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Evaluating Readiness for Return-to-Dance: A Scoping Review of Candidate Tools Across Sport and Dance Literature

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Abstract

Introduction:

Return-to-dance (RTD) following injury is a complex decision informed by physical, functional and psychological factors. Pragmatic and accessible assessment tools may support decision-making and increase confidence in determining readiness to resume dance. However, there is a paucity of such tools within the dance literature. Assessment approaches developed in sport may provide useful models for informing RTD decisions in dancers.

Methods:

This scoping review mapped instruments used to evaluate readiness for return-to-performance in competitive dance and sport. The review was conducted in accordance with Joanna Briggs Institute Evidence Synthesis guidance. Eight databases spanning performance, health, medicine, kinesiology and sport were searched. Studies examining lower-limb and spinal injuries in non- or minimal-contact sports were included to reflect the specific demands of dance. Tools requiring specialist equipment or extensive clinical training were excluded. Studies relating to anterior cruciate ligament injury and concussion were excluded because of the substantial existing literature and guidance for these conditions. Primary research studies published in English over the preceding 20 years were included.

Results:

Twenty-five studies involving 1,931 participants, including 58 dancers, met the inclusion criteria. A broad range of assessment approaches was identified, encompassing physical/functional tests, patient-reported outcome measures (PROMs) and psychological measures. Physical and functional measures assessed domains including balance, strength, agility, range of motion and lower-limb performance. PROMs predominantly assessed pain, function and activity, while psychological measures addressed confidence, anxiety, fear of reinjury, coping and catastrophising. Few measures were dance-specific, although dance-specific functional tests were identified. The findings also highlighted the importance of incorporating the performer's perspective, including psychological readiness and self-reported function, when informing return-to-performance decisions.

Conclusion:

Numerous candidate tools and measures from sport may support RTD decision-making. However, the limited representation of dancers within the evidence base and paucity of dance-specific measures highlight the need for further dance-focused research. Future RTD assessment approaches should reflect the holistic nature of dance injury and incorporate physical, functional and psychological factors alongside the dancer's own assessment of readiness.

Key points

1. Return-to-dance (RTD) decision-making requires a holistic, biopsychosocial framework that integrates physical performance, subjective symptoms (PROMs), and psychological readiness.

2. Existing dance-specific RTD guidelines are sparse, narrow in genre scope, and underutilize psychological measures—highlighting a need for practical tools accessible to non-clinical stakeholders.

3. Return-to sport (RTS) tools may provide useful candidate measures to inform RTD decisions that centralize the dancer's voice in shared decision-making.

Introduction

Elite dance exists at the crossroads of the aesthetic and the athletic. Dance excellence demands enormous strength, endurance and control, in addition to the ability to embody beauty and creativity. It is therefore unsurprising that injury is common among dancers who pursue their craft at a high level. Dance encompasses diverse genres, each imposing distinct physical and psychological demands. Epidemiological research has recorded substantial levels of injury in non-recreational dancers, across numerous dance genres. This is despite widespread heterogeneity in injury definitions (time-loss, medical attention, any complaint) across the available dance literature.[1]

In a mixed modern-contemporary cohort, an injury prevalence of 82% was recorded in an extensive systematic review of professional and pre-professional dancers,[2] while a 1-year injury incidence proportion of 81% was reported in a cohort of 134 student contemporary dancers in the Netherlands.[3] This compares to a prospective study of 57 professional ballet dancers which identified that 96.5% of the cohort had reported at least one injury over a 44-week season.[4] A study in a similar cohort over a five-year period reported an incidence of musculoskeletal injuries as high as 72.6% per season.[5] Lower-limb injuries, particularly those affecting the foot and ankle, account for the vast majority of injuries across multiple genres including ballet,[5] contemporary and modern,[2] hip-hop,[6] Irish dance,[7] and ballroom dancesport.[8]

The impact of a dance injury is profoundly multidimensional and can be effectively framed using the World Health Organization’s ICF model.[9] While the physical impairment itself is the initial catalyst, the resulting participation restrictions heavily disrupt a dancer’s ability to engage in training and performance. Beyond these functional limitations, a complex web of personal and environmental contextual factors comes into play. Research has identified critical psychological toll points including distress, elevated stress, disordered eating, and maladaptive coping mechanisms.[10] Compounding these challenges, a further study has highlighted that many dancers experience a sense of stigma[11] about being injured. This pervasive environmental barrier often deters dancers from reporting their injuries to healthcare professionals and authority figures, creating a compounding cycle of delayed care. Dancers additionally experience practical worries related to job security, financial resources and the affordability

of medical intervention if required.[12] Some dancers have expressed a sense of responsibility towards peers in team or group settings, perceiving that their absence is letting down their colleagues.[13]

It is therefore extremely important that efficient, optimised return-to-dance (RTD) is facilitated and that the strategies used to support the RTD decision/process are comprehensive and multidimensional in nature, reaching beyond physical markers alone. Current guidelines for RTD are emerging, but remain fragmented and largely focused on ballet.[14] Existing guidelines address specific pathology or procedure-specific rehabilitation protocols. These include a recent RTD consensus statement for dancers with concussion[15] and post hip arthroscopy protocols for various conditions.[16] The Dance Functional Outcome Survey (DFOS) developed by Bronner and colleagues[17] is a 14-question self-report questionnaire for healthy and injured dancers, focusing on lower back and lower extremities. However, again the focus on genre is narrowly tailored to modern, ballet, contemporary dancers, with approximately half of the tool devoted to assessment of movement specific to those genres.

In addition to limitations regarding genre and injury type, a further shortcoming of existing and available tools is the limited integration of psychological readiness into RTD assessment. While existing guidance acknowledges the potential importance of confidence, fear of reinjury, anxiety and other psychological factors, there is a lack of clear, validated tools and clinical pathways for systematically assessing these factors across the wider dance population. Such measures have been widely integrated into various return-to-sport (RTS) pathways and have been found to be of critical importance in supporting a successful return after injury.[18] Given the more established use of psychological-readiness measures within RTS pathways, examining tools developed and evaluated in elite sport may provide an opportunity to identify approaches that could be adapted to the dance context.

Despite important artistic and cultural distinctions, elite dancers and competitive athletes share many traits pertinent to return-to-performance decision making. Both cohorts function in performance-oriented environments characterised by intensive training loads, high physical and psychological demands, and marked consequences often associated with injury.[19] The comparatively mature RTS literature therefore provides a valuable source of candidate assessment tools that may be relevant to dancers and warrant further evaluation in dance-specific contexts.

This scoping review therefore aimed to identify tools and measures used to assess readiness for return-to-performance in elite performers, drawing from literature in both dancers and athletes. The scoping review has been carefully tailored to explore lower limb injuries in elite performers, reflecting the injury burden and biopsychological demands experienced by elite dancers. The identification of tools with potential applicability to dancers, particularly ones that are accessible by non-clinical members of the dance community, may provide a valuable foundation for developing accessible, multidimensional approaches to supporting dancers' return-to-performance.

Methods

This scoping review was conducted according to the Joanna Briggs Institute (JBI) Evidence Synthesis guidelines[20] and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).[21] A scoping review protocol in accordance with the JBI was registered on the Open Science Framework (https://osf.io/hyz4a/overview) and has been published elsewhere.[22]

Inclusion and Exclusion Criteria

The scoping review was tailored to explore return-to-performance assessments of competitive/elite (non-recreational) athletes or dancers, involving lower-limb and spinal injuries. Non and limited-contact sports[23] and activities were included to further refine the focus on the nature of dance participation. Studies of full-contact activities were excluded. In cohorts with mixed participation level (e.g. recreational and non-recreational) and/or varied contact type (full-contact and non/limited-contact), there was a requirement for at least ten participants to meet the inclusion criteria. This approach was adopted to identify return-to-performance assessment tools that had been applied in relevant high-performance populations, even where studies also included recreational participants. Injuries to Anterior Cruciate Ligaments and Concussion were excluded given the relative rarity of these conditions in dance, and the breadth of literature and existing guidance for these conditions already in existence. Studies specifically pertaining to the Covid-19 context were excluded. Tools and measures that required technical equipment (e.g. MRI, isokinetic machinery) and/or expertise were excluded as access to such cannot be assumed as given and would limit the general applicability of the utilised assessment. Retrospective studies conducted more than a mean of 24 months after the initial injury or surgery were also excluded, as these were perceived to extend far beyond any reasonable return-to-participation window. Studies since 2000 were included (Table 1).

Table 1
Inclusion/exclusion domains.

Domain	Inclusion criteria	Exclusion criteria
Population and participation level	Competitive athletes or dancers. Mixed-level cohorts were eligible if ≥ 10 participants were competitive.	Recreational participants only; mixed-level cohorts with < 10 competitive participants.
Activity/contact type	Non-contact or limited-contact sports and activities. Mixed-contact cohorts were eligible if ≥ 10 participants were involved in non-/limited-contact activities.	Full-contact sports or activities; mixed-contact cohorts with < 10 eligible participants.
Injury	Lower-limb or spinal injuries, including post-surgical populations.	Upper limb injuries, Anterior cruciate ligament (ACL) injury, concussion/traumatic brain injury (TBI), COVID-19 context.
Return-to-performance assessment	Studies including tests, tools or measures used to assess readiness for or inform return-to-performance.	Studies not evaluating return-to-performance or readiness assessments.
Assessment requirements and timing	Assessments not requiring specialized technical equipment (e.g., MRI, isokinetic machinery) or specialist technical/clinical expertise. Retrospective assessments conducted within a mean of 24 months of injury or surgery.	Assessments requiring specialized technical equipment or technical and/or clinical expertise; retrospective assessments conducted > 24 months after injury or surgery.
Study design	Primary research reporting original data from 2000 to 2026 inclusive.	Reviews, case studies/reports, consensus reports, guidelines and other non-primary research. Studies prior to 2000.

Comprehensive searches of the following databases were conducted in Spring of 2026: Web of Science; EMBASE; EBSCO (CINAHL Ultimate, MEDLINE, SPORTDiscus, PsycINFO); PubMed; Elsevier (Scopus); ProQuest; Performing Arts Periodical Database, Dissertations; and JSTOR.

A concept framework approach was adopted to develop the search strategy, with search concepts derived from the eligibility criteria. Four key concepts were identified: population (athletes and dancers), readiness to RTD/RTS, measurement instruments, and injury context. Search terms were developed for each concept and adapted for the syntax and indexing requirements of each database. (Table 2). Search strings for all included databases are available in supplementary file 1.

Table 2
Concept framework and search terms

Concept	Search terms
a) Population (athletes and dancers)	**Dancers**: (MeSH: "Dancers") OR dancer* OR ballet OR "professional dancer*" OR "elite dancer*" **Athletes**: (MeSH: "Athletes") OR athlete* OR sport* OR "competitive athlete*" OR "elite athlete*"
b) Readiness to return (to sport or dance)	**Readiness**: (MeSH: "Psychological Readiness") OR "return to sport" OR "return to dance" OR "return to play" OR "return to performance" OR "return to activity" OR "sport participation" OR "physical readiness" OR "psychological readiness" OR "psychological readiness to return"
c) Instrument/measurement tool	**Measurement tools**: (MeSH: "Questionnaires") OR questionnaire* OR survey* OR scale* OR inventory OR inventories OR instrument* OR tool* OR assessment* OR measure* OR evaluation*
d) Injury context	**Injury context**: (MeSH: "Sports Injuries") OR "musculoskeletal injur*" OR "dance injur*" OR injur* OR rehabilitation OR "injury recovery" OR "physical therapy" OR physiotherapy OR "injury rehabilitation"

2.1

Study selection and screening

A pilot search strategy was developed in conjunction with the faculty librarian at the host institution of the lead author (RC). The strategy was tested, and appropriate subject headings and keywords were identified for the final search strategy. The strategy was then adapted for each database. Records identified in the search were collated into Endnote X9.3.3 (Clarivate Analytics, PA, USA) and citation details were imported into the Covidence reference management system (Covidence; Covidence Melbourne, Australia). Duplicates were removed and titles and abstracts were screened by four independent reviewers for assessment against the inclusion and exclusion criteria previously outlined. Each abstract was reviewed by two reviewers to ensure robust evaluation. An initial sample of 100 screened abstracts was evaluated to ensure consistency in reviewer screening approach.

Potentially relevant papers were retrieved and the full text independently assessed in detail against the inclusion and exclusion criteria. An initial 10% of papers were reviewed by two members of the authorship team to ensure consistency. Reasons to exclude were adjudicated by the main author where disagreements arose. The remaining full texts were reviewed by one member of the authorship team only.

Data charting, collection and extraction

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A standardized data extraction form based on the JBI Manual Appendix 10.1[21] was used by all members of the research team who completed data extraction. The form was amended to detail key information from eligible studies including: study characteristics (author, year, country of origin), study design, study population (sex, age, level of participation), details of sport/activity engaged in, condition or injury, tools/outcome measures, key RTD/RTS findings. Data extraction was completed by all members of the authorship team. Disagreements were adjudicated by RC.

Results

Initial searching identified 9088 articles for screening. Once duplicates were removed, 6729 titles and abstracts were included for screening. An audit of 100 screened articles showed excellent agreement by reviewers, with a conflict rate of < 5% which was resolved through discussion. Following title and abstract review, 260 full texts were assessed against the inclusion and exclusion criteria. Six disagreements were noted in the full text sample (10%, n = 26), but all related to reasons for exclusion as opposed to conflicts related to whether to include or exclude. Following full-text review, a total of 25 studies (Supplementary file 2) met the inclusion criteria and were included in the scoping review (Fig. 1).

A total of 1,931 athletes (including 58 dancers) were included in this review across 25 studies. This included 1,179 (61.1%) male and 624 (32.3%) female participants. The sex of participants was not reported for 128 (6.6%) athletes in two studies.[24 25] The age of included participants ranged from 14 to 69 years across the cohorts, with most studies focused on young adults or adolescents, with mean/median ages typically falling between 15 and 36.6 years. Approximately one third (n = 638 (33.0%)) of the overall cohort were described or self-described as professional, elite or intervarsity National Collegiate Athletic Association division 1 athletes. There were 1023 (53.0%) competitive / sub-elite / high school athletes, with the remainder of the cohort (n = 270 (13.9%)) falling into the recreational or leisure athlete category.

A variety of non/minimal contact sports were identified in this review, the most common of which were track and field/running (n = 220 athletes); baseball/softball (n = 85); dance (ballet, modern, jazz: n = 58); volleyball (n = 33); and horseback riding/equestrian (n = 30). The number of athletes participating in some of these activities was likely higher; however, some studies reported the number of teams rather than individual athletes. Consequently, accurate numbers of athletes participating in each sport could not be determined.

Where specified, all injuries identified in the studies in this review were to the lower limb. Hip pathologies including femoroacetabular impingement syndrome (FAIS), hip labral pathology/tears, proximal hamstring avulsions/strains, posterior hip impingement, chronic adductor-related groin injury (HARGI), and pyramidalis–anterior pubic ligament–adductor longus complex (PLAC) tears were identified in these studies. Knee conditions

included patellar tendinopathy, cartilaginous knee injuries, and collateral ligament sprains, while common conditions affecting the foot and ankle identified in this review were chronic ankle instability (CAI), acute lateral ankle sprains (LAS), posterior ankle impingement, navicular stress injuries, and sesamoid excisions. Several non-specific injuries[26], non-surgical strains[27] and those requiring extended absence from activity[28] were also included in this review.

A wide range of tools and measures was utilised to inform and evaluate return-to-activity across the included studies (Table 3). These have been categorised broadly as physical/functional tests (encompassing measures of balance, agility, strength, range of movement, hop tests, and clinical palpation assessments); Patient-Reported Outcome Measures (PROMs) assessing subjective physical function, symptoms, pain, and activity levels; and psychological measures evaluating domains such as mental readiness, fear, anxiety, confidence, motivation, and coping strategies. Among the most commonly used tools were joint-specific PROMs, such as the Foot and Ankle Ability Measure[29] (FAAM; ADL and sport subscales) which was used in four studies, and the modified Harris Hip Score[30] (mHHS), used in three studies. Also used in three studies was the Ankle-GO, which is a composite tool including several functional tests and a PROM.[31] The Ankle Ligament Reconstruction – Return-to-Sport after Injury (ALR-RSI) scale was the most frequently employed psychological measure, adopted in three studies.[32] Additionally, six studies used visual analogue scale (VAS) measures of pain to inform return-to-activity decisions.

Physical / Functional Tests	Patient-Reported Outcome Measures (PROMs)	Psychological Measures
30-Second Eyes-Closed Balance (n = 1): Assesses static postural control with visual input removed.	**American Orthopaedic Foot and Ankle Society (AOFAS) Score* (n = 2)**: Assesses foot/ankle pain and function, with clinician-rated components.	**Ankle Ligament Reconstruction-Return to Sport after Injury (ALR-RSI)* (n = 3)**: Assesses psychological readiness to return to sport, including confidence, emotions and risk appraisal.
60m Average Speed & Finishing Time (n = 1): Assesses running speed and sprint performance over 60 m.	**Ankle-GO* (n = 3)**: Composite return-to-sport assessment incorporating functional tests and patient-reported measures.	**Athlete Feelings About Returning to Practice or Competition (n = 1)**: Assesses subjective feelings and readiness regarding return to sport.
Clinical Hip Impingement Tests (n = 1): Clinical assessment of hip range of motion and pain provocation associated with hip impingement.	**Copenhagen Hip and Groin Outcome Score (HAGOS) (n = 2)**: Assesses hip/groin symptoms, pain, function, sport participation and quality of life.	**Attention Questionnaire of Rehabilitated Athletes (n = 1)**: Assesses ability to focus on performance rather than the injured body part.
Dance-Specific Functional Tests (Topple, Airplane, Sauté) (n = 1): Dance-specific tests assessing balance, single-leg control, landing stability and lower-limb performance.	**Foot and Ankle Ability Measure (FAAM) – ADL & Sport (n = 4)**: Assesses self-reported foot and ankle function during daily activities and sport.	**Brief COPE (n = 1)**: Assesses cognitive and behavioural strategies used to manage stress.
Figure-of-8 Test (n = 2): Assesses dynamic agility and ability to change direction.	**Hip Outcome Score (HOS) – ADL & Sport (n = 2)**: Assesses self-reported hip function during daily activities and sport.	**Causes of Re-Injury Worry Questionnaire (n = 1)**: Assesses concerns and worries about reinjury and return to sport.
Full Strength & Endurance Relevés (n = 1): Assesses single-leg plantarflexor strength and endurance using repeated relevés.	**Hip Sports Activity Scale (HSAS) (n = 1)**: Quantifies participation in sport and physical activity in people with hip disorders.	**Hip-RSI (n = 1)**: Assesses psychological readiness, confidence and emotional responses associated with return to sport after hip injury or surgery.
Hop Test (n = 1): Assesses unilateral lower-limb functional performance through hopping.	**International Hip Outcome Tool (iHOT-12 / iHOT-33) (n = 2)**: Assesses hip symptoms, function, sport/recreation and quality of life.	**Pain Catastrophizing Scale (PCS) (n = 1)**: Assesses rumination, magnification and helplessness related to pain.
Hip Flexion/Knee Extension Range of Motion (n = 1): Manually assesses hip and knee range of motion.	**International Knee Documentation Committee Subjective Knee Form (IKDC-S) (n = 1)**: Assesses patient-reported knee symptoms, function and sport participation.	**Pain Coping Measure (n = 1)**: Assesses cognitive and behavioural strategies used to cope with pain.

Physical / Functional Tests	Patient-Reported Outcome Measures (PROMs)	Psychological Measures
Isometric Strength Testing (n = 2): Manually assesses maximal voluntary muscle force during isometric contraction.	**Lower Extremity Functional Scale (LEFS) (n = 1)**: Assesses self-reported difficulty with physical activities in people with lower-extremity conditions.	**PROMIS – Anxiety (n = 1)**: Assesses self-reported symptoms of anxiety.
Local / Spot Tenderness Palpation (n = 2): Clinical assessment of localised tenderness or pain on palpation of the affected region.	**Marx Activity Rating Scale (MARS) (n = 1)**: Assesses frequency of participation in running, cutting, pivoting and deceleration activities.	**PROMIS – Depression (n = 1)**: Assesses self-reported symptoms of depression.
Modified Star Excursion Balance Test (mSEBT) (n = 2): Assesses dynamic postural control using multidirectional single-leg reaching.	**Modified Blazina Score (n = 1)**: Grades patellar tendinopathy symptoms according to pain and sporting activity.	**Sport Anxiety Scale (SAS) (n = 1)**: Assesses competitive anxiety, including somatic anxiety, worry and concentration disruption.
Passive Straight Leg Raise (PSLR) Test (n = 2): Assesses hamstring flexibility and passive hip range of motion.	**Modified Harris Hip Score (mHHS/HHS) (n = 3)**: Assesses hip pain and function.	**Sport Confidence Questionnaire (n = 1)**: Assesses confidence in the ability to perform successfully following rehabilitation.
Resisted Knee Flexion (n = 1): Assesses hamstring strength and pain response during resisted knee flexion.	**Musculoskeletal Outcomes Data Evaluation and Management System (MODEMS) Satisfaction (n = 1)**: Assesses satisfaction with treatment outcome.	**Tampa Scale of Kinesiophobia (TSK-11) (n = 1)**: Assesses fear of movement and reinjury associated with physical activity.
Rolling Start Sprints (n = 1): Assesses high-speed sprinting following progressive acceleration.	**Parisian Hamstring Avulsion Score (PHAS) (n = 1)**: Assesses pain, function and return-to-sport status following proximal hamstring avulsion.	**VAS – Psychological Constructs (n = 1)**: Study-specific visual analogue scales assessing emotion, anxiety, motivation and self-efficacy.
Side Hop Test (n = 2): Assesses dynamic lateral lower-limb control and agility through repeated side-to-side hopping.	**PROMIS – Physical Function (n = 1)**: Assesses self-reported ability to perform physical activities and everyday tasks.	
Single-Leg Squat (n = 1): Assesses single-leg lower-limb control and dynamic alignment during a squat.	**PROMIS – Pain Interference (n = 1)**: Assesses the extent to which pain interferes with activities and participation.	
Single-Leg Hop for Distance / Unilateral Long Jump (n = 2): Assesses unilateral horizontal hopping performance and between-limb symmetry.	**Revised Foot Function Index (FFI-R) (n = 1)**: Assesses foot pain, disability and activity limitation.	

Physical / Functional Tests	Patient-Reported Outcome Measures (PROMs)	Psychological Measures
Single-Leg Stance (n = 2): Assesses static postural control during single-leg standing.	**Return-to-Running Survey (n = 1)**: Study-specific questionnaire assessing return to running following hip surgery.	
Triple Hop (n = 1): Assesses unilateral lower-limb performance through three consecutive hops.	**Short-Form McGill Pain Questionnaire (SF-MPQ) (n = 1)**: Assesses sensory and affective dimensions of pain.	
	SF-12 (n = 1): Assesses physical and mental health-related quality of life.	
	Single Assessment Numeric Evaluation (SANE) (n = 2): Single-item patient-reported rating of overall function or status of the affected limb.	
	Study-specific Dance Questionnaire / Dancers Questionnaire (n = 1): Study-specific questionnaire assessing dance-related status, including pain.	
	Study-specific Satisfaction Questionnaire (n = 1): Study-specific assessment of satisfaction with treatment outcome.	
	Subjective Outcome Rating (n = 1): Patient-rated overall outcome using a four-category scale from excellent to poor.	
	VAS / Numeric Rating Scale – Pain (n = 6): Patient-reported rating of pain intensity using a visual or numerical scale.	
	VISA-P (n = 2): Assesses symptoms, pain and functional limitations associated with patellar tendinopathy.	

*** Composite / multidomain measure**: AOFAS includes patient- and clinician-rated components; Ankle-GO combines functional tests with PROMs and the ALR-RSI; ALR-RSI is included here under Psychological Measures because it specifically assesses psychological readiness, although it contributes to the

composite Ankle-GO score. **Note**: Frequency is based on the number of included studies in the review, counting each study once for each identified measure.

Table 3: Tools and Measures Identified in the Included Studies

Discussion

A notable finding of this review was the lacuna of dance-specific research. However, dance medicine in its evolution has frequently drawn upon sports medicine principles to inform injury prevention, management, and return-to-performance practices. Although direct validation remains necessary, athletes and dancers share many of the biopsychosocial challenges associated with injury, making sport a valuable source of candidate RTD assessment tools.

Injury in elite dance is acknowledged as a near inevitability, but one that may have a devastating impact on the dancer.[33] A complex array of interlinked biopsychosocial factors may affect the dancer experience of injury, including but not limited to, injury severity,[34] available social support networks,[35] embedded dancer identity,[36] and employment and financial repercussions.[11] Therefore, RTD must address the holistic implications of injury to ensure the dancer is properly equipped to recommence practice. There is a paucity of dance-specific study in this area, and therefore this scoping review has borrowed largely from sport to inform our understanding of appropriate tools and measures to inform timely and effective RTD decisions.

Physical implications of injury are intuitively the most obvious, and historically, dance researchers have focused on the ability of the dancer to meet the functional demands of their craft. A number of dance-specific functional tests such as endurance for relevé and control and balance for sauté were identified in this review. While such tests are not representative of elements of all dance styles, consideration of genre-specific movements should form a key part of any RTD assessment, in addition to the more fundamental tests listed previously. This review also identified a wide spectrum of physical measures beyond that routinely used/reported in dance medicine. Furthermore, the nature of this review means that the tests identified are relatively straightforward to implement.

A range of PROMs also featured strongly in our findings. There is currently a paucity of research exploring the role of the dancer's voice in RTD decision-making. In sport, however, athlete-centred and shared decision-making approaches are advocated, with a 2016 Consensus Statement on RTS recognising the athlete as an active contributor to the RTS decision alongside clinicians and other stakeholders. Such an approach ensures that athlete concerns and experiences, which may not be objectively measurable, are central to informing safe and timely RTS.[37] The inclusion of PROMs is one method of gathering input from athletes and dancers to facilitate a collaborative approach and one that promotes autonomy. Whilst PROMs might not provide all of the nuance required to make an RTS/RTD decision, they can prove to be valuable tools in identifying strengths and barriers and stimulate further conversations with performance support teams.

Dancers and those responsible for overseeing RTD assessment may wish to consider several validated PROMs identified in this review, although targeted evaluation of their psychometric properties in dancers is required. This review has identified joint-specific tests for the hip, knee and ankle that could be readily incorporated into RTD protocols. For instance, the Copenhagen Hip and Groin Outcome Score (HAGOS)[38] has multiple domains measuring pain and other symptoms, physical functioning in activities of daily living, sporting and recreational activities, and quality of life. Similarly, the Ankle-GO is a multi-domain tool that combines objective physical/functional testing with patient-reported psychological readiness and function.[31] Elements of the tool, or the tool in its entirety may inform RTD decision making. Numerous studies in this review also employed a Visual Analogue Scale (VAS) measure of pain as an important RTP indicator. The VAS is a validated and widely used measure of pain intensity[39] and may be useful to track progress in the injured dancer. However, it is worth bearing in mind that there is a robust body of research stating that dancers may normalise and minimise pain,[40 41] and may be motivated to minimise pain reporting in order to RTD expeditiously.

This scoping review finally identified a selection of measures that were adopted to evaluate the psychological readiness of participants to return to their activity. These covered a range of domains including fear of movement (Tampa Scale of Kinesiophobia)[42], catastrophizing (Pain Catastrophizing Scale)[43], anxiety (Sports Anxiety Scale[44]; PROMIS Anxiety and Depression[45]) confidence (Sport Confidence Questionnaire of Rehabilitated Athletes[46]) and re-injury worry (Causes of Re-Injury Worry Questionnaire[47]), among others. Such domains are commonly experienced by dancers and have been documented in the literature.[48 49] In sport, the presence of these factors has been established to underpin poorer RTS outcomes.[50] Although the research exploring the impact of these factors on RTD is scarce, one study has reported better post-injury outcomes in the absence of fear.[51] Many of the psychological constructs listed above are not unique to any specific sport or activity. Rather, they represent generic responses to injury that are likely to influence return-to-performance across a variety of settings, including dance. Consequently, assessment tools targeting these constructs may have particular potential for translation to dance.

Across the reviewed studies, no single measure emerged as sufficient in isolation. Rather, the most comprehensive approaches combined objective functional testing, PROMs and psychological readiness measures. This suggests that multidimensional assessment may provide the most appropriate framework for informing RTD decisions. Also notable was the lack of any tool that considered socioenvironmental factors such as availability of resources, time of the season, support networks, relationships or financial security, all of which may impact on RTD decisions.

Limitations

The main limitation of this scoping review is the small number of dancers included. Caution should be employed when extrapolating findings in athletic populations to dancers, but this review does identify the best available measures from a more mature field and proposes them as candidates for future dance-

specific validation. The review adopted a narrow lens and did not consider studies of upper limb, contact athletes/dancers and may therefore have failed to find some additional relevant studies. We additionally did not include ACL injury, given its comparative rarity in dance[52] and existing, well-developed rehabilitation protocols for this injury. The focus was also limited to measures and tests that did not require extensive clinical or technical machinery or training. We fully acknowledge that clinical input is often recommended and required to optimise injury outcomes. However, this review was designed to provide practical, implementable advice to dancers and other stakeholders who support dancers. In line with scoping review guidelines,[21] this manuscript did not evaluate the quality of the studies included, which were mainly cross-sectional and retrospective in nature. This review should therefore be interpreted as a mapping of available measures rather than evidence of effectiveness

Only studies in the English language were included, which may have further limited the number of relevant studies included.

Conclusion

RTD decisions are complex and involve consideration of a wide range of factors. In dance, there are limited guidelines or resources to inform holistic decision making in this regard. Inclusion of physical assessment, PROM measures and evaluation of a range of psychological domains is advised and should be informed by genre-specific demands. This review provides dancers and their support teams with a suite of practical and easy-to-use tools and measures that may enhance RTD decision making and confidence. The findings provide a foundation for future dance-specific validation studies, consensus development, and the creation of multidimensional RTD frameworks that integrate physical, functional and psychological readiness to RTD.

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Figures

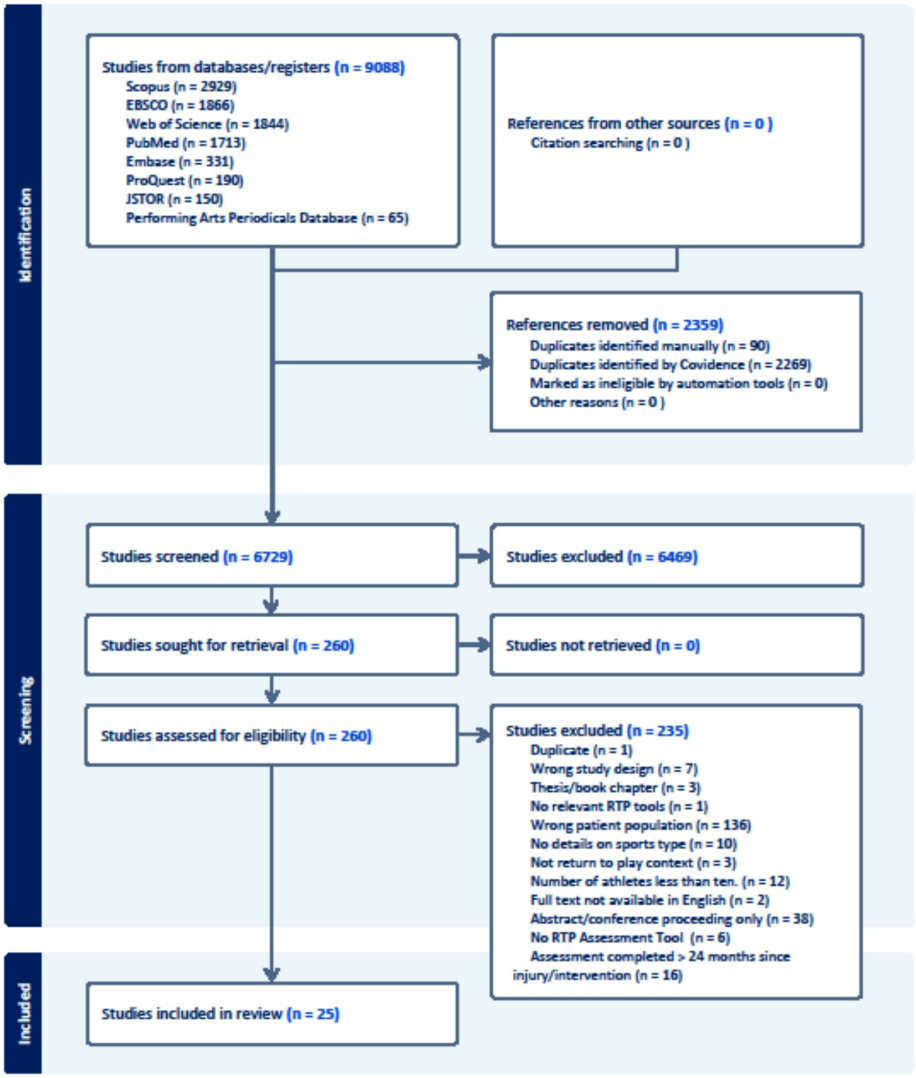


Figure 1

PRISMA Flow diagram of studies screened and included in this review.

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