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When the Injury Heals but the Athlete Does Not : Psychological Barriers to return to Sport – A Narrative Review

Aleksandra Arczyńska-Antkiewicz

Jagiellonian University Collegium Medicum

Świętej Anny 12, 31-008 Kraków, Poland

ORCID: 0009-0008-0410-4751

aaarczynska@gmail.com

Mikołaj Antkiewicz

Ludwik Rydygier Specialist Hospital in Krakow sp. z o.o.

Osiedle Złotej Jesieni 1, 31-820 Kraków, Poland

ORCID: 0009-0000-8735-9339

miki.antek2000@gmail.com

Paweł Czechowicz

University Hospital in Krakow

Marii Orwid 11, 30-688 Kraków, Poland

ORCID: 0009-0008-0143-0404

pawel.czechowicz2000@gmail.com

Justyna Czechowicz

Stefan Żeromski Specialist Hospital in Krakow

Osiedle na Skarpie 66, 31-913 Kraków, Poland

ORCID: 0009-0003-1035-1648

justyna.barycz12@gmail.com

Gabriela Zając

University Hospital in Krakow

Marii Orwid 11, 30-688 Kraków, Poland

ORCID: 0009-0009-9222-2711

gabrielazajac.zajac@student.uj.edu.pl

Maria Drozd

Ludwik Rydygier Specialist Hospital in Krakow sp. z o.o.

Osiedle Złotej Jesieni 1, 31-820 Kraków, Poland

ORCID: 0009-0001-4246-4095

mariadrozd22@gmail.com

Paulina Łobaza

Medical Center in Łańcut Sp z o.o.

Ignacego Paderewskiego 5, 37-100 Łańcut, Poland

ORCID: 0009-0003-3566-005X

paulina.lobaza@gmail.com

Martyna Kudła

University Clinical Hospital No. 4 in Lublin

Doktora Kazimierza Jaczewskiego 8, 20-954 Lublin, Poland

ORCID: 0009-0007-7465-5199

[mkudla20@gmail.com](mailto:m kudla20@gmail.com)

Agata Krawczyk

University Clinical Hospital No. 4 in Lublin

Doktora Kazimierza Jaczewskiego 8, 20-954 Lublin, Poland

ORCID: 0009-0004-8883-3572

agata.krawczyk0137@gmail.com

Natalia Pawelczak

Health Care Facility of the Ministry of Interior and Administration in Lublin

Granadierów 3, 20-331 Lublin, Poland

ORCID: 0000-0001-9933-258X

n.pawelczak@student.uw.edu.pl

Dorota Kolkowicz

Provincial Specialist Hospital in Wrocław

Henryka Michała Kamińskiego 73A, 51-124 Wrocław, Poland

ORCID: 0009-0001-3410-4401

dorotakolkowicz@gmail.com

Julia Kociuba

LUX MED Sp. z o.o.

Szturmowa 2, 02-678 Warszawa, Poland

ORCID: 0009-0001-9030-0108

julia.kociuba@wp.pl

Zuzanna Kruczek

SP ZOZ MSWiA in Rzeszów

Krakowska 16, 35-111 Rzeszów, Poland

ORCID: 0009-0008-6153-1995

zuzanna.kruczek@op.pl

Julia Kurcińska

University Clinical Hospital No. 4 in Lublin

ul. Dra K. Jaczewskiego 8, 20-090 Lublin, Poland

ORCID: 0009-0003-4008-4245

j.kurcinska00@gmail.com

Szymon Kurciński

1st Military Clinical Hospital with a Polyclinic SPZOZ in Lublin

al. Racławickie 23, 20-049 Lublin, Poland

ORCID: 0009-0001-9157-854X

szymonkurcinski.med@gmail.com

Corresponding author: **Aleksandra Arczyńska-Antkiewicz**, aaarczynska@gmail.com

Abstract

Introduction and purpose: Sports injury should be understood not only as a physical event but also as a clinically relevant psychological stressor. The aim of this narrative review is to summarize current evidence on depression and anxiety after sports injury, with particular attention to symptom course, risk factors, rehabilitation adherence, and return-to-play implications.

Brief description of the state of knowledge: The literature indicates that depressive and anxiety symptoms may appear shortly after injury, persist during prolonged rehabilitation, and become especially important during the transition back to sport. Early distress is commonly related to shock, uncertainty, pain, loss of control, and interruption of athletic identity. During rehabilitation, psychological burden may be sustained by slow progress, pain-related anxiety, kinesiophobia, reduced motivation, social isolation, and weak therapeutic support. At return to play, fear of reinjury and low psychological readiness may remain despite satisfactory physical recovery. Important risk factors include injury severity, prolonged time-loss, strong athletic identity, previous mental health vulnerability, insufficient social support, and pressure within competitive sport environments.

Summary (conclusions): Depression and anxiety are meaningful components of post-injury recovery and should be addressed throughout sports injury management. Screening, education, interdisciplinary care, timely referral, and assessment of psychological readiness should be integrated into rehabilitation and return-to-play decisions to support safer and more sustainable return to sport.

Keywords: sports injuries; depression; anxiety; rehabilitation; return to play

1. Introduction and purpose

Sports injuries remain among the most common and clinically significant problems in both competitive and recreational sport. They affect athletes across disciplines, age groups, and levels of participation, from amateur exercisers to elite performers exposed to high training loads and repeated competition demands. Although the somatic dimension of injury has traditionally received the greatest attention, the consequences of injury extend beyond pain, tissue damage, or temporary physical impairment. Injury may interrupt training continuity, reduce performance, compromise athletic goals, and destabilize routine, social functioning, and self-perception. For this reason, sports injury should be viewed not only as a biomechanical event but also as a multidimensional stressor with important psychological consequences [1].

For many athletes, sport represents more than exercise; it is a central structure around which daily life, long-term goals, and personal identity are organized. Training schedules, competition plans, team membership, and performance expectations often shape an athlete's sense of purpose and self-worth. When injury abruptly limits participation, the athlete may experience loss of control, uncertainty regarding recovery, and concern about future performance. This disruption may be especially pronounced in those whose identity is strongly tied to athletic competence and continuity of participation. Consequently, the post-injury period should not be conceptualized solely as a phase of physical healing, but also as a period of increased psychological vulnerability [2,3].

Among the psychiatric and psychological sequelae observed after sports injury, symptoms of depression and anxiety are particularly clinically relevant. Emotional reactions may arise immediately after injury as shock, frustration, sadness, irritability, or fear, and may later evolve into more persistent psychological distress. Depressive symptoms may include low mood, anhedonia, hopelessness, withdrawal from teammates or social support, and reduced motivation to engage in rehabilitation. Anxiety-related symptoms may include excessive worry about recovery, fear of reinjury, hypervigilance toward bodily sensations, and apprehension about returning to competition. Although not every injured athlete develops a formal psychiatric disorder, contemporary sports medicine literature emphasizes that depression- and anxiety-related symptoms are common, meaningful, and potentially disruptive components of the injury experience [2,4,5].

These symptoms are highly relevant because they may influence the course and quality of rehabilitation. Recovery after sports injury is not determined solely by biological healing or functional testing. It also depends on treatment adherence, confidence, motivation, tolerance of discomfort, and the athlete's ability to remain engaged throughout a sometimes prolonged recovery process. Depression may reduce persistence, energy, and belief in recovery, whereas anxiety may increase avoidance, fear of movement, and hesitancy during progressive loading or sport-specific retraining. In practice, this may delay rehabilitation milestones, complicate communication within the interdisciplinary care team, and create a mismatch between objective recovery and subjective readiness. As a result, an athlete may be medically improved without feeling psychologically prepared to return [5,6].

The significance of depression and anxiety becomes especially apparent in return-to-play decisions. Return to sport is often framed in biomedical terms, yet increasing evidence suggests that psychological factors strongly affect whether athletes return, when they return, and whether they regain their pre-injury level of participation. Fear of reinjury, emotional distress, reduced confidence,

and altered athletic identity may persist despite satisfactory physical recovery. If these factors are overlooked, athletes may return prematurely, return with hesitation, underperform, or fail to sustain participation after clearance. Mental health assessment should therefore not be treated as an optional addition to rehabilitation, but as an integral component of safe and effective return-to-play planning [6,7].

A narrative review on this topic is justified because the available literature is clinically important but methodologically heterogeneous and dispersed across sports medicine, psychiatry, psychology, rehabilitation, and orthopedic research. Existing evidence includes narrative reviews, consensus statements, qualitative studies, systematic reviews, and broader conceptual analyses rather than one uniform body of trials addressing a single outcome. A narrative synthesis is therefore suitable for integrating current knowledge on depressive and anxiety symptoms after sports injury, identifying major risk factors, and clarifying how these symptoms influence rehabilitation and return-to-play processes. Unlike broader reviews of athlete mental health, this article specifically organizes depression- and anxiety-related sequelae after sports injury according to clinically relevant recovery stages, from the early post-injury period to rehabilitation and return-to-play decision-making. This staged approach may help bridge the persistent gap between physical injury management and mental health care in athletes [2,4,7].

The aim of this narrative review is to evaluate current evidence on depression and anxiety following sports injury, with particular attention to their clinical relevance across successive stages of rehabilitation. The review seeks to analyze the temporal dynamics of these symptoms, identify major individual and contextual risk factors, and examine their implications for return-to-play decision-making. It also aims to synthesize practical considerations for interdisciplinary care by highlighting how post-injury psychological distress may influence assessment, rehabilitation adherence, recovery trajectories, and safe return to sport. Particular emphasis is placed on the clinical implications of these findings for sports physicians, psychiatrists, psychologists, physiotherapists, athletic trainers, and coaches.

2. Description of the state of knowledge

2.1. Search strategy and narrative synthesis

This study was designed as a narrative review aimed at synthesizing current knowledge on depression and anxiety following sports injury, with particular emphasis on psychiatric sequelae, risk factors, rehabilitation, and return-to-play implications. The narrative approach was selected because the available literature is methodologically heterogeneous and includes studies with diverse designs, populations, injury types, outcome measures, and clinical contexts.

PubMed was used as the primary biomedical database for the identification of relevant publications. A supplementary search was also performed in Scopus to identify additional clinically relevant articles and reduce the risk of omitting important studies. The literature search focused on publications from January 2000 to April 2026 in order to capture contemporary evidence while retaining sufficient historical depth for conceptual and clinical context. The last search was performed in April 2026.

The search strategy was based on combinations of the following terms: sports injury, athlete, depression, anxiety, mental health, rehabilitation, return to play, return to sport, fear of reinjury, psychological readiness, athletic identity, kinesiophobia, and social support. These terms were

combined in different configurations to identify publications addressing psychological and psychiatric outcomes after sports-related injury.

Priority was given to high-quality and clinically informative evidence, including systematic reviews, meta-analyses, cohort studies, prospective studies, and consensus statements. Narrative reviews and selected clinically relevant observational or qualitative studies were also considered when they contributed important conceptual, practical, or interdisciplinary insights. Publications were included if they focused on athletes or sports-related injury and addressed depression, anxiety, emotional distress, psychological recovery, rehabilitation, or return-to-play outcomes. Articles unrelated to sport, studies centered on non-athletic injury populations, and papers judged to be only marginally relevant to the main review question were excluded.

The final synthesis was narrative and interpretive in character. Rather than performing formal quantitative pooling of outcomes, the review aimed to integrate findings across study types and clinical perspectives in order to provide a practical and clinically relevant overview for sports physicians, psychiatrists, psychologists, physiotherapists, athletic trainers, and coaches.

2.2. Psychological responses to sports injury: conceptual background

Sports injury should be understood not only as a physical event but also as a psychologically significant stressor that may challenge an athlete's sense of control, identity, and future orientation. Contemporary sport injury research shows that psychological responses are neither uniform nor static. They emerge through a dynamic process shaped by the athlete's interpretation of the injury and by the broader rehabilitation context [5,7,8]. This conceptual perspective is particularly important because depression and anxiety rarely arise in isolation. Instead, they often develop within a broader pattern of cognitive, emotional, and behavioral responses to injury.

A central assumption of the integrated conceptual model of sport injury response is that injury initiates a stress reaction mediated by cognitive appraisal. In this framework, the athlete does not respond only to the objective severity of the injury, but also to its perceived meaning. The individual evaluates how serious the injury is, how long recovery may take, whether athletic goals remain achievable, and whether personal coping resources are sufficient. Appraisal is therefore crucial because it influences the intensity and direction of subsequent psychological responses [8].

These appraisals are reflected in emotional responses, which may include sadness, frustration, anger, disappointment, anxiety, uncertainty, and more persistent depressive symptoms [2,5,8]. Importantly, such reactions are not inherently pathological. In the early phase after injury, distress may represent an understandable reaction to pain, loss of function, removal from training, or fear about prognosis. However, when emotional distress becomes prolonged, disproportionate, or increasingly impairing, it may interfere with rehabilitation and increase the clinical relevance of depression and anxiety. This distinction is essential in sports medicine, where psychological suffering may be normalized or minimized unless it clearly disrupts performance or return-to-play progression [2].

Psychological responses also have a behavioral dimension. Cognitive and emotional reactions may shape whether the athlete engages consistently with rehabilitation, avoids movement because of fear, withdraws from the team environment, or attempts to return too quickly before sufficient recovery [6,8]. In this way, behavior functions both as an outcome of psychological processing and as a factor that may further influence rehabilitation success. Maladaptive behaviors, such as poor adherence, persistent avoidance, excessive reassurance seeking, or risk-taking, may reinforce distress and delay recovery. By contrast, adaptive coping behaviors, including structured rehabilitation engagement,

realistic goal setting, and effective communication with the care team, may support physical and psychological recovery.

Personal and situational factors moderate these responses. Personal factors include age, injury history, personality traits, coping style, athletic identity, prior mental health vulnerability, and confidence in the ability to recover [7-10]. Situational factors include injury severity, type of sport, competitive level, timing within the season, social support, team culture, and the quality of communication with clinicians, coaches, and family members [5,8-10]. These moderators help explain why similar injuries may produce markedly different psychological outcomes. An athlete with strong social support and flexible coping strategies may adapt more effectively than an athlete whose identity is narrowly tied to performance and whose environment emphasizes rapid return at all costs.

Psychological responses are also dynamic across successive stages of rehabilitation. Qualitative research suggests that emotional priorities often change over time: acute shock and uncertainty may dominate the early phase, frustration and motivational fluctuation may become more prominent during prolonged rehabilitation, and fear of reinjury or doubts about readiness may intensify near return to sport [5]. This stage-dependent variability is highly relevant because depressive and anxiety symptoms may fluctuate rather than follow a simple linear trajectory. Accordingly, the clinical meaning of such symptoms must be interpreted within the temporal context of rehabilitation rather than as a fixed reaction.

Taken together, this integrated conceptual perspective provides an essential foundation for understanding psychiatric sequelae after sports injury [7-10]. It clarifies that injury-related depression and anxiety are embedded in a broader biopsychosocial process involving appraisal, emotion, behavior, and recovery context. This perspective also explains why effective post-injury care requires more than physical treatment alone. A comprehensive understanding of psychological responses is necessary to identify athletes at risk, interpret emotional symptoms appropriately, and guide rehabilitation and return-to-play planning in a clinically meaningful way [2,5,6].

2.3. Phase I: early post-injury period

The early post-injury period begins at the moment of diagnosis and usually covers the first days to several weeks after the event. Although this phase is often discussed primarily in orthopedic or rehabilitation terms, it is also a period of marked psychological vulnerability. For many athletes, injury abruptly interrupts training, competition, daily routine, and social belonging within the team environment. As a result, the injury is appraised not only as a physical problem but also as a threat to athletic identity, perceived competence, and future participation. In student and competitive athletes, the initial response frequently includes shock, disbelief, frustration, sadness, anger, and uncertainty, often occurring simultaneously rather than in a predictable sequence. These early reactions may be especially pronounced when the injury occurs during an important competitive period or when it immediately raises concerns about surgery, team position, scholarship status, or long-term performance [2,5].

At this stage, the diagnosis itself has major psychological significance. Athletes do not respond only to pain or functional loss; they also respond to the meaning of the injury. Questions such as how severe the injury is, how long sport participation will be interrupted, whether full recovery is realistic, and whether the athlete will return at the same level strongly influence emotional adjustment. Qualitative work on sport-injury rehabilitation has shown that the earliest phase is often dominated by negative cognitive appraisals, including catastrophizing, uncertainty about prognosis, concern about deselection, and fear of losing physical conditioning or social relevance within the team [5]. Uncertainty may be as distressing as bad news itself. A clearly communicated but prolonged recovery plan can be easier to process than an ambiguous prognosis that leaves the athlete without a sense of control.

These appraisals help explain why depressive and anxiety symptoms may emerge very early after injury. In the first post-injury weeks, sadness may reflect more than disappointment; it may begin to resemble low mood associated with reduced motivation, hopelessness, or loss of interest in previously valued activities. Likewise, worry may extend beyond realistic concern about healing and develop into persistent anxiety related to reinjury, delayed recovery, loss of role, or future non-selection. Narrative review data indicate that injury can trigger, intensify, or unmask underlying mental health problems, including depression and anxiety, particularly in athletes with prior vulnerability, limited coping resources, or poor psychosocial support [2].

Prospective findings support the view that these symptoms are not merely theoretical concerns. In collegiate athletes, depressive symptom scores have been shown to rise shortly after time-loss injury, including during the first week, and then decline over time in many cases. This suggests that the earliest phase may represent a critical window for detection and support [11]. A systematic review similarly concluded that musculoskeletal injuries are associated with higher depressive symptom burden in athletes, while also emphasizing heterogeneity in injury type, level of sport, and assessment methods across studies [12]. Taken together, these data suggest that depressive symptoms can emerge rapidly after injury and should not be assumed to occur only during later or prolonged rehabilitation.

Anxiety is equally relevant in this phase, although it may present in more varied forms. Some athletes experience generalized worry about recovery or career consequences, whereas others show more situational anxiety related to medical evaluation, pain during movement, surgery, or anticipated return to training. Early anxiety may also be reinforced by social context. Reduced contact with teammates, inconsistent communication from staff, or a perceived drop in social value can intensify feelings of isolation and apprehension. Conversely, supportive interpersonal environments appear to buffer distress. Evidence from injured college athletes shows that stronger social support is associated with fewer post-injury depressive and anxiety symptoms, underlining the importance of early relational factors rather than focusing exclusively on tissue healing [13].

A clinically important challenge in this period is distinguishing between an expected adaptive response and symptom severity that warrants formal mental health attention. Some sadness, irritability, frustration, or worry is normal after a meaningful sports injury. These reactions are often proportionate to the event, fluctuate over time, and gradually lessen as pain is controlled, the diagnosis becomes clearer, and the athlete regains structure. By contrast, concern should increase when symptoms are persistent, intensifying, disproportionate to the clinical situation, or clearly interfering with sleep, appetite, concentration, rehabilitation adherence, and everyday functioning outside sport. Marked hopelessness, pronounced anhedonia, panic-like symptoms, social withdrawal, or suicidal ideation should never be dismissed as a normal part of being injured [2].

This distinction is also important because not all maladaptive post-injury responses fit neatly within common mood or anxiety categories. A systematic review on sports injury and stressor-related disorder suggested that, in some athletes, injury may function as a psychologically traumatic event capable of producing more complex stress reactions that affect recovery and delay return to competition [14]. Although such severe responses are not the norm, this framework is useful because it reminds clinicians that early distress exists on a spectrum. What begins as an understandable reaction to diagnosis may, in vulnerable individuals, evolve into clinically meaningful psychopathology if not recognized promptly.

Overall, the early post-injury period should be viewed as a decisive phase in which cognitive appraisal, emotional distress, and social context begin to shape the rehabilitation trajectory. Initial shock and uncertainty are common, but they are not trivial. They influence motivation, trust in the rehabilitation process, symptom interpretation, and later readiness for return to play. For this reason, early psychological monitoring should be regarded as a core component of sports-injury management rather than an optional addition reserved only for athletes with prolonged recovery [2,5,13].

2.4. Phase II: rehabilitation period

The rehabilitation period is often the longest and psychologically most demanding phase of recovery after sports injury. In contrast to the immediate post-injury stage, which is usually dominated by acute emotional reactions to diagnosis and functional loss, rehabilitation exposes the athlete to sustained confrontation with pain, physical limitations, uncertainty, and separation from the competitive environment. During this stage, symptoms of depression and anxiety may diminish as recovery advances or persist and intensify when rehabilitation becomes prolonged, repetitive, and psychologically exhausting. Contemporary evidence indicates that psychological distress during rehabilitation is closely intertwined with functional outcomes, treatment engagement, and eventual readiness to return to sport [15,16].

Depressive symptoms during rehabilitation often arise from cumulative rather than sudden loss. Injured athletes may remain physically active within a therapeutic context, yet they are still excluded from training, competition, and the reinforcing structure of athletic life. Over time, this may foster low mood, irritability, demoralization, reduced enjoyment, sleep disturbance, and loss of motivation, particularly when recovery is slower than anticipated or when progress is interrupted by pain or setbacks [15,16]. A systematic review of psychosocial factors in sports injury rehabilitation emphasized that emotional responses during recovery are shaped not only by injury severity but also by appraisal, coping style, perceived control, and social context [16]. For some athletes, the rehabilitation phase becomes especially difficult because the initial hope of a rapid return gradually gives way to frustration and uncertainty.

Anxiety symptoms are equally common during rehabilitation, although they often present in performance-specific or body-focused ways. Injured athletes may become preoccupied with pain sensations, excessively vigilant to physical signals, or fearful that advancing loading and sport-specific exercises will provoke reinjury. This is particularly evident in athletes who develop kinesiophobia, defined as excessive and debilitating fear of movement associated with anticipated pain or physical harm. A recent systematic review confirmed that kinesiophobia is a meaningful issue in injured athletes and may interfere with confidence, rehabilitation progression, and return-to-sport readiness [17]. Anxiety during rehabilitation may therefore persist even when objective healing is proceeding appropriately.

The rehabilitation period also exposes athletes to social and identity disruption. Even when they remain formally attached to the team, injured athletes frequently experience partial exclusion from group routines, travel, match preparation, and everyday peer interaction. This separation may lead to a subjective sense of invisibility or reduced value within the sporting environment. At the same time, daily athletic routines that previously organized sleep, nutrition, time structure, and emotional regulation are often replaced by a more fragmented and less rewarding schedule. These disruptions are particularly important in athletes with strong athletic identity, for whom sport functions as a central component of self-definition. A recent systematic review found that stronger athlete identity is associated with more severe depressive symptoms after musculoskeletal injury, suggesting that injury may be especially destabilizing when it threatens the core of how the athlete understands the self [18].

Persistent pain, delayed milestones, and repeated fluctuations in recovery can further intensify emotional distress. Pain that remains present beyond the expected period may undermine confidence and increase uncertainty about full recovery. Similarly, extended rehabilitation timelines may produce emotional fatigue and gradually diminish the athlete's sense of agency. In some cases, demotivation emerges not as indifference but as a consequence of repeated effort without visible reward. This interaction between symptoms and behavior is especially relevant for adherence. Rehabilitation

adherence depends not only on discipline or external supervision but also on motivation, treatment beliefs, confidence, and the athlete's capacity to tolerate discomfort and ambiguity. An integrated psychosocial model of rehabilitation adherence emphasizes that behavioral engagement is shaped by cognitive, emotional, and social influences rather than by physical status alone [19]. Accordingly, reduced adherence during rehabilitation may reflect unresolved distress, hopelessness, fear, or frustration rather than simple lack of commitment.

For this reason, the quality of interpersonal support becomes a central determinant of psychological adjustment during rehabilitation. Social support may buffer distress, improve treatment engagement, and reduce feelings of isolation, but its effectiveness depends strongly on how the athlete experiences that support. In collegiate athletes, greater satisfaction with support from athletic trainers has been associated with lower odds of depressive and anxiety symptoms at return to play [20]. This finding is clinically important because it suggests that emotional outcomes are shaped not only by injury severity or duration, but also by the relational environment within which rehabilitation occurs. Supportive contact can preserve motivation, normalize setbacks, and help the athlete reinterpret rehabilitation as an active and meaningful process rather than a passive waiting period.

The role of sports medicine professionals extends beyond technical treatment delivery. Qualitative evidence from professional athletes indicates that injured athletes value clinicians who recognize psychosocial as well as physical aspects of recovery, even when psychological concerns are not explicitly presented at the outset [21]. Communication style, empathy, continuity, and the ability to explain progress or delay in understandable terms may influence confidence and emotional stability throughout rehabilitation. When clinicians acknowledge fears, frustrations, and identity-related concerns, they may reduce the sense of isolation that often develops during time away from full participation. In contrast, exclusively biomedical communication may inadvertently reinforce emotional disengagement by signaling that only physical recovery matters.

Closely related to this is the therapeutic alliance between the athlete and rehabilitation professional. Recent qualitative work in elite sport suggests that effective therapeutic relationships are built on trust, shared goals, mutual respect, role clarity, and a clear understanding of the athlete's sporting context [22]. A strong therapeutic alliance can improve adherence, enhance confidence in the rehabilitation plan, and provide emotional containment during periods of uncertainty. This is especially important in longer rehabilitation trajectories, where progress is nonlinear and setbacks are common.

Overall, the rehabilitation period should be viewed as a phase of ongoing psychological vulnerability rather than merely a technical phase of physical restoration. Depression and anxiety during this stage may fluctuate, overlap, and interact with pain, identity disruption, demotivation, social isolation, and the quality of therapeutic relationships. Rehabilitation after sports injury should therefore incorporate psychologically informed care as a core element of best practice. Monitoring emotional symptoms, supporting adherence, preserving social connection, and fostering strong clinician-athlete relationships are all essential to improving recovery quality and facilitating a safer, more sustainable return to sport [15-22].

2.5. Phase III: return-to-play period

The return-to-play period represents a clinically decisive phase in the post-injury trajectory because physical recovery does not automatically translate into psychological recovery. At this stage, the athlete may be medically cleared, demonstrate satisfactory strength or range of motion, and still remain mentally unprepared for unrestricted participation. This discrepancy is especially important in competitive sport, where return-to-play decisions are often framed in biomedical terms, while

confidence, perceived safety, and emotional stability receive less systematic attention. Evidence from the sports injury literature indicates that psychological readiness is a central determinant of whether an athlete resumes pre-injury participation rather than merely re-enters training or competition in a limited, guarded manner [23].

Qualitative studies suggest that athletes approaching return to sport frequently describe this period as more psychologically demanding than expected. Instead of relief alone, they often report hesitancy, heightened self-monitoring, doubt, and emotional ambivalence. Even after completing rehabilitation milestones, many remain uncertain whether the injured body part can tolerate sport-specific demands under unpredictable conditions such as cutting, contact, acceleration, or fatigue. In this context, fear of reinjury becomes a dominant cognitive-emotional theme. Athletes may consciously avoid certain movements, reduce intensity, or participate with excessive caution despite having technically returned to sport. Such responses should not be interpreted simply as poor motivation; they often reflect a rational but potentially performance-limiting attempt to regain a sense of control in an environment perceived as risky [24].

A major concept in this phase is psychological readiness, understood as a multidimensional construct encompassing confidence, emotional stability, risk appraisal, and willingness to perform without persistent fear. Studies conducted in athletes after anterior cruciate ligament reconstruction, which remain among the best-characterized return-to-sport populations, show that psychological readiness is strongly associated with actual return to pre-injury activity. In one influential study, psychological readiness was more strongly related to return to the pre-injury level than age, sex, or pre-injury activity level, and common reasons for not returning included lack of trust in the knee and fear of a new injury [25]. These observations are relevant beyond ACL injury alone because they illustrate a broader clinical principle: biological healing and subjective readiness are related but not interchangeable.

Psychological readiness is also shaped by interacting factors during the later stages of recovery. Greater self-reported function, fewer symptoms, higher confidence in performance, and more favorable perceptions of recovery are associated with greater readiness to return to sport, whereas ongoing pain, residual instability, and uncertainty regarding sport-specific ability are associated with lower readiness [26]. This phase often revives concerns that were less visible during structured rehabilitation. Once the athlete begins sprinting, jumping, pivoting, or re-entering team practice, the abstract possibility of reinjury becomes concrete again. Anxiety may therefore intensify precisely at the moment when the athlete appears closest to recovery. Clinically, return to play should not be viewed as the endpoint of rehabilitation, but as a psychologically vulnerable transition requiring continued monitoring.

This transition highlights the return-to-sport gap: the difference between being cleared to play and being genuinely ready to play with confidence, autonomy, and normal decision-making. Recent work suggests that psychological readiness is only weakly related to standard physical function tests used at return-to-sport assessment [27]. In practical terms, an athlete may pass hop tests, strength benchmarks, and other performance criteria while still experiencing substantial fear, vigilance, or emotional restraint. Conversely, some athletes may present as highly eager to return even when they remain insufficiently prepared for the demands of competition. These findings challenge a purely test-based approach to return-to-play clearance and support a more integrated model in which physical and psychological domains are evaluated in parallel.

Fear of reinjury is particularly important because it can persist despite satisfactory tissue healing and acceptable functional performance. This fear may manifest as avoidance of specific movements, reduced aggressiveness, attentional narrowing, or persistent concern during contact situations. In some athletes, these symptoms resemble ongoing anxiety rather than a transient adaptive response. They may also coexist with residual depressive phenomena, such as low confidence, reduced enjoyment, demoralization, or a sense of not being the same athlete as before the injury. Although overt

depressive symptoms often lessen as physical capacity improves, the return-to-play period may still expose unresolved psychological vulnerability, particularly if the athlete interprets imperfect performance as evidence of permanent decline. Evidence further suggests that lower psychological readiness in younger athletes is associated with a higher risk of second ACL injury, indicating that unresolved psychological factors may have emotional and clinically measurable consequences [28].

At the same time, return to play may be distorted by contextual pressures. Coaches, teammates, family members, contracts, scholarships, and internal expectations may all encourage a faster return than is psychologically advisable. An athlete may therefore resume sport not because fear has meaningfully subsided, but because absence has become socially or professionally costly. This creates a high-risk scenario in which participation occurs before adequate restoration of confidence, attentional freedom, and sport-specific trust in the body. The problem is compounded when return-to-play decisions rely heavily on chronological timelines. In young athletes after ACL reconstruction, return to knee-strenuous sport before 9 months has been associated with a markedly increased rate of new injury, emphasizing that premature return has tangible consequences [29]. Although time alone is not sufficient as a clearance criterion, early return in the presence of unresolved physical or psychological vulnerability may be dangerous.

For these reasons, the return-to-play period should be conceptualized as a phase of guided reintegration rather than simple discharge from care. Psychological assessment should include fear of reinjury, confidence in sport-specific tasks, perceived readiness, and the athlete's own narrative about risk and performance. Medical clearance should be complemented by discussion among the sports physician, physiotherapist, psychologist or psychiatrist when needed, coaching staff, and the athlete. A successful return is not defined solely by reappearance in competition, but by restoration of functional performance together with sufficient psychological readiness to participate without persistent disabling fear. This comprehensive understanding is essential for reducing reinjury risk, improving adherence to long-term recovery strategies, and supporting a durable, high-quality return to sport [23-29].

2.6. Risk factors for depression and anxiety after sports injury

The development of depressive and anxiety symptoms after sports injury is not random. Rather, it reflects the interaction of injury-related burden, athlete-related vulnerability, and social-contextual stressors. Evidence from professional and collegiate sport indicates that psychological distress is more likely when the injury is severe, recovery is prolonged, the athlete's self-concept is strongly tied to sport participation, and social support is inadequate in amount or quality. Additional vulnerability may arise from pre-existing mental health difficulties and from performance-related pressures characteristic of highly competitive sport environments [2,3,13,18,30,31].

One of the most consistently described risk factors is injury severity. Severe musculoskeletal injuries, especially those associated with substantial tissue damage, surgery, or long periods away from training and competition, are more likely to be followed by symptoms of distress, anxiety, and depressed mood than minor injuries [30,31]. In professional footballers, the cumulative number of severe injuries has been positively associated with symptoms of common mental disorders, including anxiety and sleep disturbance, suggesting that psychological burden increases not only with the current injury but also with repeated disruption across a sporting career [30]. Longitudinal data further indicate that time-loss injuries are associated with the onset or persistence of anxiety/depression symptoms over follow-up, supporting the view that the duration of functional interruption is clinically relevant [31]. From a practical perspective, the athlete who anticipates weeks or months of restricted activity is exposed not only to physical deconditioning, but also to uncertainty, loss of role, and reduced access to the emotional benefits of training and competition.

Closely related to severity is the length and course of rehabilitation. A longer-than-expected recovery may intensify hopelessness, frustration, and anticipatory anxiety, particularly when progress is nonlinear or when setbacks occur after an initially optimistic prognosis [16,31]. The psychological meaning of delayed recovery may be especially adverse for athletes who interpret rehabilitation difficulties as evidence of personal failure or irreversible decline. Thus, the risk of depression and anxiety does not depend exclusively on the objective seriousness of the injury, but also on how long the injury keeps the athlete outside their usual performance environment and how predictable recovery appears to be.

Another important risk factor is high athletic identity. For athletes whose self-worth, daily structure, and social recognition are strongly anchored in the athlete role, injury may threaten not only performance but also identity continuity. A systematic review concluded that stronger athlete identity is associated with more severe depressive symptoms after musculoskeletal injury [18]. This relationship is clinically plausible across age groups: when sport functions as a central organizing principle of life, enforced withdrawal may produce a sense of emptiness, diminished self-esteem, and heightened uncertainty about the future. High athletic identity may therefore transform injury from a temporary physical event into a broader existential disruption, increasing susceptibility to both depressive and anxious symptoms.

The role of social support is equally important. Evidence suggests that not only the presence but also the perceived quality of support matters. In injured college athletes, greater satisfaction with social support was associated with reductions in depressive and anxiety symptoms across recovery, whereas inadequate or unsatisfactory support was linked to less favorable psychological trajectories [13]. Poor support may take several forms: emotional invalidation, minimal contact from teammates during rehabilitation, inconsistent communication from coaches, or a purely biomedical approach from clinicians that neglects the athlete's emotional experience. Conversely, when the athlete feels understood, included, and informed, distress appears less likely to intensify [13,16].

Pre-existing mental health vulnerability should also be considered. Injury can trigger or unmask depression, anxiety, disordered eating, substance misuse, or other psychological difficulties in athletes who were already vulnerable before the injury event [2]. More broadly, reviews of elite athlete mental health indicate that prior symptoms, maladaptive coping patterns, perfectionistic tendencies, and limited help-seeking may all increase the likelihood that a stressful event will evolve into clinically relevant distress [3]. In practice, an athlete with a history of anxiety, depressive symptoms, poor emotional regulation, or rigid self-evaluative standards may have fewer internal resources to absorb the losses associated with injury.

The level of competition may further shape risk. High-performance settings expose athletes to intense external evaluation, pressure to maintain form, and concern about selection or career progression [3]. After injury, these pressures may magnify anxiety about falling behind, losing status, or failing to return at the expected level. For some athletes, especially those in professional or scholarship-dependent pathways, injury may also carry implications for future opportunities, thereby heightening both fear and low mood. Similarly, contract-related pressure and performance expectations may worsen the psychological impact of injury rather than merely accompany it.

Finally, sport type may plausibly influence risk, although this area is less well defined than injury severity, athletic identity, or support. The available literature suggests that contextual demands differ meaningfully across sport environments, and these differences may shape how threatening an injury feels to the athlete [3,16]. However, current evidence supports the strongest conclusions for injury severity, rehabilitation duration, athletic identity, support quality, and pre-existing psychological vulnerability [2,3,13,18,30,31].

Taken together, the literature supports a multifactorial model of risk. Depression and anxiety after sports injury are most likely when a serious or prolonged injury occurs in an athlete with strong identity investment in sport, limited or unsatisfactory support, and pre-existing psychological vulnerability, particularly within a demanding competitive context [2,3,13,18,30,31]. Recognizing these factors early may help clinicians identify athletes who require closer psychological monitoring during rehabilitation and before return to play.

2.7. Clinical management and practical implications

Clinical management of depression- and anxiety-related symptoms after sports injury should begin with systematic recognition rather than waiting for overt psychiatric deterioration. Mental health screening is most useful when embedded into routine sports medicine care at clinically meaningful transition points, including shortly after injury diagnosis, after surgery, during prolonged or complicated rehabilitation, following major setbacks, and before return-to-play decisions. The International Olympic Committee Sport Mental Health Assessment Tool 1 (SMHAT-1) was developed specifically to support this process in athletes aged 16 years and older and to facilitate timely management or referral when mental health symptoms are suspected [32]. Screening should be understood as a structured entry point to clinical dialogue rather than as a substitute for professional judgment. In practice, it should be combined with direct questioning about mood, anxiety, sleep, motivation, fear of reinjury, confidence, and social withdrawal, with particular attention to changes over time rather than isolated scores.

A second practical principle is that psychological care after sports injury should be interdisciplinary. The sports physician is often the first professional to identify prolonged distress because the physician provides diagnosis, prognosis, and clearance-related decisions. However, optimal care requires contributions from several professionals with distinct but complementary roles. The psychiatrist is particularly important when symptoms are moderate to severe, diagnostic clarification is needed, suicidality or marked functional decline is present, or pharmacotherapy is being considered. The sport psychologist can support coping, emotional regulation, goal setting, confidence rebuilding, and fear management across rehabilitation stages. The physiotherapist and athletic trainer often have the most frequent contact with the athlete and are therefore well positioned to notice deteriorating mood, avoidance behaviors, low adherence, or rising anxiety during rehabilitation. Coaches also play an important role because their communication can either reduce or intensify pressure, stigma, and perceived social exclusion. Consensus recommendations for student-athlete mental health emphasize education, early recognition, and clear referral pathways, underscoring that psychological concerns should not be managed informally or left to chance within the sporting environment [33].

Athlete education should be treated as part of treatment rather than as an optional supplement. Injured athletes benefit from being told that sadness, frustration, uncertainty, and reduced confidence are common, but that persistent, escalating, or functionally impairing symptoms require attention. This distinction may reduce shame, improve help-seeking, and prevent clinically significant distress from being misread as a normal consequence of injury. Support should also be adapted to the stage of recovery. In the early phase, athletes often need clear information, emotional containment, and realistic expectations. During rehabilitation, support should focus more strongly on sustaining routine, preserving team connection, improving adherence, and addressing discouragement when recovery becomes prolonged. Closer to return to play, support should shift toward confidence rebuilding, management of fear, and graded exposure to valued sport-specific tasks. A systematic review of psychosocial interventions after musculoskeletal sports injury found that techniques such as relaxation and guided imagery, positive self-talk, goal setting, counseling, written disclosure, and modeling

videos can improve emotional state, self-efficacy, and rehabilitation-related engagement, supporting the use of structured psychological strategies alongside physical treatment [34].

Pharmacotherapy may be appropriate in selected cases, but it should not be viewed as the default response to post-injury distress. Medication is best reserved for athletes who meet criteria for clinically significant depressive or anxiety disorders, whose symptoms are persistent and functionally impairing, or whose presentation is too severe to be managed adequately with education, monitoring, and psychological support alone. In such situations, psychiatric evaluation is essential. Broader reviews published in *Quality in Sport* also emphasize that mental health challenges in athletes require holistic, multidisciplinary care rather than a narrow focus on physical performance or musculoskeletal recovery [35]. For many injured athletes, however, the most appropriate first-line approach remains psychologically informed rehabilitation combined with careful follow-up and referral when needed.

Mental health assessment should also be integrated directly into return-to-play planning. A medically healed athlete is not necessarily psychologically ready to resume unrestricted sport participation. Concerns about reinjury, reduced trust in the body, uncertainty about performance, and pressure to return may persist even after formal treatment milestones have been met. Recent review literature in *Quality in Sport* further supports a multimodal approach to return-to-play criteria, reinforcing the idea that clearance should not depend on physical parameters alone [36]. For this reason, return-to-play decisions should incorporate not only physical examination and performance testing, but also the athlete's perception of readiness, residual fear, emotional stability, and confidence in sport-specific tasks.

A practical post-injury mental health pathway may therefore include five steps: early screening after diagnosis, education and normalization of expected emotional reactions, stage-specific psychosocial support during rehabilitation, referral to mental health professionals when symptoms are persistent or severe, and integration of psychological readiness into return-to-play clearance. Such a pathway is more consistent with the lived realities of injured athletes than a narrowly orthopedic model and is more likely to improve both mental health outcomes and the quality of return to sport [32-36].

Table 1. Practical clinical pathway for mental health support after sports injury

Stage of recovery	Main psychological concerns	Practical clinical actions
Early post-injury period	Shock, uncertainty, sadness, worry, loss of control	Explain diagnosis and prognosis clearly; screen for mood, anxiety, sleep disturbance, social withdrawal, and risk symptoms; normalize expected emotional reactions while identifying red flags
Rehabilitation period	Frustration, demotivation, isolation, pain-related anxiety, kinesiophobia, reduced adherence	Maintain structured goals; preserve team connection; monitor adherence and avoidance; use psychological strategies such as goal setting, relaxation, imagery, and self-talk; refer if symptoms persist or impair functioning

Stage of recovery	Main psychological concerns	Practical clinical actions
Return-to-play period	Fear of reinjury, low confidence, performance anxiety, pressure to return	Assess psychological readiness, confidence, and sport-specific fear; use graded exposure; include the athlete's perspective in clearance decisions; involve mental health professionals when needed

2.8. Limitations of current evidence

The current evidence base on depression and anxiety after sports injury remains clinically useful, but it is limited by substantial methodological heterogeneity. Across studies, both injury definitions and psychological outcomes vary considerably. Some investigations focus on time-loss injuries, others on specific diagnoses such as anterior cruciate ligament rupture, while psychological endpoints range from general distress and mood disturbance to formal depressive or anxiety symptoms assessed with different instruments. This variability reduces comparability across studies and complicates synthesis of findings across injury types, rehabilitation stages, and return-to-sport outcomes [12,16].

A second major limitation is the predominance of observational research, including cross-sectional, retrospective, and qualitative designs. Although these studies provide valuable clinical insight, they limit causal inference and make it difficult to determine whether psychological symptoms are a consequence of injury, a modifier of recovery, or both. Relatedly, there is still a relative shortage of longitudinal data capturing symptom trajectories from the time of injury through rehabilitation and return to play. As a result, the temporal dynamics of depressive and anxiety symptoms remain incompletely understood, especially outside well-studied injury models such as ACL reconstruction [16,23].

The literature is also constrained by the tendency to combine athletes from different sports, competitive levels, age groups, and injury contexts into broad analytic categories. This weakens external validity because the psychological meaning of injury may differ substantially between, for example, an elite professional athlete, a collegiate athlete, and an adolescent recreational competitor. Recent consensus work additionally suggests that much of the literature remains anchored in sports medicine and rehabilitation frameworks rather than in strictly psychiatric investigation, with relatively limited use of formal diagnostic approaches or studies led by mental health specialists [7].

This review also has limitations inherent to its narrative design. It did not include formal risk-of-bias assessment, quantitative pooling, or a reproducible systematic screening process. Therefore, the conclusions should be interpreted as a clinically oriented synthesis rather than as a formal systematic review or meta-analysis.

Future research should prioritize longitudinal designs beginning at the time of injury and continuing through return to sport. Greater standardization of injury definitions, mental health outcomes, and psychological readiness measures would improve comparability across studies. Further research is also needed in understudied groups, including adolescent athletes, recreational competitors, female athletes, and non-ACL injury populations, as well as in sport-specific contexts where social pressure and return-to-play demands differ substantially. Stronger integration of psychiatric methodology into sports injury research may help distinguish transient emotional reactions from clinically significant depression and anxiety [7,12,16,23].

3. Summary

Depression and anxiety after sports injury should not be regarded as secondary or incidental consequences of physical trauma. They are clinically meaningful components of recovery that may influence symptom interpretation, rehabilitation adherence, confidence, and return-to-sport outcomes. Available evidence indicates that these responses are dynamic rather than static. In the early post-injury period, distress is often driven by shock, uncertainty, and loss of control; during rehabilitation, symptoms may be sustained by pain, prolonged absence from sport, disrupted athletic identity, and variable social support; and in the return-to-play phase, fear of reinjury and doubts about performance may persist even after formal physical recovery [7].

For this reason, mental health assessment should be integrated into routine sports injury care across all stages of recovery. Screening, education, interdisciplinary collaboration, and timely referral are important elements of comprehensive athlete care. Particular attention should be paid to the transition back to sport, which appears to be one of the most psychologically vulnerable phases of the recovery process. An athlete may satisfy physical criteria for return while remaining emotionally unprepared for unrestricted participation [27].

In conclusion, return-to-play decisions should incorporate psychological readiness alongside physical healing to support safer, more sustainable, and more complete recovery. Future research should refine stage-specific screening strategies, identify athletes at highest psychiatric risk, and determine which psychosocial interventions most effectively improve both mental health outcomes and durable return to sport [7,27].

Disclosure

Author's contribution

Conceptualization: Aleksandra Arczyńska-Antkiewicz, Julia Kurcińska, Agata Krawczyk

Methodology: Aleksandra Arczyńska-Antkiewicz, Maria Drozd, Szymon Kurciński

Software: Paulina Łobaza, Martyna Kudła, Agata Krawczyk, Aleksandra Arczyńska-Antkiewicz

Check: Julia Kurcińska, Szymon Kurciński, Paweł Czechowicz

Formal analysis: Justyna Czechowicz, Aleksandra Arczyńska-Antkiewicz, Julia Kociuba, Szymon Kurciński

Investigation: Paweł Czechowicz, Martyna Kudła, Zuzanna Kruczek, Gabriela Zając

Resources: Mikołaj Antkiewicz, Agata Krawczyk, Julia Kurcińska, Maria Drozd

Data curation: Justyna Czechowicz, Agata Krawczyk, Dorota Kołkowicz, Julia Kociuba

Writing - rough preparation: Justyna Czechowicz, Mikołaj Antkiewicz, Natalia Pawełczak

Writing - review and editing: Mikołaj Antkiewicz, Aleksandra Arczyńska-Antkiewicz, Martyna Kudła, Dorota Kołkowicz

Visualization: Justyna Czechowicz, Paulina Łobaza, Natalia Pawełczak

Supervision: Maria Drozd, Natalia Pawełczak, Zuzanna Kruczek, Szymon Kurciński, Mikołaj Antkiewicz, Dorota Kołkowicz

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