Multidisciplinary Journal of Tourism, Hospitality, Sport and Physical Education
Vol. 3, No. 1, June 2026, pp. 173~186
ISSN: 3062-9551, DOI: 10.37251/jthpe.v3i1.3163

Psychological Support in Sport Injury Rehabilitation: Evidence from Physiotherapists and Athletes

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Article Info

Article history:

Received Mar 3, 2026
Revised Apr 23, 2026
Accepted Jun 19, 2026
OnlineFirst Jun 24, 2026

Keywords:

Athlete Recovery
Psychological Intervention
Rehabilitation Psychology
Sport Injury
Sports Physiotherapy

ABSTRACT

Purpose of the study:
This study aims to examine the role of psychological interventions in sports injury rehabilitation by exploring physiotherapists' and athletes' perspectives and identifying the effectiveness of psychological support within contemporary sports medicine rehabilitation practices.

Methodology:
This study used a mixed-methods design involving a national survey of 361 licensed physiotherapists in the UK, a training preference survey (N=22), and semi-structured interviews analyzed using Interpretative Phenomenological Analysis. Data were supported by contemporary literature review in sport psychology and sports medicine up to 2025.

Main Findings:
The findings revealed that most physiotherapists recognized the importance of psychological aspects in rehabilitation but lacked formal training in applying psychological interventions systematically. Goal setting, social support, and imagery were the most frequently applied interventions, while relaxation and positive self-talk were less utilized. Athletes emphasized emotional acknowledgment and psychological support from physiotherapists as essential factors during recovery.

Novelty/Originality of this study:
This study integrates empirical findings from physiotherapists and injured athletes with recent developments in sport psychology and sports medicine literature up to 2025. It highlights the urgent need for systematic psychological competency training in sports physiotherapy and proposes a comprehensive biopsychosocial rehabilitation framework to improve athlete recovery outcomes.

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1. INTRODUCTION

Sports injuries are an inseparable part of physical activity and competitive sports. Along with the increasing participation of athletes in recreational, amateur, and professional sports, the incidence of sports injuries

has also continued to rise globally [1]-[5]. Sports injuries not only affect athletes' physical performance, but also have broader consequences on their psychological condition, social life, and quality of life. In many cases, injuries force athletes to stop training and competing for a certain period, causing significant changes in daily routines, self-confidence, and athletic identity [6]-[10]. The increasing development of sports achievements and the growing enthusiasm for sports activities among young people have also contributed to the higher risk of injury among athletes and active individuals [11]-[13]. However, sports injury management is still predominantly focused on physical recovery, while psychological aspects often receive limited attention.

Psychological responses following sports injuries are highly complex and vary among athletes [14]-[18]. Injured athletes commonly experience anxiety, frustration, stress, fear of re-injury, loss of motivation, and decreased self-confidence during the rehabilitation process. Prolonged injuries can even trigger emotional disturbances that negatively affect adherence to rehabilitation programs and delay recovery outcomes [19]-[23]. Modern sports medicine increasingly recognizes that recovery from injury is not merely a biological healing process, but rather a multidimensional process involving physical, psychological, and social components simultaneously [24]-[28]. Therefore, successful rehabilitation requires not only physical therapy interventions, but also psychological support capable of helping athletes manage emotional pressure and maintain motivation throughout rehabilitation.

The biopsychosocial approach in sports rehabilitation emphasizes the importance of integrating psychological interventions into rehabilitation programs [29]-[31]. Within this perspective, psychological factors such as stress, coping strategies, self-efficacy, motivation, and social support play a major role in determining rehabilitation success [32]-[35]. Athletes with better psychological adaptation generally demonstrate higher adherence to rehabilitation programs, stronger recovery motivation, and greater readiness to return to sport [36]-[39]. Consequently, psychological interventions are now considered an essential component of sports injury rehabilitation rather than merely a complementary aspect.

Physiotherapists hold a strategic role in the rehabilitation process because they interact directly and intensively with injured athletes during treatment and recovery [40]-[43]. In addition to restoring physical function through therapeutic exercises and rehabilitation modalities, physiotherapists are also expected to provide psychological support during recovery. In practice, many physiotherapists have applied psychological approaches such as goal setting, motivation enhancement, relaxation techniques, positive communication, imagery, and emotional support to help athletes cope with rehabilitation challenges [44]-[46]. Nevertheless, the implementation of these interventions is often carried out informally and depends heavily on individual experience rather than standardized evidence-based guidelines. This condition indicates that psychological competencies among physiotherapists remain inconsistent and not yet systematically integrated into rehabilitation practice.

Several previous studies have discussed the role of psychological interventions in sports injury rehabilitation. However, most studies focus only on one perspective, either the physiotherapist's perspective or the athlete's perspective. Research integrating both perspectives simultaneously remains limited, even though the interaction between physiotherapists and athletes is central to the rehabilitation process [47]-[49]. As a result, there is still a lack of comprehensive understanding regarding how psychological interventions are applied, how athletes perceive these interventions, and how both parties evaluate their effectiveness in supporting recovery. This gap causes rehabilitation practices to often fail to fully address the psychological needs experienced by injured athletes.

Studies examining psychological interventions in sports injury rehabilitation are still relatively scarce. Rehabilitation services are generally more oriented toward physical recovery outcomes, while psychological support systems have not been optimally developed. In addition, collaboration between physiotherapists and sports psychologists remains limited due to the lack of trained professionals and insufficient integration of sports psychology competencies in physiotherapy education curricula. This situation creates an urgent need to develop a more holistic rehabilitation approach that integrates physical and psychological aspects in order to improve the effectiveness of athlete recovery [50]-[52].

The urgency of this study lies in the increasing awareness that ineffective management of psychological responses during rehabilitation can negatively affect athletes' recovery, return-to-sport readiness, and long-term performance. Without proper psychological support, athletes are more vulnerable to emotional distress, reduced rehabilitation adherence, and recurrent injuries after returning to competition. Therefore, understanding the role of psychological interventions from both physiotherapists' and athletes' perspectives is highly important for developing more effective, athlete-centered, and evidence-based rehabilitation practices.

The novelty of this study is reflected in its integrative approach that combines the dual perspectives of physiotherapists and athletes in analyzing the implementation and effectiveness of psychological interventions during sports injury rehabilitation. Unlike previous studies that generally focus on a single perspective, this study attempts to provide a more comprehensive understanding of the interaction dynamics between physiotherapists and athletes throughout rehabilitation. Furthermore, this study integrates recent developments in sports psychology and sports medicine literature to formulate recommendations relevant to rehabilitation context, where research on this topic remains limited.

Based on the background above, this study aims to: (1) analyze the implementation patterns of psychological interventions used by sports physiotherapists during injury rehabilitation; (2) identify gaps in psychological competencies and formal training among physiotherapists; (3) explore athletes' perceptions, experiences, and expectations regarding psychological support during rehabilitation; (4) examine the relationship between psychological interventions and rehabilitation outcomes; and (5) formulate evidence-based recommendations for the development of holistic sports injury rehabilitation practices.

2. RESEARCH METHOD

2.1 Research Design

This study employed a mixed-methods integrative research design that combined quantitative and qualitative approaches with an integrative review of recent literature on psychological interventions in sports injury rehabilitation. Mixed-methods research is particularly appropriate for complex health and rehabilitation phenomena because it enables researchers to integrate measurable patterns with contextual understanding derived from individual experiences [53]. A mixed-methods design was selected because the research questions concern both the prevalence and the lived meaning of psychological support during rehabilitation; quantitative data establish general patterns of intervention use, whereas qualitative data provide an in-depth understanding of the experiences, perceptions, and expectations of physiotherapists and athletes [54]. The integration of quantitative and qualitative evidence allows a more comprehensive interpretation of rehabilitation processes that cannot be fully captured through a single methodological approach [55].

The empirical work was organised as a programme of four complementary studies designed sequentially so that earlier findings informed the focus of later ones. Studies 1 and 2 used quantitative survey methods, and Studies 3 and 4 used a qualitative approach based on Interpretative Phenomenological Analysis (IPA). Findings from the four studies were subsequently triangulated with an integrative review of international literature published between 2020 and 2025. The overall design is summarised in Figure 1.

The empirical datasets analysed in this article derive from a previously conducted programme of research on UK chartered physiotherapists and injured athletes.

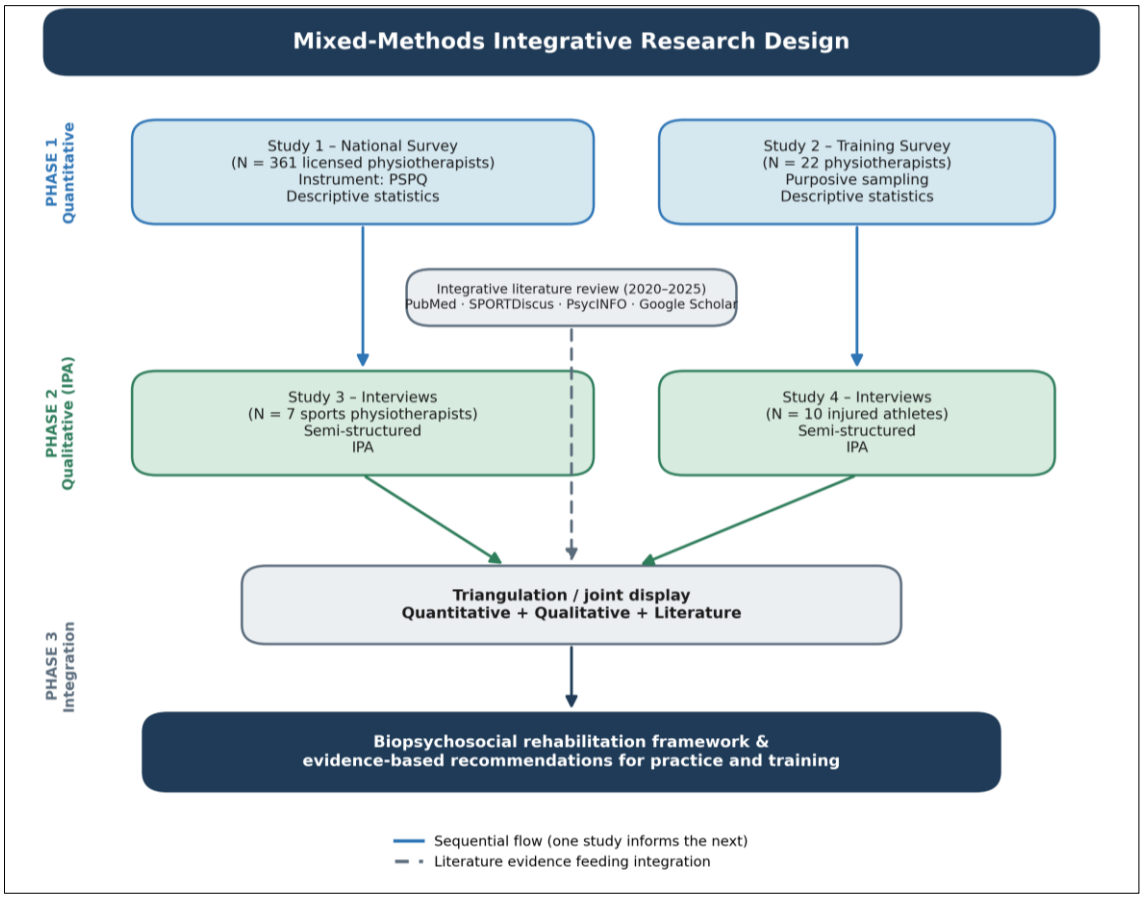

Figure 1. Flow diagram of the mixed-methods integrative research design

2.2 Participants and Sampling

The target population comprised licensed physiotherapists working in sports medicine and athletes who had sustained sports injuries requiring rehabilitation. Sampling was organised across the four studies as follows.

a) Study 1: 361 licensed physiotherapists involved in sports rehabilitation, recruited nationally through professional physiotherapy organisations using combined online and postal distribution.
b) Study 2: 22 physiotherapists, selected purposively based on professional background and experience in sports rehabilitation and interest in psychological-intervention training.
c) Study 3: 7 licensed sports physiotherapists, selected purposively based on direct clinical experience in applying psychological strategies during injury rehabilitation.
d) Study 4: 10 athletes who had experienced moderate-to-severe sports injuries and had completed or were undergoing physiotherapy rehabilitation, selected purposively based on injury history and willingness to provide detailed recovery experiences.

Inclusion criteria included: (1) possession of valid professional certification for physiotherapists; (2) minimum of one year of experience in sports rehabilitation practice for Studies 1–3; (3) documented experience of treating or experiencing sports-related injuries for Study 4; (4) willingness to participate voluntarily; and (5) ability to provide informed consent. Exclusion criteria included: (1) physiotherapists not actively engaged in sports rehabilitation practice; (2) incomplete professional registration or expired licensure; (3) athletes with non-sports-related injuries; and (4) participants with incomplete or unreliable responses during data collection. Recruitment continued until the planned sample size for each study was reached.

2.3 Instruments and Measures

2.3.1 Quantitative instruments

Study 1 used the Physiotherapist and Sport Psychology Questionnaire (PSPQ), an established instrument assessing physiotherapists' views on the psychological content of practice and their use of psychological techniques during rehabilitation. The PSPQ consists of 28 items organised into three domains: psychological skill utilisation, perceived relevance of sport psychology, and confidence in applying psychological strategies. All items are rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Study 2 used a researcher-developed questionnaire addressing training needs, preferred learning formats, and perceived importance of psychological competencies in sports rehabilitation. The instrument contained 18 items using a 5-point Likert scale. Content validity was established through expert review by three specialists in sports physiotherapy and sport psychology, resulting in a Content Validity Index (CVI) of 0.89. A pilot test with 15 physiotherapists produced acceptable internal consistency (Cronbach's $\alpha = 0.86$).

2.3.2 Qualitative instruments

Studies 3 and 4 used individual semi-structured interview guides developed based on study objectives and findings from the quantitative phase. The guides explored physiotherapists' application of psychological interventions, therapeutic communication, perceived barriers, and professional training needs, as well as athletes' emotional experiences during rehabilitation, expectations of psychological support, and recovery challenges. Open-ended questions with flexible prompts allowed participants to provide rich, detailed narratives.

2.3.3 Literature search

The integrative review searched PubMed, SPORTDiscus, PsycINFO, and Google Scholar for empirical studies, systematic reviews, and meta-analyses published between 2020 and 2025. Search terms included combinations of "sports injury rehabilitation," "psychological intervention," "sports physiotherapy," "athlete recovery," and "sport medicine."

A total of 1,245 records were initially identified. After removing duplicates and screening titles and abstracts, 186 full-text articles were assessed for eligibility. Ultimately, 42 studies met the inclusion criteria and were included in the final synthesis. A PRISMA-style flow diagram was used to document the selection process.

2.4 Procedure

Data collection followed a sequential multi-study procedure across the four studies:

1. Ethical approval was obtained from the Research Ethics Committee of prior to data collection.
2. Eligible participants were identified and invited to participate. Those who agreed received detailed participant information and provided written informed consent.
3. Quantitative data (Studies 1–2) were collected using online and postal questionnaires, with follow-up reminders to improve response rates.
4. Qualitative data (Studies 3–4) were collected through semi-structured interviews conducted at mutually convenient times and locations. All interviews were audio-recorded with consent and transcribed verbatim.
5. Confidentiality was ensured by removing all identifying information and assigning pseudonyms or participant codes. Data were stored securely and accessed only by the research team.

6. The integrative literature review was conducted in parallel and its findings were synthesized with empirical results during the interpretation phase.

2.5 Data Analysis

Quantitative data were analysed using descriptive statistics, including frequencies, percentages, means, and standard deviations, to describe physiotherapists' use of psychological interventions and training preferences. Analyses were performed using IBM SPSS Statistics version 26. Qualitative interview data were analysed using Interpretative Phenomenological Analysis (IPA). The analysis followed established steps: repeated reading of transcripts, initial noting, development of emergent themes, clustering into superordinate themes, and cross-case comparison to identify convergent and divergent patterns. Integration of quantitative, qualitative, and literature findings was conducted using a triangulation approach with a joint-display method to compare and synthesise evidence across datasets.

3. RESULTS AND DISCUSSION

3.1 Sample characteristics

The evidence base comprised four sequential studies spanning two methodological approaches. The quantitative strand surveyed a large national sample of physiotherapists, while the qualitative strand examined a smaller, purposively selected group of physiotherapists and injured athletes. The composition of the samples is summarised in Table 1.

Table 1. Characteristics of the participant samples across the four studies

Study	Design	N	Population	Selection
Study 1	Quantitative survey	361	UK chartered physiotherapists in sport-injury settings	National postal survey
Study 2	Quantitative survey	22	UK chartered physiotherapists	Purposive
Study 3	Qualitative (IPA)	7	UK chartered sports physiotherapists (4 female, 3 male)	Purposive
Study 4	Qualitative (IPA)	10	Athletes with moderate–severe injuries undergoing physiotherapy	Purposive

As Figure 1 shows, the design combined breadth (a national physiotherapist survey of 361 respondents) with depth (small purposive samples for in-depth interviews), which is the rationale for the mixed-methods design.

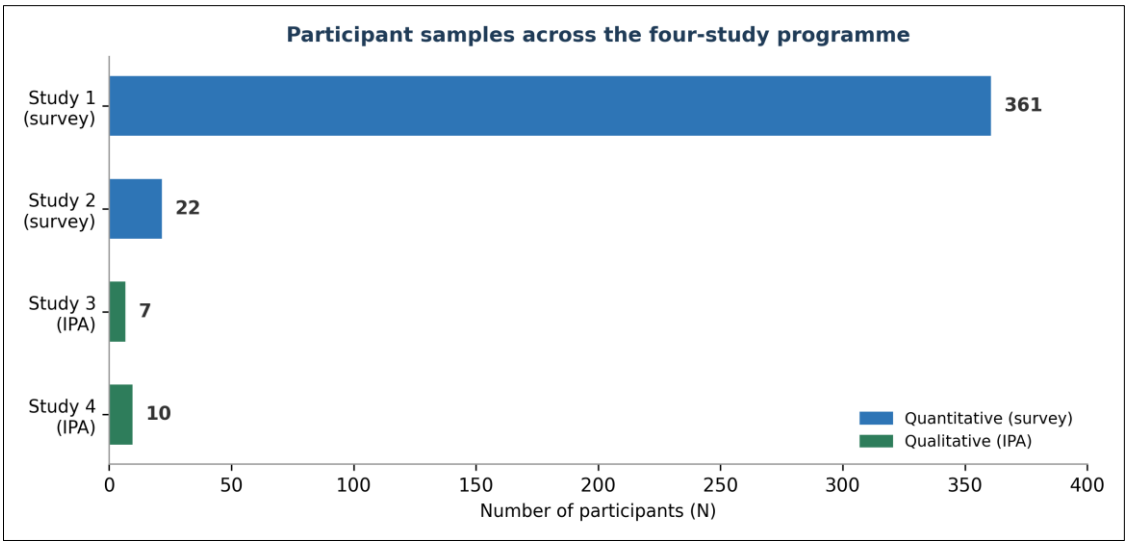

Figure 1. Participant samples across the four-study programme

As illustrated in Figure 1, the participant distribution reflects the complementary logic of the four-study programme. The quantitative studies contributed a broader understanding of physiotherapy practices through larger survey samples, whereas the qualitative studies provided a more detailed exploration of professional and patient experiences through in-depth interviews. This combination enabled the investigation of both the extent of observed patterns and the contextual meanings underlying those patterns, providing the foundation for the mixed-methods integration presented in Section 3.5.

3.2 Quantitative results (Studies 1–2)

Physiotherapists almost universally reported that injury affects athletes psychologically, identifying stress and anxiety as the most common responses, together with frustration, fear of re-injury, reduced confidence, and lowered motivation. In terms of practice, the descriptive data showed a clear hierarchy in the use of psychological interventions, summarised in Table 2.

Table 2. Reported use of psychological interventions by physiotherapists

Intervention	Reported use	Key descriptive finding (attributed)
Goal setting	Frequent / valued	Most consistently applied; valued for motivation and progress monitoring, but often informal rather than structured
Social support	Frequent	Strongest area of understanding; emphasis on the therapeutic relationship and referral
Imagery	Infrequent / unsystematic	Recognised in principle but poorly understood; rarely delivered as structured programmes
Relaxation	Infrequent / unsystematic	Often conflated with physical rest or modalities rather than formal techniques
Positive self-talk	Infrequent / unsystematic	Interpreted as therapist encouragement rather than an athlete cognitive strategy

The descriptive pattern in Table 2 separates two groups of techniques: those readily incorporated into routine practice (goal setting, social support) and those used rarely or unsystematically (imagery, relaxation, self-talk). This contrast is shown graphically in Figure 2.

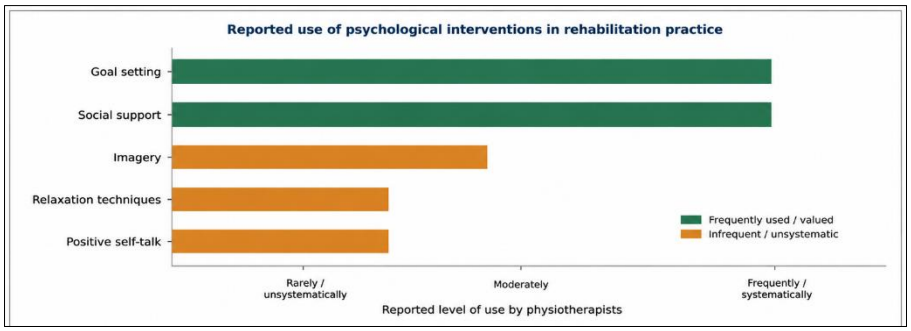

Figure 2. Reported use of psychological interventions in rehabilitation practice.

Figure 2 demonstrates a clear distinction between psychological strategies that were routinely incorporated into rehabilitation practice and those that remained less consistently applied. Goal setting and social support represented the most commonly used approaches, reflecting physiotherapists' greater confidence in strategies embedded within routine communication, motivation, and therapeutic relationships. In contrast, imagery, relaxation techniques, and positive self-talk were reported as less frequently and less systematically implemented, suggesting limited familiarity with their structured application within rehabilitation programmes. These findings indicate that although physiotherapists recognised the psychological dimensions of injury recovery, the delivery of specific psychological skills was variable and often dependent on informal practice rather than systematic intervention frameworks.

Further interpretation of these patterns, including the underlying reasons for differences in implementation and the experiences of physiotherapists and athletes, is explored through the qualitative findings presented in Section 3.3 and Section 3.4.

3.3 Qualitative results: physiotherapists (Study 3)

Interpretative Phenomenological Analysis of the physiotherapist interviews produced four superordinate themes (Table 3). The accounts described limited formal training and a reliance on intuition and experience in deciding how and when to use psychological techniques.

Table 3. Master table of themes – physiotherapists' accounts

Superordinate theme	Sub-themes (interpreted)
Acquired knowledge	Limited formal sport-psychology training; awareness of athletes' emotional processes.
Understanding interventions	Goal setting essential; imagery poorly understood; relaxation conflated with physical rest; 'being positive' rather than structured self-talk; social support recognised.

Superordinate theme	Sub-themes (interpreted)
Experiences of applying interventions	Influence of personal attitudes; reliance on intuition ('gut feeling'); the athlete's engagement; the constraint of time.
Role in the process	Recognising the importance of psychological rehabilitation; uncertainty about professional role boundaries.

The themes in Table 3 indicate that confidence was concentrated in goal setting and social support, whereas imagery, relaxation, and self-talk were either misunderstood or reframed as general encouragement, mirroring the usage hierarchy seen in the quantitative data.

3.4 Qualitative results: athletes (Study 4)

Analysis of the athlete interviews generated five superordinate themes (Table 4). Athletes reported strong emotional responses to injury and emphasised the relational dimension of their care.

Table 4. Master table of themes – athletes' accounts

Superordinate theme	Sub-themes (interpreted)
Emotional responses to injury	Self-doubt; frustration during recovery.
Experiences of social support	From family, partners and friends; from teammates and fellow injured players; from the physiotherapist; a preference for subtle support.
Physiotherapist as primary provider	Valuing individualised care; wanting clear diagnosis and treatment; wanting pain acknowledged; trust.
Psychology within physiotherapy	Ambivalence toward explicit 'psychological support'; valuing target-/goal-setting.
Normalising injury	Taking personal responsibility; a 'getting on with it' attitude.

As Table 4 shows, athletes valued trust, individualised care, and acknowledgement of their pain, and preferred psychological support to be subtle and embedded rather than explicitly labelled while still valuing target-setting. These accounts form the athlete side of the integration that follows.

3.5 Mixed-methods integration

Bringing the qualitative strands together, Figure 3 maps the convergence and divergence between physiotherapist and athlete accounts.

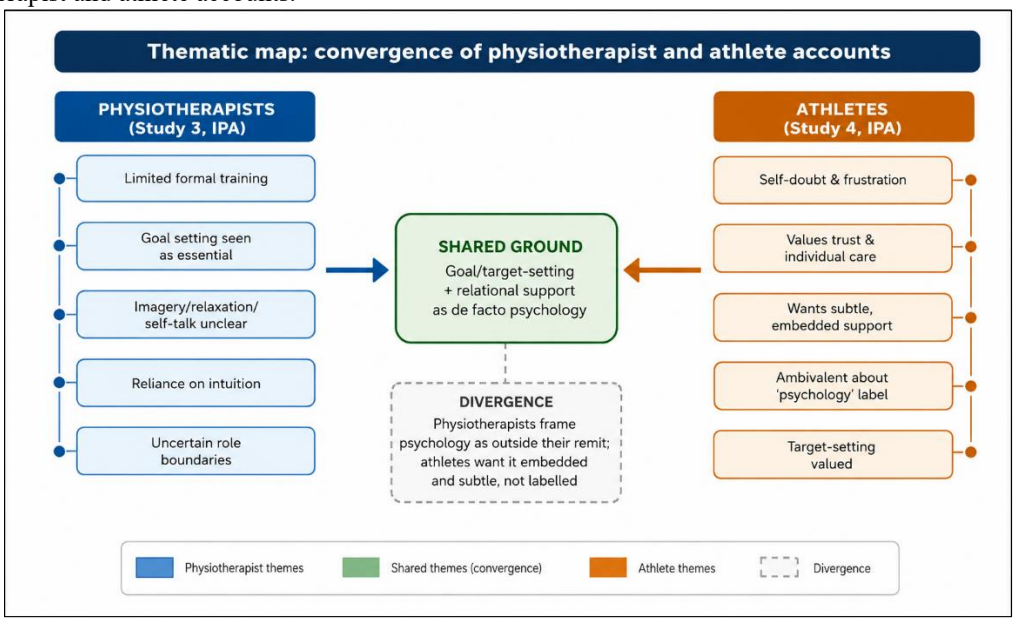

Figure 3. Thematic map of convergence and divergence between physiotherapists and athletes.

The thematic map identifies a shared core goal/target-setting and relational support function as de facto psychological practice for both groups alongside a divergence in framing. The quantitative and qualitative evidence are then aligned explicitly in the joint display in Table 5.

Table 5. Joint display integrating quantitative, qualitative, and literature evidence

Focus	Quantitative evidence (Studies 1–2)	Qualitative evidence (Studies 3–4)	Convergent insight
Psychological impact	Widely endorsed; stress/anxiety most common.	Self-doubt and frustration; valued acknowledgement of pain/emotion.	Impact is salient to both parties; recognition is not the limiting factor.
Goal setting	Most frequently reported intervention.	Essential to physiotherapists; valued by athletes; applied informally.	The realistic entry point for structured psychological practice.
Imagery / relaxation / self-talk	Least systematically used.	Misunderstood or reframed as encouragement / rest.	A clear competency gap requiring training.
Therapeutic relationship	Limited access to sport psychologists for referral.	Athletes prioritised trust, individualised and subtle support.	Everyday interaction is itself a psychological intervention.
Training	Strong demand; preference for workshops / face-to-face.	Reliance on intuition due to limited formal training.	Systematic competency training is the priority.

Read together, Table 5 and Figure 3 show that recognition of the psychological dimension is present on both sides of the rehabilitation relationship, and that the principal constraint is structured competency rather than attitude. The meaning of this pattern is interpreted in the Discussion.

3.6 DISCUSSION

3.6.1 Interpretation of the principal findings

Because the quantitative strand was analysed with descriptive statistics rather than inferential tests, the findings describe patterns of prevalence and emphasis rather than effect sizes or causal relationships. Interpreted in that light, the descriptive hierarchy is itself the key result: the consistent gap between frequently used techniques (goal setting, social support) and rarely used ones (imagery, relaxation, self-talk) indicates that uptake tracks how closely a technique resembles existing physiotherapy routines, not how clinically valuable it is.

The qualitative strand explains why this pattern occurs. The IPA themes show that physiotherapists draw on experiential, intuitive knowledge in the absence of formal training, and that they conceptualise psychological work as adjacent to their role. The athlete themes show the complementary reality: athletes do not necessarily want formal 'psychology', but they consistently value the relational and goal-focused elements physiotherapists already provide. Integrating the two strands (Table 5, Figure 3) yields a coherent mixed-methods conclusion—the everyday physiotherapist–athlete relationship is already a vehicle for psychological support, but its more technical components are under-delivered because of a training gap.

3.6.2 Comparison with previous research

These findings are largely consistent with the wider literature, while extending it in scope. Table 6 compares the present synthesis with key prior studies.

Table 6. Comparison of the present synthesis with previous research

Prior study	Findings	Relation to the present synthesis
Hemmings & Povey (2002) [56]	UK physiotherapists viewed psychological factors as important and used some strategies (preliminary survey).	Converges on recognition; the present work extends it with a national sample and qualitative depth.
Hamson-Utley et al. (2008) [57]	US athletic trainers and physiotherapists held positive attitudes toward psychological strategies but reported limited training.	Converges on the attitude–practice gap; minor differences likely reflect the US versus UK professional context.
Alexanders et al. (2015) [58]	Systematic review: musculoskeletal physiotherapists value psychological interventions and use goal setting, yet feel inadequately trained.	Strong convergence; differences in scope (general MSK versus sport-specific) do not alter the training-gap conclusion.

Prior study	Findings	Relation to the present synthesis
Arvinen-Barrow, Massey & Hemmings (2014) [59]	Professional athletes expected sport-medicine professionals to address the psychosocial aspects of injury.	Converges with the athlete data: athletes want psychological support embedded through the practitioner.
Bae (2024); Tranæus et al. (2024) [60], [61]	Advocate a biopsychosocial, interdisciplinary model of injury rehabilitation.	The present synthesis operationalises this model specifically for physiotherapy practice and training.

The convergence across previous studies and the present synthesis demonstrates a consistent pattern: physiotherapists recognise the importance of psychological factors in injury rehabilitation but frequently experience limitations in applying structured psychological techniques. Early investigations showed that physiotherapists considered psychological aspects relevant to rehabilitation practice but reported uncertainty regarding their role and competency boundaries [37]. Subsequent research among athletic trainers and physiotherapists similarly identified positive attitudes toward psychological interventions but highlighted insufficient training as a major barrier to implementation [38]. This pattern has also been confirmed by systematic reviews indicating that rehabilitation professionals commonly integrate basic strategies such as goal setting and communication, whereas more specialised psychological techniques remain underutilised because of limited knowledge and confidence [39].

The present synthesis extends previous findings by integrating practitioner and athlete perspectives within a mixed-methods framework. While earlier studies primarily focused on professional perceptions and practices, the current findings demonstrate that athletes also value psychological support when it is embedded naturally within the rehabilitation relationship, particularly through trust, individualised care, and collaborative goal setting [40]. This convergence indicates that the main challenge is not the recognition of psychological needs, but rather the translation of psychological knowledge into consistent and structured clinical practice.

Recent literature further supports this interpretation by highlighting the transition from a predominantly biomedical approach toward an integrated biopsychosocial model in sports injury rehabilitation [41], [42]. Contemporary evidence emphasises that psychological readiness, emotional regulation, confidence restoration, and rehabilitation adherence are essential components of successful recovery and return-to-sport processes [41], [39]. However, despite increasing recognition of these factors, implementation remains inconsistent because rehabilitation professionals continue to report limited formal education, insufficient confidence, and inadequate practical frameworks for delivering psychological interventions [39], [41]. Therefore, the contribution of the present synthesis lies in identifying the specific implementation gap: psychological factors are widely acknowledged, but competency-based approaches are still required to translate this awareness into effective rehabilitation practice.

3.6.3 Mechanisms and scientific reasoning

Beyond describing that interventions are used unevenly, it is important to explain why psychological interventions matter physiologically and psychologically. Figure 4 outlines a plausible mechanism.

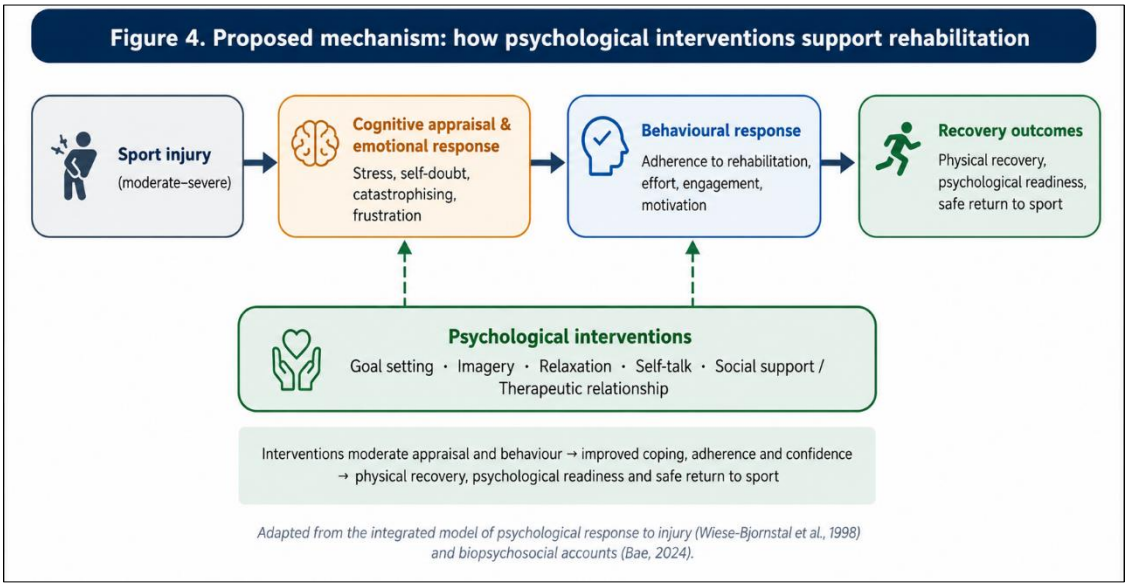

Figure 4. Proposed mechanism linking psychological interventions to rehabilitation outcomes.

Drawing on the integrated model of psychological response to injury (Wiese-Bjornstal et al., 1998) and biopsychosocial accounts (Bae, 2024), the mechanism operates through several pathways. Psychologically, goal setting structures attention and sustains motivation, supporting rehabilitation adherence; imagery and relaxation can reduce stress and pain perception and may dampen sympathetic arousal that interferes with tissue healing and sleep; and self-talk reframes the negative appraisals (self-doubt, catastrophising) that otherwise undermine confidence and effort. Socially, a trusting therapeutic relationship and effective social support buffer the emotional impact of injury and improve communication, which in turn raises adherence. Because adherence and effort are themselves determinants of physical recovery, these psychosocial pathways have a physiological endpoint: better-executed rehabilitation. This explains why the relational and goal-focused elements that athletes valued most are not 'soft extras' but active ingredients of recovery.

3.6.4 Implications, research gap, limitations, and future directions

The convergence of the evidence points to clear, actionable implications, summarised in the framework in Figure 5.

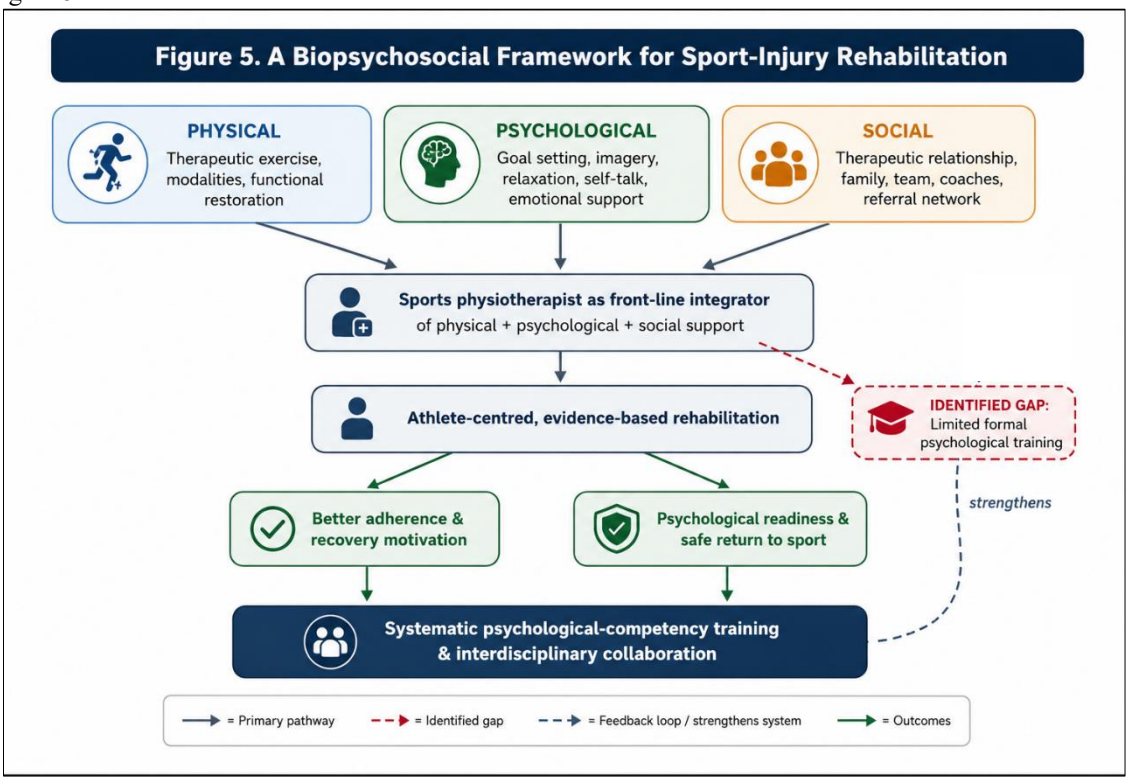

Figure 5. A biopsychosocial framework for translating the findings into practice.

The integrated findings of the present synthesis highlight important implications for clinical practice, education, policy, and future research. Figure 5 presents a biopsychosocial framework that summarises the identified research gap, the translation of findings into practice, and potential future directions for sport-injury rehabilitation.

Although previous studies have consistently demonstrated that psychological factors influence injury rehabilitation, an important gap remains in how psychological knowledge is translated into routine physiotherapy practice. Earlier investigations have primarily focused on practitioners' perceptions, attitudes, and confidence regarding psychological interventions, with less emphasis on how these professional perspectives correspond with athletes' lived experiences during rehabilitation [34]–[36]. The present synthesis addresses this gap by integrating physiotherapist and athlete perspectives and demonstrating that the primary challenge is not the recognition of psychological needs, but the limited availability of structured competency-based approaches for applying psychological skills in clinical settings.

Compared with previous research, the current findings extend existing evidence by showing that psychological support should not be considered an additional component separate from physiotherapy, but rather an integrated element of athlete-centred rehabilitation. Consistent with previous studies, goal setting and therapeutic relationships emerged as the most accessible psychological strategies, whereas more technical skills, including imagery, relaxation, and self-talk, remained underutilised because of limited training and confidence [36], [37]. This interpretation aligns with contemporary biopsychosocial perspectives, which emphasise that successful sport-injury rehabilitation requires the integration of physical, psychological, and social dimensions rather than an exclusive focus on tissue recovery [38], [39].

The findings have several implications for clinical practice. Physiotherapists should be supported to function as front-line integrators of biopsychosocial care by incorporating structured psychological strategies within their professional scope while maintaining appropriate referral pathways for athletes requiring specialist psychological support. Goal setting and therapeutic communication, which were already embedded within routine practice, can be further developed into systematic approaches with measurable rehabilitation objectives. Meanwhile, psychological techniques such as imagery, relaxation, and self-talk should be introduced through competency-based training programmes to improve practitioners' confidence and consistency in application.

For education and professional development, the identified competency gap indicates the need to strengthen psychological training within physiotherapy curricula and continuing professional development programmes. Educational approaches should move beyond theoretical awareness toward practical learning through workshops, case-based training, and supervised application of psychological techniques. At the organisational and policy levels, interdisciplinary rehabilitation models involving physiotherapists, sport psychologists, coaches, and athletes should be promoted to ensure comprehensive athlete-centred care. As illustrated in Figure 5, systematic psychological-competency training and interdisciplinary collaboration represent important pathways for improving rehabilitation adherence, psychological readiness, and safe return-to-sport outcomes.

Several limitations should be acknowledged. First, the evidence base originates from a single research programme conducted in the United Kingdom; therefore, differences in healthcare systems, professional regulations, and sporting cultures may influence the transferability of findings to other contexts. Second, the quantitative studies relied on self-reported practices and descriptive analyses, meaning that causal relationships between psychological intervention use and rehabilitation outcomes cannot be established. Third, although the qualitative samples were appropriate for interpretative phenomenological analysis, their purposive nature and limited sample size restrict broader generalisation. Finally, this article represents an integrative synthesis of existing empirical data and recent literature rather than a prospective intervention study. Future research should therefore evaluate whether structured psychological competency training for physiotherapists improves rehabilitation adherence, psychological readiness, and return-to-sport outcomes through longitudinal and experimental designs.

4. CONCLUSION

This review highlights that psychological interventions are an essential component of sports injury rehabilitation because psychological responses such as anxiety, fear of re-injury, and decreased motivation significantly influence athletes' recovery processes and rehabilitation outcomes. Sports physiotherapists play a strategic role in providing psychological support; however, their ability to deliver structured and evidence-based interventions is still limited due to inadequate formal training, causing rehabilitation practices to rely heavily on personal experience and clinical intuition. The findings also show that athletes highly value individual recognition, transparent communication, and supportive therapeutic relationships during rehabilitation, indicating that physiotherapists need not only technical rehabilitation skills but also strong communication and interpersonal competencies. Furthermore, current developments in sports medicine increasingly emphasize a biopsychosocial rehabilitation approach that integrates physical, psychological, and social dimensions, making interdisciplinary collaboration between physiotherapists, sports psychologists, and other healthcare professionals an important strategy for optimizing athlete recovery and improving the overall quality of rehabilitation services.

ACKNOWLEDGEMENTS

The author would like to express sincere gratitude to all physiotherapists and athletes who participated in the empirical studies and shared their experiences regarding psychological support during sports injury rehabilitation. The author also acknowledges the contribution of previous researchers whose work in sport psychology, sports medicine, and rehabilitation science informed the development of this integrative analysis. Appreciation is extended to the Department of Sport Philosophy, Faculty of Arts, The University of Northampton, for providing academic support and institutional facilities throughout the research process.

AUTHOR CONTRIBUTIONS

Conceptualization, M.A.B.; Methodology, M.A.B.; Investigation, M.A.B., J.B., and C.L.; Data Curation, M.A.B.; Formal Analysis, M.A.B.; Literature Review and Synthesis, M.A.B., J.B., and C.L.; Writing – Original Draft Preparation, M.A.B.; Writing – Review & Editing, M.A.B., J.B., and C.L.; Visualization, M.A.B.; Project Administration, M.A.B.; Supervision, M.A.B.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

Not applicable.

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