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Review Article

Fear of Reinjury in Athletes After Traumatic Injuries: A Multidisciplinary Review

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Abstract

Introduction: Fear of reinjury (FoR) and kinesiophobia represent significant psychological barriers affecting athletes' return to pre-injury activity levels despite successful physical rehabilitation. This review examines current evidence regarding the prevalence, impact, assessment, and management of FoR in athletes recovering from traumatic injuries. **Methods:** A narrative review was conducted using a structured search of PubMed, Embase, SPORTDiscus, and the Cochrane Library. Studies published between 2005 and 2025 evaluating FoR or kinesiophobia following anterior cruciate ligament (ACL) injury, Achilles tendon rupture, shoulder instability, or other traumatic sports injuries were included. **Results:** FoR consistently emerges as the primary psychological reason for failure to return to sport across multiple injury cohorts, with over 50% of athletes in some samples reporting significant fear. Higher for levels correlate with poorer patient-reported outcomes, altered movement patterns such as gait asymmetry, and increased reinjury risk. Assessment tools like the Tampa Scale of Kinesiophobia (TSK) and Injury-Psychological Readiness to Return to Sport (I-PRRS) scale help identify at-risk athletes, particularly females and amateurs. Effective interventions include cognitive-behavioral strategies, graded exposure, and integrated biopsychosocial rehabilitation programs. **Conclusion:** For is a modifiable barrier requiring routine screening during rehabilitation. Integrating psychological assessment and intervention into standard orthopedic and physiotherapy care may enhance functional recovery, restore confidence, and support safer return to sport.

Keywords: Fear of reinjury, Kinesiophobia, return to sport, Psychological readiness, Athlete rehabilitation, Traumatic injury

Introduction

The successful return of an injured athlete to sport (RTS) remains a central objective in sports medicine. While traditional rehabilitation has emphasized physical parameters like strength, range of motion, and neuromuscular control, accumulating evidence highlights psychological readiness as equally critical [1-4].

Among psychological factors, fear of reinjury (FoR) and kinesiophobia an excessive, irrational fear of movement due to pain or injury have emerged as major obstacles to RTS [5]. Athletes often regain physical function yet remain unable to return to pre-injury performance levels due to apprehension, avoidance behaviors, and diminished confidence [6]. This psychological barrier transcends injury type, affecting individuals after anterior cruciate ligament (ACL) reconstruction, Achilles tendon rupture, shoulder instability, and other significant musculoskeletal injuries [7-9].

This multidisciplinary review consolidates current evidence on FoR in athletes. We examine its prevalence and clinical significance, explore psychological and biomechanical correlates,

review assessment tools, and discuss intervention strategies. By synthesizing insights from orthopedics, sports psychology, and physical therapy, we advocate for integrating psychological care into rehabilitation pathways to improve outcomes and reduce reinjury rates.

Review

Prevalence and Clinical significance of Fear of Reinjury

Fear of reinjury is highly prevalent across sports injuries. In a large cohort of Achilles tendon rupture patients, over half reported meaningful for, correlating with lower Achilles Tendon Total Rupture Scores (ATRS) and reduced post-injury activity levels [8]. Following ACL reconstruction, FoR frequently represents the main psychological reason for failing to resume competitive sport, sometimes outweighing residual physical limitations [10].

The impact extends beyond sport avoidance. Among athletes with shoulder instability, those who returned to sport demonstrated higher Shoulder Instability-Return to Sport after Injury (SI-RSI) scale scores compared to non-returners (48.40–79.10 vs. 36.40–65.34), underscoring the role of psychological readiness in functional recovery [7]. Similarly, in military personnel after pectoralis major repair, 58.3% avoided bench-pressing at pre-injury loads due to for despite favorable objective outcomes, suggesting fear may limit performance even in highly conditioned populations [11] (Table 1).

Injury type	Reported prevalence of significant FoR/kinesiophobia	Key impact on RTS/outcome	Reference
Achilles tendon rupture	>50% of patients	15-point lower median ATRS; primary reason for not returning to sport	[8]
ACL reconstruction	Leading psychological barrier	Strongest predictor of failure to return to competitive sport; associated with gait asymmetry	[10]
Shoulder stabilization	Common significant factor	Lower SI-RSI scores in non-returners; FoR identified as key barrier to RTS	[7]
Pectoralis major repair	58.3% avoid pre-injury loads	Decreased perceived strength potentially related to fear rather than structural limitations	[11]
Various lower extremity injuries	Up to 67% in chronic cases	Positive correlation with reinjury anxiety ($r=0.579$, $p<0.01$)	[18]

Table 1: Prevalence and impact of fear of reinjury across selected injuries.

Psychological and Biomechanical Correlates

Kinesiophobia and Pain Catastrophizing: For frequently co-occurs with pain catastrophizing an exaggerated negative cognitive response to pain. In shoulder arthroscopy patients, those with pain catastrophizing reported higher kinesiophobia and poorer postoperative functional outcomes [12]. These cognitive-emotional factors promote hypervigilance and avoidance, reinforcing maladaptive behaviors.

Biomechanical Alterations: For manifests in observable movement changes. After ACL reconstruction, individuals with high fear scores demonstrate gait asymmetries in vertical ground reaction forces and muscle activation patterns, potentially increasing reinjury susceptibility [13]. Similarly, athletes with Achilles tendon ruptures who report for exhibit altered joint power distribution during drop jumps two years post-injury, shifting load from ankle to knee and hip [14]. These findings indicate for expresses itself through protective movement strategies.

Impact on return-to-sport Decisions: Beyond biomechanics, for influences confidence and risk appraisal. In a prospective soccer study, higher reinjury anxiety and lower self-confidence predicted increased lower extremity reinjury incidence, with each anxiety increment raising injury odds substantially [15]. This supports viewing psychological state as a measurable risk factor for subsequent injury.

Assessment of Fear of Reinjury

Early structured assessment identifies athletes at psychological risk during rehabilitation. Several validated patient-reported outcome measures are commonly used:

Tampa Scale of Kinesiophobia (TSK/TSK-11): Assesses fear of movement/(re)injury; scores >37 often indicate clinically significant kinesiophobia [16].

Athlete Fear Avoidance Questionnaire (AFAQ): Captures sport-related fear and avoidance behaviors [17].

Injury-Psychological Readiness to Return to Sport (I-PRRS) scale: Brief 6-item measure of confidence and readiness for RTS [6].

Pain Catastrophizing Scale (PCS): Evaluates negative pain-related cognitions associated with higher FoR. [12].

Shoulder Instability-Return to Sport after Injury (SI-RSI) scale: Measures psychological readiness specific to shoulder instability [7] (Table 2).

Tool	Constructs measured	Items	Key features
Tampa Scale of Kinesiophobia (TSK)	Fear of movement/(re)injury	17-Nov	Widely used; flexible cut-offs
Athlete Fear Avoidance Questionnaire (AFAQ)	Sport-injury specific fear & avoidance	10	Developed for athletic populations
I-PRRS scale	Psychological readiness for RTS	6	Brief; useful for serial monitoring
Pain Catastrophizing Scale (PCS)	Maladaptive pain cognitions	13	Identifies pain beliefs driving FoR
SI-RSI scale	Readiness after shoulder instability	12	Condition-specific; predicts RTS likelihood

Table 2: Common assessment tools for fear of reinjury and related constructs.

Intervention and Management Strategies

Addressing FoR requires proactive, coordinated strategies within rehabilitation.

Psychological Interventions

Cognitive-behavioral therapy (CBT): Challenges catastrophic thoughts about pain, vulnerability, and movement.

Graded exposure: Stepwise reintroduction of feared movements and sport-specific tasks to build confidence.

Motivational interviewing (MI): Collaborative conversation to strengthen rehabilitation motivation.

Imagery and mental skills training: Visualization of successful performance to enhance self-efficacy.

Integrated Biopsychosocial Rehabilitation

Education and reconceptualization: Clear explanation of tissue healing and safe loading reduces perceived threat.

Multidisciplinary communication: Regular dialogue among surgeons, physiotherapists, athletic trainers, and psychologists ensures consistent messaging.

Goal setting and mastery experiences: Realistic, time-bound goals support self-efficacy and reduce FoR.

Biomechanical and Physical Strategies

Biofeedback and wearable technology: Real-time feedback on symmetry and load demonstrates movement safety.

Sport-specific drills and RTS Testing: Structured progression guided by objective criteria bridges clinic-competition gaps.

Discussion

This review emphasizes that fear of reinjury should be regarded as a core rehabilitation target rather than a secondary consideration. Several themes carry important clinical and research implications.

Integration of findings: Across ACL reconstruction, Achilles tendon rupture, and shoulder instability, for consistently emerges as the dominant psychological barrier to RTS. Its associations with poorer patient-reported outcomes, biomechanical alterations, and higher reinjury risk demonstrate concrete clinical consequences beyond subjective concern. These observations align with fear-avoidance models where pain-related fear drives avoidance and disability [5].

Clinical implications: The high for prevalence argues for routine psychological screening during rehabilitation. Relying solely on physical criteria may miss psychologically unprepared athletes. Incorporating tools like the TSK and I-PRRS at multiple time points can identify at-risk individuals, particularly females, amateurs, and those with pain catastrophizing. An integrated biopsychosocial model combining education, cognitive-behavioral strategies, and graded exposure with physical rehabilitation provides a practical framework.

Research Gaps and Future Directions: Several areas require further exploration. Injury- and sport-specific assessment protocols need refinement, as scales like the TSK may not operate identically across all populations [16]. High-quality intervention

trials comparing different psychological approaches are needed. Longitudinal research tracking FoR throughout rehabilitation is limited, though existing work shows psychological factors evolve over time [20]. Social and environmental influences including coaching behavior and team culture likely shape for but remain understudied.

Multidisciplinary Collaboration: Optimal for management requires coordinated input from sports medicine physicians, orthopedic surgeons, physiotherapists, athletic trainers, and psychologists. Incorporating basic psychological assessment skills into rehabilitation professionals' training would help ensure consistent FoR recognition and management.

Limitations: As a narrative review, this work is subject to selection bias despite structured searching. Included studies vary in design, sample size, and outcome measures, restricting direct comparison. Most research focuses on lower extremity injuries, leaving upper limb and trunk injuries underrepresented. Cultural factors influencing for expression are insufficiently addressed.

Conclusions

Fear of reinjury is a common, modifiable, and often decisive factor determining athletes' return to sport and post-injury performance. It measurably influences symptoms, function, movement patterns, and reinjury risk. Routine use of brief, validated measures like the TSK and I-PRRS at baseline and follow-up visits should become standard in RTS decision-making. Effective management requires team-based biopsychosocial approaches integrating physical rehabilitation with education, graded exposure, and cognitive restructuring. Future work should refine sport-specific protocols, broaden psychological training for rehabilitation professionals, and test targeted interventions in robust clinical trials. By addressing FoR alongside physical recovery, clinicians can facilitate not only return to play but also help athletes return with greater confidence and resilience.

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