

Research paper

# Distinguishing Reinjury Anxiety from Fear of Reinjury in Athletes: Insights from Ten Years of Research – A Systematic Review

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## ABSTRACT

Reinjury anxiety and fear of reinjury are key psychological constructs influencing athletes' recovery and return-to-sport outcomes. Although increasingly examined in sport psychology, their theoretical distinction remains unclear. This systematic review aimed to clarify their conceptual boundaries and identify associated psychological, demographic, and clinical correlates. A comprehensive search was conducted in seven databases—Medline, PsyArticles, PsycINFO, SportDiscus, SocINDEX, Web of Science, and Scopus—for peer-reviewed quantitative studies published in English between January 2014 and December 2024. Of 2,825 articles screened, fifteen met the inclusion criteria. Risk of bias was assessed using a 17-item standardized checklist. Results suggest that reinjury anxiety is mainly associated with psychological traits and injury-related factors, such as injury type and severity. In contrast, fear of reinjury is more commonly linked to sociodemographic and medical characteristics. Conceptually, reinjury anxiety is defined as an anticipatory, cognitively driven response to the possibility of future injury, whereas fear of reinjury is characterized as an immediate emotional reaction to perceived physical threat. A narrative synthesis was used to integrate findings. Limitations include heterogeneity in measurement tools, sample variability, and definitional ambiguity. No external funding was received, and the review was not registered.

## 1. Introduction

The process of returning to athletic participation following an injury is often accompanied by substantial psychological hurdles, with reinjury anxiety and fear of reinjury emerging as two of the most commonly reported concerns. These psychological responses are frequently linked to an elevated risk of subsequent injury, diminished athletic performance, and prolonged rehabilitation timelines. Empirical findings have associated reinjury anxiety with a heightened likelihood of recurrence in post-rehabilitation athletes [1], whereas fear of reinjury has been evidenced through behavioral indicators such as withdrawal, cautious participation, and the adoption of protective motor patterns during activity [2]. While these two terms are often treated as synonymous, recent research indicates that they represent distinct psychological processes. Reinjury anxiety involves a cognitively driven emotional state, centered on the anticipation of negative consequences. In contrast, fear of reinjury typically arises as an immediate emotional response to a perceived situational threat. This conceptual ambiguity makes it more difficult to isolate key contributing factors or to design interventions tailored to each construct. For instance, some studies have found that a lack of psychological readiness to return to sport is more strongly related to fear of reinjury [3], [4], whereas others highlight a closer link with heightened levels of reinjury anxiety [5]. Additional distinctions have been identified in relation to the factors associated with each construct. Coping mechanisms appear to be more strongly linked to reinjury anxiety, whereas variables such as age, gender, and athletic experience tend to be more closely associated with fear of reinjury [6]. Nevertheless, the boundary between these two constructs remains blurred, largely due to inconsistent terminology and usage across existing research.

Even after receiving medical clearance, many athletes continue to report feelings of anxiety and fear concerning the possibility of reinjury, underscoring the enduring psychological impact of such concerns [6]–[4]. In addition, athletes frequently describe fear of

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reinjury as one of the most prominent psychological stressors they face when returning to competitive sport, [5]. In response to these challenges, the present review pursues two central objectives: first, to systematically examine the main factors associated with reinjury anxiety and fear of reinjury; and second, to delineate the conceptual boundaries between these constructs by drawing on both theoretical definitions and empirical findings.

## 2. Materials and Methods

This review examined peer-reviewed empirical studies published between January 2014 and December 2024, ensuring an up-to-date synthesis of theoretical and clinical developments regarding reinjury anxiety and fear of reinjury in sport settings. The review protocol was developed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines [12].

## 3. Search Strategy

A comprehensive search strategy was developed to capture relevant literature across multiple disciplines. Seven electronic databases were systematically searched: Medline, PsyArticles, PsycINFO, SportDiscus, SocINDEX, Web of Science, and Scopus. The search terms included combinations of keywords and expressions such as: "reinjury", "fear", "anxiety", "injury", "concern", "uncertainty", "worry", "sports", "athletes", and Boolean phrases like "fear of reinjury", "reinjury anxiety", and "return to sport". Grey literature, including academic theses and relevant book chapters, was also included. Reference lists of the selected articles were reviewed to identify additional sources.

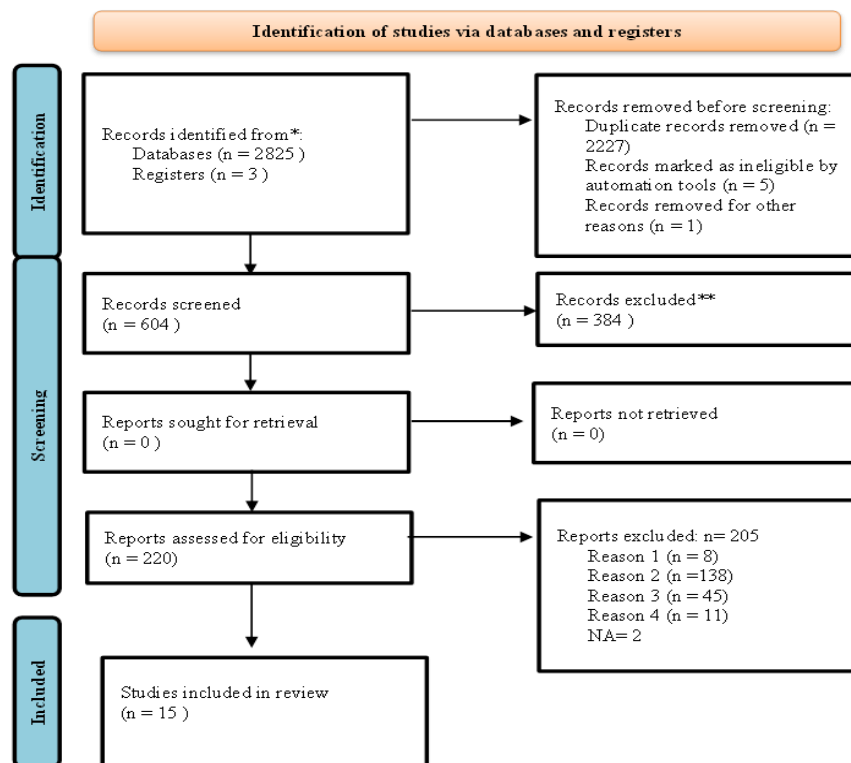


FIG. 1. Flow diagram of study selection process.

TABLE 1: SEARCH TERMS AND EXPRESSIONS

Databases	Search terms and expressions (including truncations)
Medline psyarticles psyinfo sportdiscuss; socindex	Sport* inj* OR 'athlet* inj*' AND worry OR scare* OR emotion* AND emotion* OR recover* OR outcome* OR return Fear AND reinjury Anxiety AND reinjury (Fear OR anxiety) AND reinjury AND sport
Web of science scopuss	Reinjury AND emotion Fear AND anxiety AND sport AND injury (Fear OR anxiety) AND reinjury AND sport Return to sport AND (anxiety OR fear)

### 3.1 Eligibility Criteria

Inclusion criteria were: (i) articles published in English or French, (ii) studies focusing on athletes returning to sport following injury, (iii) quantitative assessment of reinjury-related fear or anxiety, and (iv) inclusion of psychological constructs in the analysis. Exclusion criteria included: (i) non-English/French publications, (ii) qualitative designs or reviews, (iii) articles not targeting fear or anxiety related to reinjury, and (iv) studies involving non-athletic populations (Table 2).

**TABLE 2: SELECTION CRITERIA**

Inclusion criteria	Exclusion criteria
articles published in English or French	studies published in languages other than French or English
focusing on post injury or reinjured athletes and return to sport after injury	qualitative studies, literature reviews, letters to the editor, or validation studies
quantitative measuring post injury (fear or anxiety)	studies that did not specifically address fear of reinjury or reinjury anxiety
studies focused on athletes	studies did not focus on athletes

### 3.2 Data Extraction and Synthesis

Key data from the selected studies were systematically extracted and synthesized to ensure a coherent and comprehensive comparison across research findings. This included detailed information on authorship, study design (e.g., cross-sectional, longitudinal), sample characteristics such as participant demographics and sport disciplines, and the measurement instruments used to assess reinjury-related psychological responses. The primary outcomes and conceptual focus of each study—specifically whether the emphasis was on fear of reinjury or reinjury anxiety—were carefully identified and categorized. Particular attention was devoted to examining how each study defined and operationalized these constructs, highlighting both theoretical interpretations and applied measures. This process facilitated a nuanced understanding of the ways in which reinjury anxiety and fear of reinjury have been addressed across different research contexts.

### 3.3 Assessment of Evidence Level

The methodological quality of included studies was evaluated by two independent reviewers using a five-tier evidence hierarchy, with Level I indicating the highest quality. Discrepancies were resolved through consensus or, when necessary, adjudicated by a third reviewer. Only studies rated as Level I, II, or III were retained. (Table 3)

**TABLE 3 :LEVEL OF EVIDENCE OF INCLUDED STUDIES**

studies	Author 1	Author 2	Author 3	Final décision
<u>Caumeil et al( 2024)</u>	<u>Level II</u>	<u>Level II</u>		<u>Level II</u>
<u>Nadery et al (2024)</u>	<u>Level II</u>	<u>Level II</u>		<u>Level II</u>
<u>Oconer et al (2022)</u>	<u>Level II</u>	<u>Level II</u>		<u>Level II</u>
<u>Frodsky et al (2022)</u>	<u>Level III</u>	<u>Level III</u>		<u>Level III</u>
<u>Oconer et al (2021)</u>	<u>Level III</u>	<u>Level III</u>		<u>Level III</u>
<u>Anderson et al(2019)</u>	<u>Level I</u>	<u>Level I</u>		<u>Level I</u>
<u>Trigsted et al (2018)</u>	<u>Level III</u>	<u>Level III</u>		<u>Level III</u>
<u>Paterno et al (2017)</u>	<u>Level I</u>	<u>Level I</u>		<u>Level I</u>
<u>Covassin et al (2015)</u>	<u>Level I</u>	<u>Level I</u>		<u>Level I</u>
<u>Gignacet al (2015)</u>	<u>Level II</u>	<u>Level I</u>	<u>Level II</u>	<u>Level II</u>
<u>Lenz et al (2015)</u>	<u>Level III</u>	<u>Level III</u>		<u>Level III</u>
<u>Covassin et al. (2014)</u>	<u>Level I</u>	<u>Level III</u>	<u>Level III</u>	<u>Level III</u>
<u>Yang, Schaeffer et al. (2014)</u>	<u>Level I</u>	<u>Level I</u>		<u>Level I</u>
<u>Yang et al. (2014)</u>	<u>Level II</u>	<u>Level II</u>		<u>Level II</u>
<u>Wadey et al (2014)</u>	<u>Level I</u>	<u>Level II</u>	<u>Level III</u>	<u>Level III</u>

### 3. 4 Risk of Bias Evaluation

Risk of bias was assessed using an adapted checklist from Williamson et al. (2008), covering three domains: (1) study design and implementation (items 1–9), (2) outcome measurement validity and reliability (items 10–13), and (3) handling of prognostic factors and reporting of statistical results (items 14–17). Each item was scored as "satisfactory" or "unsatisfactory". Studies were classified into three categories based on percentage scores: low risk ( $\geq 75\%$  in all domains), moderate risk ( $\geq 50\%$  in all), and high risk ( $< 50\%$  in any domain). Disagreements were resolved by consensus or with a third reviewer (Table 4).

TABLE 4: RISK OF BIAS ASSESSMENT

articles	Study characteristics Items 1 to 9	Outcomes measures Items 10 to 13	Prognostics factors and results Items 14 to 17	Total scores	Risk of bias
Caumeil et al (2024)	9/9 = 100%	3/4= 75%	4/4 = 100%	16/17=94%	Low risk of bias
Nadery et al .2024	5/9=55.56%	3/4=75%	2/4=50%	10/17= 58%	Moderate risk of bias
Occoner et al 2022	8/9=89%	3/4=75%	3/4=75%	14/17=82%	low risk of bias
Frodsky et al 2022	9/9 = 100%	3/4=75%	4/4 = 100%	16/17=94%	Low risk of bias
Occoner et al 2021	6/9=66.7%	3/4=75%	2/4=50%	11/17=64.71%	Moderate risk of bias
Anderson et al 2019	7/9=78%	4/4 =100%	2/4=50%	13/17=76.47%	low risk of bias
Trigsted et al 2018	5/9=55.56%	4/4=100%	4/4=100%	13/17= 86.67%	Low risk of bias
Paterno et al 2017	7/9=78%	4/4=100%	4/4=100%	15/17= 88.24%	Low risk of bias
Covassin et al 2015	6/9=66.7%	3/4=75%	3/4=75%	12/17=70.59%	Moderate risk of bias
Gignac et al 2015	8/9=89%	4/4=100%	4/4=100%	16/17=94%	Low risk of bias
Lenz et al 2015	7/9=78%	4/4=100%	4/4=100%	15/17= 88.24%	Low risk of bias
Covassin et al 2014	8/9=89%	3/4=75%	3/4=75%	14/17=82.835%	Low risk of bias
Yang et al 2014	5/9=55.56%	4/4=100%	4/4=100%	13/17 = 86.67%	Low risk of bias
Yang et al 2014	9/9 = 100%	4/4=100%	4/4=100%	17/17=100%	Low risk of bias
Wadey et al 2014	8/9=89%	4/4=100%	3/4=75%	16/17=94%	Low risk of bias

### 4. Results

The initial search yielded 2791 articles across database, including Medline (N=1287), Sportdiscuss (N=1034), Psycinfo (N=168), Psycarticles (N=162), Socindex (N=38), Web of science (N=12), Scopus (N=126). After a title screening and duplicate removed 604 articles were selected for further review and following the abstract review 220 articles were retained for consideration. Following the application of inclusion and exclusion criteria; 204 articles were excluded with the breakdown as follows: 8 for criterion (i); 138 for criterion (ii); 45 for criterion (iii) and 11 for criterion (iv) and 2 for NA reason. In the end fifteen articles fulfilled all the inclusion criteria. In the 15 reviewed studies a total of 3111 participants were included; sample size ranged from 30 to 400 participants. The studies involved divers' samples of injured athletes or previously injured athletes encompassing both male and females across various sports. The studies included athletes at different stage of recovery notably those undergoing reathletisation, the majority of participants were over 18 years of age, with a representation of collegiate and high school athletes. The mean age of within the sample ranged from 16.2 to 25.2 years, illustrating a wide age distribution. The population encompassed soccer players, American football players and others field of practice and differences type of injuries including acl reconstruction and concussion and others type of injuries reflecting a comprehensive overview of the type of injuries experienced and the varying recovery trajectories. This diversity underscore the multifaceted nature of reinjury anxiety and fear of reinjury which are critical consideration for athletes as theirs transition back to participate.

The studies in this review employed a range of research designs, highlighting the diversity of methodological approaches used to explore reinjury anxiety and fear of reinjury in athletes. Several authors including Caumeil et al. [9] and Naderi et al. [10] utilized prospective cohort designs allowing for the tracking of participants over time to observe outcomes related to reinjury anxiety. Similarly,

Paterno et al. [11] and Yang et al. [1] applied longitudinal prospective cohort approaches, offering a temporal analysis of these psychological factors. Furthermore, strengthening the temporal analysis of these psychological factors would provide valuable insights. In contrast, several studies such as those by Forsdyke et al. [13], Trigsted et al. [14], Covassin et al. [15], and Wadey et al. [5] employed cross-sectional designs, offering a detailed snapshot of athletes' experiences at specific time points. Longitudinal methods, as used by Anderson et al. [16], Covassin et al. [17], Gignac et al. [18], and Yang et al. [12], offered valuable insights into the progression of reinjury anxiety over time. Lenz et al. [19] adopted a case-control design, focusing on comparing groups to uncover differences in psychological responses post-injury. The cohort study by O'Connor et al. [20] also contributed a unique perspective, focusing on medium-term outcomes. This variety in study designs enhances the comprehensive understanding of determinants and characteristics of reinjury anxiety and fear of reinjury, allowing for a nuanced analysis of these complex psychological constructs.

When considering assessment methodologies across these studies, researchers utilized various validated tools to capture the intricacies of reinjury anxiety and fear of reinjury in athletes. Caumeil et al. [9] and Naderi et al. [10] applied the Reinjury Anxiety Inventory (RIAI), a validated tool designed to assess anxiety related to reinjury, thereby highlighting its psychological impact on athletes. Similarly, O'Connor et al. [20] and Wadey et al. [5] incorporated the RIAI in their evaluation, focusing on the integration of the athletes' return-to-sport experiences to provide a more comprehensive assessment of reinjury anxiety. In studies by Anderson et al. [16], Trigsted et al. [14], and Paterno et al. [11], the Tampa Scale for Kinesiophobia (TSK), in both its 11-item and 17-item versions, was employed, highlighting its widespread use in capturing kinesiophobia, a prevalent aspect of fear of reinjury. For a broader understanding of general anxiety, Yang et al. [1] and Covassin et al. [15] quantitatively measured anxiety after injury using the State-Trait Anxiety Inventory (STAI). While the STAI is not specific to reinjury anxiety, its application in these studies provides valuable insights into the overall anxiety profile of athletes during rehabilitation, complementing the exploration of reinjury-related psychological factors.

Additionally, Gignac et al. [18] utilized the anterior cruciate ligament quality of life (ACL-QoL) scale to understand the injury's impact on athletes' quality of life, encompassing physical, emotional, and psychological dimensions post-ACL reconstruction. Covassin et al. [17] also included a simple Likert-type scale to gauge fear levels, demonstrating a more straightforward approach for initial assessment. This combination of specialized and general tools reflects the comprehensive strategies researchers have adopted to assess fear and anxiety related to reinjury in athletes, highlighting the nuanced psychological challenges encountered during rehabilitation and return to sport.

When examining the sociodemographic determinants, findings indicate a general trend of diminishing fear over time [9], [10], [4]. Gender has been identified as a significant predictor, with several studies noting that women tend to experience higher levels of fear and anxiety concerning re-injury compared to men [13], [16], [14]. However, studies by Paterno et al. [11] and Covassin et al. [15] did not support this conclusion.

Age also emerged as a predictor; while some research links younger athletes with heightened fear of reinjury and readiness to return to sport [18], other studies have not found a significant relationship between age and fear of reinjury [19].

Moreover, the specificity of sport practice plays a significant role. Athletes involved in higher-risk activities often report varying levels of reinjury anxiety and fear of reinjury, with lower fear levels observed in sports associated with a high risk of knee injury [15], [1]. The level of participation upon returning to sport is also significant; athletes reporting intense anxiety about reinjury are less likely to compete at their pre-injury level [5]. Conversely, those who successfully return to their pre-injury performance, tend to experience reduced fear and anxiety of reinjury compared to those playing at lower participation levels [10], [13].

Injury specificity is a key factor influencing psychological outcomes among athletes, particularly in the context of reinjury anxiety or fear of reinjury. Studies consistently indicate that type and severity of an initial injury significantly influence an athlete's psychological response during the rehabilitation and return-to-sport phases [9], [10]. For instance, athletes recovering from high-stakes injuries, such as those involving ligaments or tendons, often exhibit heightened levels of reinjury anxiety due to the perceived severity and long-term implications of these injuries [4]. This anxiety may stem from the expectation of the physical limitations that could arise from a reinjury, impacting the athlete's confidence in their ability to regain their pre-injury self-efficacy and performance levels.

Conversely, athletes recovering from less severe injuries may experience a different manifestation of fear of reinjury. Although their emotional responses are generally less intense compared to those recovering from severe injuries, the fear remains significant enough to influence their readiness to return to sport [14], [11]. The emotional weight of fear can vary, often creating substantial psychological barriers associated with the physical demands and risk inherent in their sport [15], [18].

Moreover, the specificity of the injury significantly influences the coping strategies employed by athletes. Those with injuries that carry a high risk of recurrence often exhibit more pronounced avoidance behaviors and heightened vigilance, which can exacerbate fear of reinjury [19], [17]. In contrast, athletes recovering from injuries perceived as less threatening may focus on regaining confidence, with less emphasis on fear-related avoidance [1], [12], [5].

The literature consistently highlights that fear of reinjury and reinjury anxiety significantly impact athletes' psychological readiness to return to sport. Many studies have found a strong correlation between high levels of reinjury anxiety and the likelihood of returning to pre-injury performance levels [9], [10], [13], [4], [13]. Athletes experiencing intense fear often report increased anxiety, which can hinder their rehabilitation process and affect their overall performance [16], [14], [11].

Various factors contribute to the levels of fear and anxiety, including the nature of injury, the duration of recovery, and previous experiences with injuries [15], [18], [19]. Some studies noted that athletes with prior injuries exhibit heightened fear of reinjury, suggesting that past experiences strongly influence psychological states [17], [1], [12], [5].

Moreover, the relationship between fear of reinjury and psychological constructs, such as perceived stress and coping strategies, has been emphasized [9], [10]. Athletes employing effective coping mechanisms tend to report lower anxiety levels and fear of reinjury, indicating that psychological resilience plays a critical role in managing these fears [13], [4], [13].

In studies that explore various psychological responses in athletes, fear of reinjury is commonly defined as an emotional response to perceived threats related to physical harm upon returning to sport. This concept is described as a response triggered by exposure to situations that remind athletes of their initial injury, leading to feelings of vulnerability and heightened awareness of potential harm [9], [10], [13], [4]. Fear of reinjury is rooted in the immediate perception of physical risk and is often characterized by an instinctual, emotional reaction to cues that could signal potential reinjury.

Other studies, such as those by Trigsted [14] and Paterno [11], emphasize the situational nature of fear of reinjury, suggesting that it is activated when athletes are physically or mentally placed in contexts that resemble their initial injury scenarios. This can occur when engaging in high-intensity activities or performing specific movement patterns. Gignac et al. [18] and Covassin et al. [17] highlight that this fear is closely linked to the athlete's sense of physical safety, being more about an immediate emotional response to perceived injury-related threats than concerns over long-term consequences.

Expanding on previous research concerning fear of reinjury, the notion of reinjury anxiety introduces a more explicitly cognitive dimension, marked by a persistent focus on the possible negative outcomes of returning to sport. Scholarly work in this area presents reinjury anxiety as a sustained anticipatory state. Caumeil et al. [9], for example, describe it as a blend of cognitive and emotional processes that surpass the scope of immediate physical risk, often undermining athletes' self-confidence and psychological preparedness. In a similar vein, Nadery et al. [10] underscore the prolonged cognitive preoccupation that athletes experience, noting its potential to disrupt decision-making and delay competitive reintegration. Oconer [13] further propose that reinjury anxiety may interfere with mental resilience during both the rehabilitation phase and return-to-play progression, particularly when anxiety is shaped by perceived injury severity and projected impact on performance. Frodesky et al. [4] add to this perspective by noting that such anxiety often reflects deeper concerns related to long-term physical capability and professional athletic sustainability.

Collectively, these findings characterize reinjury anxiety as a multifaceted anticipatory state that integrates both cognitive and emotional dimensions, primarily oriented toward the perceived consequences of sustaining another injury. As such, this form of anxiety may represent a substantial psychological obstacle, potentially hindering athletes' mental readiness and adaptive processes throughout their return-to-sport transition.

In summary, the results highlight the nuanced distinctions and overlapping factors that influence both fear of reinjury and reinjury anxiety among athletes. The findings demonstrate how socio-demographic factors, sport-specific contexts, and injury characteristics uniquely shape athletes' psychological responses. By analysing the cognitive and emotional components across various studies, it becomes clear that both fear of reinjury and reinjury anxiety are critical determinants influencing the return-to-sport process.

## 5. Discussion

This review synthesizes recent evidence from the past ten years to distinguish reinjury anxiety from fear of reinjury, two psychological responses that are frequently conflated but conceptually distinct. These two constructs have been consistently recognized as influential psychological elements impacting athletic recovery and readiness for sport reintegration. The review's analysis of current studies emphasizes the diverse predictors, emotional processes, and practical consequences associated with each constructs throughout the rehabilitation and return-to-play phases.

Distinctions between reinjury anxiety and fear of reinjury :

Finding indicate that athletes commonly experience both reinjury anxiety and fear of reinjury when resuming sport after injury, though each presents distinct psychological characteristics, while simultaneously clarifying critical yet often overlooked distinctions between these closely related constructs.

While earlier studies often merged the two terms, subtle yet important distinctions between them have been insufficiently clarified.

Earlier foundational works, such as those by Podlog and Eklund [24] and Wiese-Bjornstal [23], highlighted the pervasive nature of psychological responses following injury, emphasizing the emotional and cognitive challenges athletes encounter during rehabilitation and return to sport. However, these earlier works did not explicitly examine the subtle divergences between reinjury anxiety and fear of reinjury.

In line with the present review's findings, many athletes report elevated levels of anxiety when anticipating a possible reinjury. A crucial distinction revealed is that reinjury anxiety tends to emerge as a forward-looking emotional-cognitive response, often resulting in behavioral patterns such as avoidance, hesitation, or overly cautious movements aimed at minimizing perceived future risk. This anticipatory anxiety is shaped by internal concerns about the potential physical, psychological, and performance-related consequences of another injury. These concerns can significantly affect athletes' decision-making, coping strategies, confidence levels, and motivation to regain their pre-injury performance capacity. Similar observations have been made in earlier research, where anxiety surrounding reinjury was found to influence not only behavioral readiness but also emotional resilience during rehabilitation [30].

Conversely, fear of reinjury tends to manifest as a sudden and intense emotional reaction in response to real or perceived physical threats. This immediate reaction functions as a self-protective response, often accompanied by intense emotional states like panic or heightened distress, particularly when athletes perceive a threat to their physical safety. Unlike reinjury anxiety, which is anticipatory and sustained, fear of reinjury arises abruptly in reaction to situational cues or high-risk contexts, such as executing a demanding movement or re-engaging in environments associated with prior injury.

This distinction between a forward-looking anxiety response and an immediate fear reaction highlights the nuanced ways in which injury-related psychological responses can influence athletic recovery and performance. This perspective aligns with the foundational work of Podlog and Eklund [25], [24] and Wiese-Bjornstal [23], who emphasized the complex and multifaceted nature of psychological responses in athletes returning to sport after experiencing injury.

Drawing on foundational studies published before 2014, it becomes clear that despite substantial advancements in the psychological understanding of athletic injury, the conceptual boundary between anxiety and fear remains insufficiently defined. Pioneering work by Brewer and his collaborators [29], [28], [27], [30], [26] consistently demonstrated the prominence of anxiety in injured athletes and emphasized how emotional responses frequently precipitate avoidant behaviors as a psychological defence mechanism. In particular, Brewer et al. [30] underscored the necessity of integrating emotional considerations into rehabilitation frameworks, noting that athletes routinely report complex emotional states—such as fear, uncertainty, and frustration—that can significantly interfere with both the recovery process and the psychological readiness to resume sport. These early investigations laid essential groundwork for the recognition of psychological dimensions in injury rehabilitation, suggesting that mental recovery is no less critical than physical restoration.

Despite the growing interest in psychological responses to sports injury, earlier studies often failed to draw a clear theoretical distinction between reinjury anxiety and fear of reinjury, frequently using the terms interchangeably or as overlapping constructs. Podlog and



Eklund [24] for example, acknowledged the prevalence of emotional distress following injury, yet did not clarify whether this distress stemmed from anticipatory concerns about future injuries or from immediate fear in response to situational threats. Addressing this conceptual ambiguity, the present review aims to provide a more refined differentiation between these two emotional responses that emerge during the post-injury period.

Determinants of reinjury anxiety and fear of reinjury :

This review confirms that distinct factors tend to predominantly influence each construct, a finding consistent with previous research. Reinjury anxiety, as evidenced herein, appears to be closely shaped by psychological variables such as coping mechanisms, perceived self-efficacy, and the availability of social support.

Foundational studies by Walker et al. [31] and Tripp et al. [32] similarly emphasized that athletes' beliefs in their ability to manage and adapt post-injury are directly linked to the intensity of reinjury-related anxiety. Furthermore, injury severity and injury type emerged as salient predictors; more serious injuries are often accompanied by elevated levels of reinjury anxiety, largely due to apprehensions regarding long-term functional impairment [9], [10], [13].

Earlier investigations, such as those by Heil [33] and Bianco et al. [34], reported that athletes recovering from injuries perceived as potentially career-threatening often experienced persistent anxiety related to the risk of reinjury. In contrast, fear of reinjury appears to be shaped more strongly by contextual and sociodemographic variables, as well as medical and physiological characteristics—including the type of injury, biomechanical implications, and time lost from sport. Notably, sex-based differences in fear levels have been well documented, with female athletes consistently reporting greater fear responses. This disparity may be attributed to variations in emotional regulation and perceived risk. Such findings are consistent with prior work by Young and White [35] and Chase et al. [36], who emphasized the influence of sex-related psychological processes on fear intensification. Additional factors, including the athlete's age, sport discipline, and injury severity, also contribute to variations in fear intensity. For instance, research by Pedersen. [38] and Weiss and Troxel [37] revealed that younger athletes often display heightened protective behavior, potentially due to increased feelings of vulnerability to subsequent injury.

The findings presented in this review highlight that each construct—reinjury anxiety and fear of reinjury—is associated with a distinct set of determinants. Research focused on reinjury anxiety has largely examined the influence of psychological variables, demographic characteristics, and injury-specific elements such as the type and circumstances of the injury. Interestingly, none of the reviewed studies investigated how physiological or medical parameters might contribute to reinjury anxiety. On the other hand, studies addressing the determinants of fear of reinjury tended to focus on variables like time away from sport, knee-related quality of life, perceived susceptibility to reinjury, and pain. In addition, demographic aspects such as sex and age, alongside clinical factors including surgical history and recovery timelines, were frequently assessed in relation to fear of reinjury.

This observation underscores the disciplinary divide in how the concept of reinjury anxiety and fear of reinjury are addressed. Psychological studies are more focused on exploring the psychological factors associated with reinjury anxiety, while medical studies tend to emphasize socio-demographic, medical, and physiological factors, primarily addressing the concept of fear of reinjury .

With the exception of a single study by Wadey and colleagues [5], none of the reviewed research attempted to test an integrative model that incorporates socio-demographic, psychological, medical, physiological, and injury-related factors. These gaps in the literature limit the ability to determine whether reinjury anxiety and fear of reinjury share common predictors or are influenced by distinct determinants. Without such comprehensive models, it remains difficult to fully understand the interplay between these factors and to distinguish the unique pathways leading to each psychological construct.

Furthermore, the studies included in this review do not provide clarity on the nature of the relationships between the predictive factors associated with reinjury anxiety or fear of reinjury. As previously suggested by Caumeil et al. [39], future research should employ mediation and moderation models to better understand these dynamics. Such insights would be crucial in determining whether reinjury anxiety and fear of reinjury can be addressed through unified psychological interventions or if distinct interventions are required for each construct. Such insight would improve the interpretation of studies evaluating the effectiveness of psychological intervention for injured athletes.

The finding of this review helps clarify the distinction between the two construct, as detailed and outlined in the following proposal:

Definitions:

Reinjury anxiety can be understood as a psychological state in which the athlete experiences anticipatory concern and emotional tension when contemplating a return to sport following a previous injury. This form of anxiety is primarily driven by cognitive appraisals related to the possibility of experiencing another, potentially more severe, injury. It is commonly expressed through behaviors such as hypervigilance, avoidance of specific actions or contexts, and diminished self-confidence, all of which may hinder psychological preparedness for re-engagement in competitive activity.

Fear of reinjury, by contrast, refers to a spontaneous emotional response triggered when an athlete perceives an elevated likelihood of getting injured again. This reaction is commonly marked by sensations of apprehension, nervous tension, or discomfort, and extends beyond the fear of physical harm. It often encompasses deeper concerns, including the potential loss of athletic performance, disruptions to personal identity, or difficulties in reclaiming a competitive role. The intensity of this fear is frequently heightened by situational cues that mirror aspects of the initial injury experience.

From another standpoint, our analysis confirms that **reinjury anxiety and fear of reinjury are distinguishable along several key dimensions**, despite their overlaps. The following **differences** between the two constructs were evident when comparing their characteristics:

1. **Temporal focus of the response:** *Reinjury anxiety* is predominantly anticipatory in nature – it arises from forward-looking thoughts about the likelihood of getting injured again, often while the athlete is still in rehabilitation or contemplating return. It is essentially a *preemptive* form of anxiety that builds up even in the absence of immediate danger. In contrast, *fear of reinjury* is an *in-the-moment* emotional reaction, triggered by a tangible or perceived threat during a specific situation (for example, a sudden tweak in the knee or an aggressive play by an opponent). Thus, anxiety about reinjury is tied to the **future** (the next training session, the upcoming match, the potential of injury), whereas fear of reinjury is tied to the **present** – it flares up at the point of encountering what the athlete perceives as an imminent risk.

2. **Cognitive versus emotional emphasis:** Reinjury anxiety is closely linked to *cognitive processes* such as rumination and worry. It involves an ongoing thought process – the athlete continually assesses and overestimates the probability and consequences of re-injury, which can lead to a state of hyper-vigilance. This mindset often translates into *behavioral manifestations* like avoidance of certain drills, overly cautious movements, or hesitance in competitive scenarios, as the athlete tries to manage the anxiety by minimizing perceived risk. Fear of reinjury, by contrast, is rooted more in a *pure emotional reaction*. It is characterized by a surge of fear or dread (a physiological fight-or-flight response) that may not involve much conscious deliberation at all. Because it is an acute fear response, it does not always result in deliberate avoidance behavior beyond the immediate moment. In other words, an athlete might feel a jolt of fear when suddenly challenged in a way that reminds them of their injury, but once that moment passes, they might carry on if the fear subsides – whereas anxiety tends to cause a more sustained change in behavior (e.g., continuing to avoid that situation in the future).
3. **Situational context:** There is a difference in how context-dependent each construct is. Reinjury anxiety tends to be *context-specific* to the return-to-sport setting – it is most salient in situations that involve preparing for competition or the act of returning to a competitive environment after injury. An athlete might feel their anxiety spike when they step onto the competition field or when they think about an upcoming high-stakes game. Fear of reinjury, on the other hand, is *less constrained by context* – it can occur in any setting where the athlete perceives a threat of harm. This means an athlete might experience fear of reinjury not only during official matches or training, but even in casual activities or daily life if something triggers the memory or sensation of the injury. Fear is broader in the sense that it can be provoked outside the formal return-to-play timetable; for instance, slipping on a wet floor might suddenly evoke the same fear an athlete would have on the field. In summary, reinjury anxiety is largely tied to competitive sport scenarios (e.g., the lead-up to competition), whereas fear of reinjury can *generalize* to any context that the athlete interprets as dangerous.
4. **Breadth of concern:** The scope of what each construct encompasses also differs. Reinjury anxiety is primarily concerned with *anticipated physical and psychological consequences* of a potential new injury. It is focused on things like: “What if I get hurt again – will I lose my season? Will I have to undergo another surgery? Will I ever be the same player?” These concerns are forward-looking and often revolve around personal health and performance outcomes. In contrast, fear of reinjury may extend to *broader contextual and social concerns* beyond just the injury itself. Because fear is an immediate reaction, it can tap into an array of worries that flood in at once – including thoughts about jeopardizing one’s career, letting down teammates or coaches, or facing social/financial consequences of another injury. Indeed, fear of reinjury can encompass anxieties about re-establishing oneself in the competitive arena and meeting external expectations after injury. Thus, while both constructs affect the athlete’s psyche, reinjury anxiety stays relatively centered on the injury’s personal ramifications, whereas fear of reinjury can more readily bring in **external pressures** (e.g. career implications, public perception, family concerns) in the heat of the moment.

In light of these distinctions, clearly defining reinjury anxiety versus fear of reinjury provides important **theoretical and practical benefits**. Conceptually, the proposed distinction offers a valuable refinement in understanding how athletes respond psychologically to injury threats. By differentiating an anticipatory, cognitively driven anxiety from an immediate, reflex-like fear, we achieve a more precise framework for interpreting athletes’ experiences during the recovery and return-to-sport process. This clarity in definition allows researchers and practitioners to identify both the **shared and unique predictors** of each construct. For example, our review corroborates that certain psychological factors (like low confidence or poor coping skills) may heighten both reinjury anxiety and fear of reinjury, whereas other factors might influence one and not the other. Indeed, consistent with previous findings, we observed that effective coping mechanisms and higher self-efficacy are particularly linked to lower reinjury anxiety, while certain demographic and injury-related variables (e.g. age, gender, competitive level) may be more closely associated with fear of reinjury. Recognizing these patterns can enhance our understanding of the underlying causes and consequences of each construct, ultimately guiding more nuanced hypotheses and future research (e.g., interventions targeting *anxiety* might focus on cognitive reappraisal and confidence-building, whereas those targeting *fear* might emphasize exposure to feared situations and arousal regulation).

From a **clinical and applied perspective**, distinguishing between reinjury anxiety and fear of reinjury carries significant implications for improving athlete care. When sports medicine professionals, psychologists, and coaches can pinpoint whether an athlete is principally anxious about reinjury (i.e. preoccupied with what *might* happen) or experiencing episodic fear (i.e. terror in the moment of action), they can tailor their support strategies accordingly. For instance, an athlete dominated by reinjury anxiety might benefit most from cognitive-behavioral interventions that address maladaptive thoughts, build confidence in the injured body part, and gradually re-expose the athlete to competition in a controlled manner. In contrast, an athlete prone to acute fear responses may require techniques for anxiety management and relaxation in vivo, such as breathing exercises, visualization, or simulated game scenarios to habituate and reduce panic in high-pressure moments. By aligning psychological interventions with the athlete’s specific profile – targeting the anticipatory *worry* component of reinjury anxiety versus the reactive *fear* component of fear of reinjury – practitioners can more effectively bolster the athlete’s psychological readiness to return. Ultimately, this targeted approach is expected to enhance rehabilitation outcomes: an athlete whose reinjury anxiety is quelled and whose situational fears are addressed is more likely to fully engage in training, regain pre-injury performance levels, and successfully overcome the mental barriers to returning to sport. In summary, **clarifying the distinction** between reinjury anxiety and fear of reinjury not only advances theoretical precision but also provides a practical foundation for developing specialized interventions that meet the unique needs of recovering athletes, thereby improving their journey back to competitive sport.



## 6. Conclusion

The conceptual distinction proposed between reinjury anxiety and fear of reinjury represents a meaningful advancement in the psychological understanding of athletes' responses to sport-related injury. By identifying reinjury anxiety as an anticipatory, cognitively mediated experience, and fear of reinjury as an immediate, emotionally charged reaction to perceived threat, this review offers a refined interpretive framework for how athletes mentally process injury-related risks. Such clarity in definition provides a foundation for distinguishing both overlapping and construct-specific predictors, thereby deepening insight into their respective psychological mechanisms.

Beyond theoretical value, this distinction carries practical relevance for optimizing psychological care during rehabilitation. Differentiating the cognitive-emotional profiles of reinjury anxiety and fear of reinjury enables clinicians to deliver more personalized interventions that are attuned to the athlete's specific psychological barriers. A targeted therapeutic approach—one that acknowledges whether the athlete's distress arises from anticipatory anxiety or in-the-moment fear—can significantly improve mental readiness to return, enhance rehabilitation success, and reduce risk of reinjury. Ultimately, aligning psychological support strategies with the athlete's individual emotional and cognitive responses fosters a more effective, athlete-centered recovery process.

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## Conflict of interest

The authors declare that there are no conflicts of interest related to the conduct or reporting of this work.

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