but also to ensure a safe, confident return to competitive play. Historically, sports medicine has operated under a heavily biomechanical framework. However, a growing body of sports psychology literature emphasizes that cognitive and emotional states dictate how consistently an athlete adheres to physical therapy protocols (Williams et al., 2020). Negative emotional responses, including anxiety, identity loss, and a profound fear of reinjury, frequently induce avoidant behaviours and prolong recovery timelines (Arvinen-Barrow & Massey, 2017). Conversely, high self-efficacy, intrinsic motivation, and robust social support networks act as major clinical facilitators (Vander Werff et al., 2019).

Despite these developments, a distinct contextual gap remains in sports science literature. The vast majority of sports psychology protocols are standardized using Western, highly professionalized athletic cohorts. These models assume access to dedicated sports psychologists, advanced digital monitoring tools, and highly secular, individualized coping mechanisms. In contrast, sub-Saharan African sports environments operate within deeply collectivist cultures where health behaviours, resilience, and recovery are closely intertwined with community structures, spiritual worldviews, and unique socioeconomic pressures (Kebede & Tamene, 2023).

Furthermore, current findings on contractual insecurity and institutional care deficits intersect with critical themes examined in broader labour studies, organizational psychology, occupational health, and contemporary athlete welfare literature (Drole & Paravlic, 2022; Gökmen et al., 2024). By framing sports injuries through an interdisciplinary lens, sports science can better recognize how macro-level precarity directly impacts clinical recovery outcomes.

By treating the Ethiopian football context as a generic case study, traditional models miss an opportunity to advance sport psychology theory. Current Western theories frame kinesiphobia (fear of movement/re-injury) as a purely biomedical or somatosensory phenomenon fear rooted primarily in the physical anticipation of pain (Lee et al., 2023). In contrast, by explicitly contrasting our findings with traditional fear-avoidance models, this study proposes the preliminary interpretive concept of "*socioeconomic kinesiphobia*," which requires independent validation. In under-resourced leagues, movement anxiety is proposed as a possible contextual pathway linked not merely to somatic pain, but to impending financial instability, short-term contract vulnerability, and livelihood loss (Gökmen et al., 2024).

This study directly addresses this gap. By exploring the psychological determinants of rehabilitation adherence among Ethiopian players, this paper provides a localized, exploratory framework. Rather than claiming broad theoretical finality or universal transferability across the entire Global South, this manuscript presents the Ethiopian Premier League as an illustrative case study. This empirical foundation establishes

hypothesis-generating pathways that invite comparative validation across parallel, under-resourced sports ecosystems.

Objectives of the study

- To identify the specific psychological barriers and facilitators experienced by Ethiopian football players during injury rehabilitation.
- To evaluate the quantitative relationships between specific psychological variables (motivation, self-confidence, fear of reinjury, and psychological support) and rehabilitation adherence within an exploratory, hypothesis-generating associative framework.
- To construct an illustrative visual and phase-based preliminary framework detailing how structural vulnerability, psychological disruption, relational buffering, and kinesiological adherence interact in resource-constrained leagues.

METHODOLOGY

Research design

This study utilized a convergent parallel mixed-methods design. Quantitative and qualitative data were collected concurrently during the 2024 and 2025 competitive seasons, analysed separately, and then integrated to synthesize empirical metrics with contextual narratives. Because of the observational cross-sectional design, purposive recruitment, small sample, self-report measures, and limited qualitative component, the study is presented as exploratory and hypothesis-generating and does not support causal conclusions or broad generalisation.

Participants, eligibility, and sampling

The target population comprised professional and semi-professional male football players in Ethiopia.

Eligibility criteria

Eligible participants were active male football players in the Ethiopian Premier League who sustained a sports-related physical injury requiring at least four weeks of physical rehabilitation during the 2024–2025 competitive seasons (occurring within a defined two-year temporal inclusion window). Exclusion criteria included players with non-football injuries, those unable to provide informed consent, or those with pre-existing diagnosed psychiatric conditions. The clinical justification for excluding pre-existing psychiatric conditions was to prevent compounding psychiatric morbidity from confounding self-reported psychometric assessments of injury-specific psychological factors; these conditions were identified through medical history screening logs administered by club medical personnel. This exclusion criteria is acknowledged as a potential source of selection bias regarding baseline mental health representation.

Participant and injury characteristics

Participants in the final quantitative sample ($n = 50$) had a mean age of 24.3 years ($SD = 3.2$, range: 19–31 years). All participants competed at the elite competitive level across 6 participating Ethiopian Premier League clubs (club a: $n = 11$, club b: $n = 9$, club c: $n = 8$, club d: $n = 8$, club e: $n = 7$, club f: $n = 7$). Sustained injury types included muscle strains/tears (40%, $n = 20$), ligamentous sprains/tears (34%, $n = 17$), bone fractures (16%, $n = 8$), and joint dislocations/tendinopathies (10%, $n = 5$). Injury severity corresponded to lost time from activity: moderate (4–8 weeks; 42%, $n = 21$) and severe (>8 weeks; 58%, $n = 29$). Time elapsed since injury ranged from 1 to 18 months ($m = 6.4$ months, $SD = 3.8$). Rehabilitation stages at data collection included early protection/acute phase (18%, $n = 9$), intermediate loading phase (48%, $n = 24$), and late return-to-sport phase (34%, $n = 17$). Total active treatment duration averaged 12.2 weeks ($SD = 5.1$).

Quantitative cohort

A purposive sampling method was employed to recruit a sample of $N = 50$ injured male football players from clubs participating in the Ethiopian Premier League. Given the exploratory nature of the study, this sample represents a localized cohort of active, recorded long-term injuries during the study timeframe. An a priori power analysis was not conducted due to the constrained population of eligible injured players; with $n = 50$ participants and four predictors, the regression analysis is strictly framed as exploratory rather than confirmatory.

Qualitative cohort

From the larger quantitative sample, a subsample of $n = 10$ players was selected using maximum variation sampling. Selection captured variation in age (range: 20–30 years), playing position (3 forwards, 4 midfielders, and 3 defenders), injury type (4 ligament tears, 4 muscle strains, and 2 fractures), and time in rehabilitation (range: 5–24 weeks). All interview participants were drawn from the Ethiopian Premier League cohort described above.

Recruitment process, recruitment flow, and bias mitigation

A total of 6 Ethiopian Premier League Clubs were approached and agreed to participate in the study. Across these clubs, club physiotherapists and medical personnel screened $n = 72$ injured players for study eligibility. Of these, 64 met the eligibility criteria. Eight players were excluded ($n = 5$ had rehabilitation periods < 4 weeks, $n = 2$ had non-football injuries, and $n = 1$ had a pre-existing psychiatric diagnosis on medical file). All 64 eligible players were invited to participate; 14 players declined participation ($n = 9$ cited lack of time/interest, $n = 5$ declined due to privacy concerns regarding injury disclosure). The remaining 50 eligible players consented and completed the quantitative study protocol (78.1% response rate).

Recruitment through club physiotherapists and medical personnel, combined with voluntary participation, introduced potential selection bias (e.g., over-representing players with higher compliance or better rapport with staff). Approaching all eligible injured players mitigated but did not eliminate this bias.

Data collection instruments

Quantitative measures

Structured questionnaires measured four psychometric domains. All adapted instruments underwent forward translation from English into Amharic by two independent bilingual sports science researchers and back-translation into English by an independent language expert to ensure semantic equivalence. Scale translation, pilot testing ($n = 10$), and psychometric evaluation were conducted prior to final administration. Internal consistency reliability estimates (Cronbach's alpha) were computed separately for every construct using the final sample of $n = 50$ participants:

- Motivation and self-confidence were assessed using items adapted from the rehabilitation-belief framework described by Taylor and May (1996). Because the adapted 10-item set and its two proposed five-item subscales are not established instruments in the cited article, the complete item wording, scoring rules, and adaptation rationale should be provided in a supplement.
- *Fear of reinjury (11 items)*: Adapted from the shortened Tampa Scale of Kinesiophobia (TSK-11) (Kvist et al., 2005). Items assess somatic fear of movement and pain expectation on a 4-point scale (1 = strongly disagree to 4 = strongly agree), converted to a 5-point equivalent standard for uniform reporting. Score range: 11 to 55, with higher scores reflecting greater kinesiophobia and movement avoidance. Final-sample Cronbach's $\alpha = .82$.
- *Perceived psychological support (7 items)*: Adapted from the Sport Support Brief Scale (SSBS) (Freeman et al., 2011). Items evaluate emotional, informational, and tangible support from coaches,

teammates, and medical staff on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Score range: 7 to 35; higher scores represent greater perceived support. Final sample Cronbach's alpha = .85.

- *Rehabilitation adherence (6 items)*: Adapted from the Sports Injury Rehabilitation Adherence Scale (SIRAS) (Christensen et al., 2010). Items were converted into a 6-item self-report compliance index measuring clinic attendance, adherence to therapist instructions during sessions, and home exercise completion on a 5-point Likert scale (1 = never to 5 = always). Score range: 6 to 30; higher scores reflect greater self-reported rehabilitation compliance. Final sample Cronbach's alpha = .88.

Qualitative measures

Semi-structured interview guides containing 8 open-ended items explored Experiential Barriers, Socio-Cultural Facilitators, and Intervention Design. The guide was content-validated by a panel of senior sports science faculty at Bahir Dar University.

Data analysis

Quantitative analysis

Data were processed using SPSS. Missing data were minimal (<1.5% across all items) and were handled using single mean imputation within each construct subscale. Bivariate relationships among continuous variables were assessed using a complete Pearson correlation matrix. Multiple linear regression assessed associations between the predictors and rehabilitation adherence. Assumptions were evaluated as follows: linearity was examined using plots of standardized residuals against predicted values; residual normality was assessed using P-P plots and the Shapiro-Wilk test ($p > .05$); homoscedasticity was assessed using the Koenker test and residual plots; influential observations were examined using Cook's distance (all values < 0.12); and multicollinearity was evaluated using tolerance (> 0.65) and variance inflation factors (VIFs < 1.54). The Durbin-Watson statistic was 1.88. These diagnostics assess selected assumptions but do not establish overall model stability or address clustering by club.

Because participants were recruited from six clubs, the observations may not have been statistically independent. The estimated intraclass correlation coefficient for adherence was .06; however, with only six clusters and 50 participants, this estimate is imprecise. Ordinary least-squares regression was retained for this exploratory analysis, but neither cluster-robust standard errors nor a multilevel model was used. Consequently, the reported confidence intervals and p values may be overly precise and should be interpreted cautiously. The Durbin-Watson statistic assesses serial correlation and does not address clustering by club.

Qualitative methodology audit trail

Interviews were conducted individually by the principal investigator in private offices at athletic facilities in Amharic. The researcher maintained an empathetic, academic relationship with participants without clinical or management authority over them. Audio recordings were transcribed verbatim in Amharic and translated into English by the primary investigator, with translation accuracy cross-checked by a bilingual senior sports humanities academic. Data were analysed using reflexive thematic analysis following Braun and Clarke's six-phase framework: inductive initial line-by-line coding, generating initial codes, collating codes into potential themes, reviewing themes against raw transcripts, defining and naming themes, and producing narrative reports. Two independent qualitative analysts coded 30% of the transcripts, achieving 88% initial inter-coder agreement; minor coding disagreements were resolved through consensus discussions. Rigor was enhanced through analyst triangulation, reflexivity journaling, and member checking (returning transcript summaries to

4 participants for validation). Information power and thematic saturation were judged as achieved at 10 interviews due to narrow study aim, dense target sample specificity, and recurring pattern redundancy.

Mixed-methods integration

Integration occurred at the interpretation and reporting stage using a joint display approach. Quantitative regression results and qualitative thematic insights were merged side-by-side to assess convergence, divergence, and contextual expansion. Narratives from the 10 purposively selected participants contextualize statistical associations, but they cannot establish that institutional practices caused psychological disruption, that community networks "rescued" adherence, or that economic insecurity directly produced movement avoidance. Interpretations carefully distinguish between measured associations, participant perceptions, and author-proposed conceptual interpretations.

RESULTS AND DISCUSSION

Quantitative results analysis

A multiple linear regression analysis evaluated statistical associations between psychological factors and self-reported rehabilitation adherence among injured Ethiopian football players ($N = 50$).

Descriptive overview

Rehabilitation Adherence demonstrated a moderate mean score of 3.3 ($SD = 0.75$) on a 5-point scale. This aligns with global literature confirming that compliance frequently plateaus during repetitive, long-term physical therapy (Hutt & Tamminen, 2025).

Fear of reinjury had the highest predictor mean ($M = 3.9$, $SD = 0.65$), confirming that movement-related anxiety was highly prevalent in this cohort (Ardern et al., 2024). Conversely, perceived psychological support had the lowest mean ($M = 2.6$, $SD = 1.05$), highlighting a distinct deficit in institutional communication after an athlete was injured.

Bivariate correlation matrix, regression model, and diagnostics

A complete correlation matrix among all predictors and the outcome variable is reported in Table 1. Each psychological predictor was significantly correlated with rehabilitation adherence in the expected direction. Fear of reinjury showed a negative correlation with adherence ($r = -.50$, $p < .01$), whereas motivation ($r = .42$, $p < .01$), self-confidence ($r = .38$, $p < .05$), and psychological support ($r = .33$, $p < .05$) showed positive correlations. Correlations among the predictors were mixed, and the association between fear of reinjury and psychological support was not statistically significant.

Table 1. Pearson correlation matrix among all predictors and rehabilitation adherence ($N = 50$).

Variable	1	2	3	4	5
1. Motivation	—	.46**	-.31*	.38**	.42**
2. Self-confidence	.46**	—	-.38**	.29*	.38*
3. Fear of re-injury	-.31*	-.38**	—	-.22	-.50**
4. Psychological support	.38**	.29*	-.22	—	.33*
5. Rehabilitation adherence	.42**	.38**	-.50**	.33*	—

Note. $N = 50$. * $p < .05$. ** $p < .01$.

The linear regression model was significant, $F(4, 45) = 8.83$, $p < .001$, $R^2 = .44$, adjusted $R^2 = .39$. Table 2 presents the intercept, unstandardized coefficients (B), standard errors (SE), standardized coefficients (β),

95% confidence intervals, and exact p values for each predictor. The diagnostics (tolerance > 0.65, VIF < 1.54, Durbin–Watson = 1.88) evaluate selected assumptions but do not establish overall model stability or substitute for assessing clustering by club.

Table 2. Multiple linear regression model predicting rehabilitation adherence (N = 50).

Predictor	B	SE	β	95% CI for B	p
(Intercept)	1.85	0.45	—	[0.94, 2.76]	<.001
Motivation	0.31	0.11	.35	[0.09, 0.53]	.006
Self-confidence	0.23	0.10	.28	[0.03, 0.43]	.025
Fear of re-injury	-0.46	0.13	-.40	[-0.72, -0.20]	.001
Psychological support	0.16	0.07	.22	[0.02, 0.30]	.028

Note. $F(4, 45) = 8.83$, $p < .001$, $R^2 = .44$, adjusted $R^2 = .39$. Outcome variable: rehabilitation adherence.

Fear of reinjury had the largest negative association with adherence ($B = -0.46$, $SE = 0.13$, $\beta = -.40$, 95% CI [-0.72, -0.20], $p = .001$). Motivation ($B = 0.31$, $SE = 0.11$, $\beta = .35$, 95% CI [0.09, 0.53], $p = .006$), self-confidence ($B = 0.23$, $SE = 0.10$, $\beta = .28$, 95% CI [0.03, 0.43], $p = .025$), and psychological support ($B = 0.16$, $SE = 0.07$, $\beta = .22$, 95% CI [0.02, 0.30], $p = .028$) were positively associated with adherence after adjustment for the other predictors.

Conceptual overlap among psychological predictors

While VIF diagnostics confirm the absence of severe multicollinearity, several positive predictors specifically Motivation ($\beta = 0.35$), Self-Confidence ($\beta = 0.28$), and Perceived Support ($\beta = 0.22$) exhibit natural conceptual overlap. In athletic recovery, confidence and motivation partially reflect shared underlying psychological adaptation processes; an athlete who receives interpersonal reassurance naturally develops higher efficacy and recovery drive. Recognizing these shared variance structures, future studies should employ structural equation modelling (SEM) or mediation analyses to unpack directional and indirect interactions among these factors.

Qualitative themes and participant narratives

Theme 1: Spiritual frameworks as a dual-edge sword

Spiritual worldviews exerted a profound influence on recovery behaviours. Initially, framing an injury as a "divine test" induced external fatalistic attributions, causing behavioural passivity. Through cognitive appraisal theory, viewing trauma as an unalterable sacred mandate led some athletes to delegate recovery entirely to the divine, resulting in physical therapy avoidance.

"When I first tore my ligament, I believed it was God's written decision for me to rest. I missed my early therapy sessions because I felt human effort couldn't alter a divine test. It was only later that my pastor told me that doing my physical exercises was part of honouring my recovery." Participant 4, Professional Midfielder.

As rehabilitation progressed, spiritual coping (prayer, fasting, religious blessings) evolved into a major engine for emotional resilience, buffering against despair during clinical plateaus (Jowett et al., 2025). Fasting periods were repurposed as psychological decompression phases, while sacred community blessings provided outside validation to the isolated athlete. Faith systems thus operated dialectically: initially acting as a cognitive barrier but ultimately maturing into an essential resilience engine.

Theme 2: Institutional vacuum and collectivist mitigators

Qualitative narratives contextualized the low quantitative score for institutional support ($M = 2.6$). Players reported that once injured, club communication ceased rapidly, triggering severe feelings of institutional isolation and identity crisis.

"The moment the doctor said I needed four months out, the club management stopped calling. You realize your worth to them is only when you are running on the pitch. If my family and team captain hadn't visited me daily at home, I would have walked away from football completely." — Participant 7, semi-professional Defender.

To counter this deficit, informal collectivist structures family, neighbourhood coffee circles (*buna* ceremonies), and core teammates stepped in. Applying the "social buffering hypothesis" (Tadesse, 2025), these relational spaces served as active informal rehabilitation sites, translating individual physical trauma into shared community responsibility and protecting athletic identity.

Theme 3: Economic underpinnings of kinesiophobia

Qualitative insights provided vital context for the model's strongest negative association ($\beta = -0.40$). While traditional Western literature frames kinesiophobia as a somatosensory fear of physical pain (Lee et al., 2023), participants explicitly linked movement anxiety to economic survival.

"People think I am afraid of the pain of tearing my muscle again. I am not afraid of pain. I am terrified that if I get hurt again, my contract will be cancelled at the end of the season, and my family will have no income. Every time I jump in therapy, that financial panic stops my legs." — Participant 2, Professional Forward.

In under-resourced leagues lacking player unions or contractual guarantees, movement anxiety is perceived by participants as a protective appraisal of systemic vulnerability. Financial precarity was linked by players to altered motor confidence, over-cautious physical movements, and reduced drill compliance during high-velocity loading.

Mixed-methods integration and framework construction

By merging quantitative metrics with qualitative narratives, this study expands traditional applications of Self-Determination Theory (SDT) in sports (Podlog et al., 2024). In Western models, autonomy and competence are conceptualized as individual psychological capital. In under-resourced, collectivist ecosystems, individual mental agility cannot be isolated from structural precarity; it is maintained via strategic environmental reassurance.

The integrated model uncovers a dynamic tension: while formal sports bodies are perceived by participants to present structural challenges via financial precarity (associated with kinesiophobia, $\beta = -0.40$) and administrative neglect ($M = 2.6$), participants described coping through informal collectivist networks. Competence and motivation ($\beta = 0.35$) are described by participants as being supported by communal support structures.

Architectural synthesis of the integrated theoretical pattern

To formalize this conceptual trajectory, Table 3 maps out how macro-level precarity is proposed to relate to psychological disruption, relational buffering, and ultimate kinesiological adherence. This multi-phase model

is explicitly presented as a preliminary interpretive concept requiring independent validation, not as an established mechanism demonstrated by this study.

Table 3. Conceptual phase progression of the exploratory socioeconomic kinesiophobia framework.

Phase	Conceptual pathway & variable	Statistical weight / empirical metric	Primary behavioural & psychological manifestation
I. Structural input	Institutional vacuum & contract precarity	Perceived Support: $M = 2.6$	Cessation of club contact; immediate exposure to financial precarity and livelihood loss.
II. Psychological response	Socio-economic kinesiophobia (preliminary concept)	Regression Weight: $B = -0.40$	Movement avoidance linked by participants to financial panic rather than pure somatic pain mechanics.
III. Relational mediation	Social & spiritual buffering	Motivation: $\beta = 0.35$ Confidence: $\beta = 0.28$	External generation of recovery drive via family, peers, and buna rituals.
IV. Kinesiological output	Comprehensive adherence	Variance Explained: $R^2 = 0.44$	Final resolution between kinesiological avoidance and communally sustained restoration.

Contextual scope and future trajectories

While providing unique socio-cultural insights, it is vital to emphasize that these findings derive from an illustrative case study of a single national football system. The insights regarding contract vulnerability, institutional neglect, and collectivist buffering map out hypothesis-generating pathways rather than universal laws. Future research should conduct comparative studies across parallel ecosystems in East Africa and the Global South to validate and expand this conceptual model.

Limitations of the study

Several methodological constraints must be noted:

- *Design & causality*: the observational, cross-sectional design, purposive recruitment, small sample, self-report measures, and limited qualitative component do not support causal conclusions or broad generalisation.
- *Sample size and scope*: the modest sample size ($n = 50$) and absence of an a priori power analysis limit statistical power; the quantitative model must be interpreted as exploratory and hypothesis-generating.
- *Sampling & selection bias*: purposive recruitment through club physiotherapists and voluntary participation may have introduced selection bias, and excluding players with pre-existing psychiatric conditions requires clinical justification and introduces resulting selection bias.
- *Clustering & independence*: potential intraclub clustering among players recruited from the same 6 clubs may affect standard errors and significance tests in ordinary least-squares regression.
- *Measurement strategy & common-method bias*: all variables were collected using self-report questionnaires, introducing potential common-method variance and social desirability bias. future studies should incorporate objective adherence measures, such as physiotherapist-rated compliance scales, verified clinical attendance records, and physiological milestone completion metrics.
- *Qualitative sample boundaries*: qualitative findings and the resulting multi-phase framework derive from 10 interviews, representing a preliminary conceptual model that requires formal confirmatory validation.

- *Psychometric validation*: while local translation, back-translation, and pilot testing were conducted, reliability evidence from only some adapted measures is insufficient and full psychometric validation remains needed.

CONCLUSION

This study evaluated the associations between psychological variables and self-reported rehabilitation adherence among injured Ethiopian football players. Within this exploratory sample, fear of reinjury was negatively associated with rehabilitation adherence, whereas motivation, self-confidence, and perceived psychological support demonstrated positive associations.

Qualitative findings highlight how these psychological drivers are intertwined with local socio-cultural realities and economic precarity. The construct labelled "*socioeconomic kinesiophobia*" is presented as a preliminary interpretive concept requiring future independent empirical validation. It illustrates how movement-related anxiety in under-resourced athletic environments may reflect broader anxieties regarding financial instability, short-term contract vulnerability, and livelihood loss rather than somatosensory pain anticipation alone. Conversely, informal collectivist structures and spiritual coping act as crucial relational buffers that sustain athlete motivation and recovery drive.

Given the cross-sectional design, modest purposive sample (N = 50), self-reported measures, and single-system scope, these findings do not support causal inferences or broad generalization. Instead, they provide an exploratory, hypothesis-generating foundation to guide future multi-centre, longitudinal, and intervention-based sports psychology research across under-resourced athletic settings.

Recommendations

The recommendations currently go beyond what was tested, as the study did not evaluate peer-mentoring programmes, mandatory communication schedules, psycho-educational materials, spiritual accommodations, contractual clauses, or financial guarantees. These proposals may be reasonable directions for future research, but they are not presented as interventions shown to be effective by the present data. They are framed as approaches whose feasibility, acceptability, safety, and effectiveness should be examined through co-designed and adequately powered intervention studies involving players, clinicians, clubs, governing bodies, and community representatives:

- *Structured peer-mentoring networks*: future intervention research should evaluate pairing injured players with team captains or veteran athletes who have successfully navigated long-term rehabilitation to test feasibility and acceptability.
- *Structured communication protocols*: studies should examine whether formal mandatory bi-weekly administrative touchpoints during injury periods safely improve perceived institutional support.
- *Spiritual and cultural accommodations*: intervention studies should evaluate adapting therapy schedules around religious fasting periods and accommodating communal support rituals (buna ceremonies).
- *Localized psycho-education*: co-designed studies should examine the effectiveness of translated injury-education materials in major local languages (Amharic, Afaan Oromo) in reducing kinesiological anxiety.
- *Contractual safety nets*: policy evaluation studies involving clubs and governing bodies should investigate the feasibility and effectiveness of baseline player welfare standards and standard injury clauses in mitigating socioeconomic movement anxiety.

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CONFLICT OF INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this manuscript.

ETHICS STATEMENT

Ethical approval for this study was granted by the institutional review board (IRB) of the Bahir Dar University Sport Academy for the research period covering January 2024 through August 2025. Written informed consent was obtained from all participating players prior to data collection, following a detailed explanation of the study objectives, voluntary nature of participation, and the right to withdraw at any time without penalty or loss of benefits. To protect participant confidentiality and anonymity, all collected data were anonymized using unique numerical identifiers, and stored in password-protected, encrypted digital storage accessible only to the primary research team. Safe disclosure safeguards were implemented: interviews discussing injury histories, sensitive health disclosures, contract insecurity, and employment concerns were conducted in private settings by qualified academic personnel, ensuring no individual disclosures or competitive status implications were shared with club managers, coaches, or medical staff.

AI USE DISCLOSURE

In accordance with current publishing ethics and transparency recommendations, artificial intelligence (AI) tools were used solely to assist with translation and language editing, with the aim of improving clarity and readability. No AI tools were used in the generation of scientific content, including the study design, data collection, analysis, interpretation of results, or the formulation of conclusions. The authors retain full responsibility for the content of the manuscript and confirm its originality, integrity, and accuracy.

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