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Loneliness in sport: A systematic mixed studies review

Patricia C. Jackman [a], Rebecca M. Hawkins [a], Matthew D. Bird [a], Ollie Williamson [a,b], Stewart A. Vella [c] and Lambros Lazuras [a]

[a]School of Psychology, Sport Science and Wellbeing, University of Lincoln, Lincoln, UK; [b]Faculty of Health, Southern Cross University, Coffs Harbour, Australia; [c]Global Alliance for Mental Health and Sport, School of Psychology, University of Wollongong, Wollongong, Australia

ABSTRACT

Loneliness is an established risk factor for mental and physical health problems. Individuals involved in sport face many unique stressors, some of which could exacerbate the risk of loneliness. To bring clarity to published evidence in this area, inform future research, and develop applied recommendations to prevent and reduce loneliness in the sport community, we sought to systematically review, synthesise, and appraise research on loneliness in sport. Following electronic database and manual searches to identify literature on loneliness in the sport community up to August 2024, we included and thematically synthesised data from 194 studies ($N = 88{,}516$). Social loneliness was the most common conceptualisation of loneliness within the literature. We identified socio-cultural, institutional, interpersonal, and intrapersonal risk factors associated with loneliness. There was less evidence for protective factors, but the available evidence was categorised into interpersonal and intrapersonal factors. Finally, there was substantial evidence concerning adverse consequences associated with loneliness in sport, including: impaired mental health and well-being; adverse social outcomes; negative cognitive, affective, and motivational outcomes; and maladaptive behavioural outcomes. Overall, this review advances knowledge by synthesising, for the first time, evidence on loneliness in sport and offers theoretical, methodological, and practical contributions that extend understanding of loneliness.

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Loneliness is an unpleasant experience that reflects the lack (or loss) of meaningful social relationships with others, regardless of the quantity of one's actual social connections (Hawkley & Cacioppo, 2010). Thus, people can still feel lonely even when they have extensive social networks and relationships, provided these relationships are perceived to be unfulfilling (Barreto et al., 2021). Loneliness and social isolation are often used interchangeably and

CONTACT Patricia C. Jackman PJackman@lincoln.ac.uk
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inconsistently, yet these concepts differ. While *perceived* social isolation may be comparable to loneliness on the basis that it is a subjective phenomenon (Cacioppo & Hawkley, 2009), social isolation is regarded as an objective measure of social relations and is concerned with the quantity of one's relationships (Gierveld & Tilburg, 2006). Researchers commonly distinguish between three types of loneliness: *social loneliness* (i.e. inadequate social relationship network); *emotional loneliness* (i.e. lack of close attachment to others); and *existential loneliness* (i.e. a realisation that one is fundamentally alone in life; Van Tilburg, 2021). Findings from extensive research show loneliness is associated with adverse outcomes, including reduced psychological well-being and quality of life, functional disability, declines in cognitive functioning, and poor mental health (Park et al., 2020). In longitudinal studies, loneliness has also been associated with higher risk for chronic diseases that contribute to premature mortality, such as cardiovascular disease (Christiansen et al., 2021). Given the high prevalence of loneliness internationally (Surkalim et al., 2022) and its threat to public health, the World Health Organization has developed the Commission on Social Connection (2024–2026) to tackle loneliness at a global scale.

Engaging in organised sport can be a valuable way for people to develop social connections (Eime et al., 2013), yet there is increasing evidence of loneliness in the sport community, including among coaches (Higham et al., 2023), officials (Potrac et al., 2021), and athletes (Fry & Bloyce, 2017a). Research on the prevalence of loneliness in sport suggests it might be experienced relatively frequently by some. Results from the National College Health Assessment (NCHA) in the USA over an 8-year period (2011–2019) indicated that more than one in two college student-athletes reported feeling 'very lonely' in the previous 12 months (Edwards et al., 2022). Similarly, more than 50% of Korean youth athletes, all of whom had attempted suicide in the previous year, reported feeling lonely 'often' or 'all of the time' (Kwon & Jang, 2024). While the antecedents of loneliness are complex and likely to be multi-faceted, various risk factors within sport might contribute to the onset of loneliness, including injury (Todd et al., 2018), retirement (Warriner & Lavallee, 2008), and migration (Ryba et al., 2016).

With growing evidence of loneliness in the sport community and strong associations between loneliness and the onset of mental health difficulties in the general population (Mann et al., 2022), it seems timely to summarise and appraise available research on loneliness in sport. Synthesising the extant literature could provide a comprehensive summary of knowledge on loneliness in sport and enable conclusions to be drawn about key questions in this research area (Siddaway et al., 2019). Accordingly, this study aimed to systematically review, synthesise, and appraise research on loneliness in sport. We sought to answer five research questions (RQs): (1) what are the characteristics of studies conducted on loneliness in sport (e.g. samples, context, methods)?; (2) how is loneliness conceptualised and described in sport?; (3) what loneliness measures have been used and how prevalent is problematic loneliness?; (4) what factors (i.e. risk and protective) and outcomes are associated with loneliness in sport?; and (5) what are the characteristics and effects of interventions targeting loneliness in sport? By answering these questions, we sought to clarify current understanding of loneliness in sport and help researchers develop more robust research programmes. Furthermore, we sought to offer insights that could guide the development of policies and practices seeking to prevent and reduce loneliness in sport.

Methods

Design and protocol

Our systematic mixed studies review adopted a data-based convergent synthesis design (Hong et al., 2017). We included quantitative and qualitative data as we wanted to synthesise and integrate all available evidence on loneliness in sport, to provide a comprehensive and intricate understanding of loneliness in this domain (Cerigo & Quesnel-Vallée, 2020). Our review, pre-registered on the Open Science Framework (https://osf.io/zrn3h/?view_only = 4dadf269fd8643b59d4a8ad41136fb2f), complies with reporting guidance for: the preferred reporting items for systematic reviews and meta-analyses (PRISMA; Appendix 1; Page et al., 2021); synthesis without meta-analysis (Appendix 2; Campbell et al., 2020); and enhancing transparency in reporting the synthesis of qualitative research (Appendix 3; Tong et al., 2012).

Eligibility criteria

To be eligible for inclusion, a study needed to (1) report original, quantitative and/or qualitative data on loneliness or perceived social isolation, (2) sample individuals (e.g. athletes, coaches, athlete support personnel, sport parents) within organised sport (i.e. a structured, rule-bound, competitive physical activity), and (3) be published in English in a peer-reviewed journal article. Due to the conceptual distinction between objective and subjective social isolation (Wang et al., 2017), we only included studies that referred to *perceived* social isolation (e.g. feeling socially isolated) as perceived social isolation refers to a lack of companionship, including feeling lonely (Cornwell & Waite, 2009), and because the terms 'perceived social isolation' and 'loneliness' have been used interchangeably to refer to the same psychological phenomenon in leading theories of loneliness (Cacioppo & Cacioppo, 2014; Cacioppo & Hawkley, 2009). Conversely, we excluded studies focused on 'objective' social isolation, defined as a situation in which an individual has a small social network (Ma et al., 2020), as this does not necessarily entail feelings of loneliness. We excluded studies that (1) involved sport-based interventions targeting loneliness that did not recruit relevant participants (e.g. health promotion programmes that do not recruit athletes) or (2) sampled ineligible participants (e.g. sport fans, esport players, or exercisers). Studies that focused on physical activity but did not present data on sport were excluded (see Pels & Kleinert, 2016 for a review of the relationship between loneliness and physical activity).

Information sources and search strategy

We used multiple sources to retrieve relevant literature and report the process in line with the PRISMA statement for reporting literature searches in systematic reviews (Appendix 4; Rethlefsen et al., 2021). First, the first author conducted searches on three occasions (7 January 2024; 17 May 2024; and 24 August 2024) of four electronic databases: APA PsycINFO (EBSCOhost); MEDLINE (EBSCOhost); SPORTDiscus (EBSCOhost); and Scopus. Following scoping searches and after reading existing reviews on loneliness (e.g. Smith et al., 2020), we developed a search string containing terms focused on relevant (1) populations (sport OR athlete OR coach OR referee) and (2) outcomes (lonel* OR social* isolat*). We searched these blocks at the full-text level, where possible, and added further search fields as relevant (e.g. subject headers). A third block was included to exclude ineligible

records (i.e. studies with 'review' or 'meta-analysis' in the title). Searches were limited to peer-reviewed journal articles written in English. Second, we screened reference lists in all included studies and checked titles of forward citations for all included studies on Google Scholar. Third, we reviewed the contents of a previous review on the relationship between loneliness and physical activity (Pels & Kleinert, 2016) to identify studies that might be eligible. Finally, the first author searched 10 journal websites relevant to sport psychology using key terms (i.e. loneliness, social isolation). Further details on the searches are presented in Appendix 5. All retrieved records were exported to Covidence. Duplicates were identified using the platform's automatic de-duplication feature.

Screening process

Two authors screened the retrieved records independently in two stages. First, the second and fourth authors screened all retrieved records at the title and abstract stage, with the two authors meeting to resolve any discrepancies. Second, the first and fourth authors assessed the remaining full texts for eligibility. The authors met to discuss their decisions and agreed reasons for excluding articles. The level of agreement prior to discussing decisions was substantial ($\kappa = .75$) at stage 1, and almost perfect ($\kappa = .87$) at stage 2.

Data extraction

As per recommendations (Taylor et al., 2021), two authors independently extracted data. The first author extracted data for all studies, with the second, third, and sixth authors extracting data for approximately one-third of the studies each. Any discrepancies were resolved through discussion and verified via further checks by the fourth author, with agreement reached for all contextual information. Specific information extracted from each study comprised: author; publication year; study type; sport(s); sample characteristics; study design; loneliness focus (i.e. primary or secondary); and methods. In studies with sport and non-sport populations, we only extracted data (i.e. sample characteristics and findings) related to eligible participants.

Quality appraisal

To appraise the quality of primary studies, we used the mixed methods appraisal tool (MMAT; Hong et al., 2018). The MMAT enables the assessment of quantitative, qualitative, and mixed methods studies. Two authors assessed each study's quality independently, with the first author assessing study quality in all studies and the second, third, and sixth authors assessing approximately one-third of the studies each. The authors discussed their decisions and resolved any discrepancies through conversation. The level of agreement between the authors was almost perfect ($\kappa = .83$).

Data synthesis

To address RQs 2–5, we undertook a thematic synthesis (Thomas & Harden, 2008). Initially, the first author read each study twice before undertaking line-by-line coding (i.e. author interpretations, participant quotes, and statistical data) to generate *codes*. To ensure new

knowledge could be generated, coding was undertaken inductively without an *a priori* framework. In adopting a data-based convergent synthesis design, transformation of data was needed to enable integration of quantitative, qualitative, and mixed-methods data using a single method (Hong et al., 2017). Following recommendations for convergent synthesis designs (Pluye & Hong, 2014), we extracted quantitative data and transformed it into narrative format to enable integration with qualitative data (Stern et al., 2021). To allow cross-study interpretation and synthesis of quantitative data, we extracted available quantitative data (e.g. descriptive and inferential statistics) and standardised effect sizes (Cohen's *d*) using Comprehensive Meta-Analysis (Version 4; Borenstein et al., 2022). We calculated effect sizes based on means, standard deviations, and sample sizes, or other available statistics (e.g. *r* values, *t*-statistics). Where data were presented as figures and could not be retrieved, we used WebPlotDigitizer (Rohatgi, 2022). All quantitative data were extracted by the first author and verified by the fourth author. Although cross-study evidence existed for some outcomes, a meta-analysis was not conducted due to the high heterogeneity in outcomes and measures used. Based on guidance for synthesis of evidence without meta-analyses (McKenzie & Brennan, 2019), we undertook vote counting based on the direction of an effect (i.e. positive, null, negative) to inform our conclusions, with $d \geq 0.20$ used to interpret the presence of an effect for quantitative data.

After developing initial codes for each RQ, the first author grouped data for similar codes to generate *descriptive themes*. To ensure the review's findings were based on cross-study evidence, codes were only included in the final review if based on findings from at least two studies. The first author then constructed *analytical themes* through consideration and interpretation of existing literature, theoretical frameworks, and research questions. Thus, this stage involved going beyond the 'data-driven' descriptive themes to offer novel interpretations. Regarding the conceptualisation of loneliness, existing definitions of emotional, social, and existential loneliness (Van Tilburg, 2021) were used to interpret textual descriptions. Additionally, a coding frame used by Maes et al. (2022) was employed to interpret conceptualisations underpinning quantitative measures. After producing an initial analysis, the first author shared all data with the other authors, who reviewed the analysis, scrutinised the audit trial, challenged the first author's interpretations, and offered alternative interpretations (Smith & McGannon, 2018). As the construction of the analytical themes developed, we identified that socio-ecological models, which have been used previously in loneliness research with older adults (Meehan et al., 2023) and in myriad sport-based, health research programmes (e.g. Eime et al., 2013; Kokko, 2014), could be used to guide the organisation and visual mapping of risk and protective factors for loneliness in sport. In representing our findings, we sought to highlight the interdependency of the different levels of our analysis, which led us to develop a conceptual model. Finally, we note that as our interpretations are inevitably shaped by our backgrounds and experiences (Denzin, 2017), we do not regard the findings presented as the only possible conclusions about the identified evidence, but rather as an analysis constructed based on our interpretive skills, practical experience, and knowledge at this time.

Sensitivity analysis and assessment of confidence

Once risk and protective factors and outcomes of loneliness were agreed upon, we assessed confidence in these findings via three methods: (1) we performed a

sensitivity analysis to determine whether any codes would be less evidenced by the exclusion of lower-quality studies, which we adjudged to be those rated as 'yes' on ≤2 items on the MMAT; (2) due to evidence of higher loneliness during the COVID-19 pandemic (Ernst et al., 2022), we assessed the volume of evidence based on studies conducted during the pandemic and how this might have impacted the conclusions drawn; and (3) we used criteria within the GRADE-Confidence in the Evidence from Reviews of Qualitative research tool (GRADE-CERQual – Lewin et al., 2018) to assess confidence in the evidence. Although our review included both qualitative and quantitative data, we chose the GRADE-CERQual tool over its quantitative equivalent (GRADE – Guyatt et al., 2011) as most codes were based entirely or primarily on qualitative data and quantitative findings were transformed into textual narratives. We assessed the level of concern with the conclusion for each code based on: methodological limitations, coherence, adequacy of data, and relevance. Combining these three methods, we graded the level of confidence in each code as 'high', 'moderate', 'low', or 'very low'.

Results

Of the 4562 records identified through our searches, 194 articles were included (Figure 1; see Appendix 6 for contextual information and Appendix 7 for a full reference list). The most common reason for exclusion was that studies did not include data on loneliness (see Appendix 8 for full texts excluded). The same dataset was included in two studies with golfers (Fry & Bloyce, 2017a, 2017b), two studies with athletes across multiple sports (Cassilo & Sanderson, 2019; Sanderson & Cassilo, 2019), and two studies that analysed college student-athletes' mental health (Edwards et al., 2022, 2023).

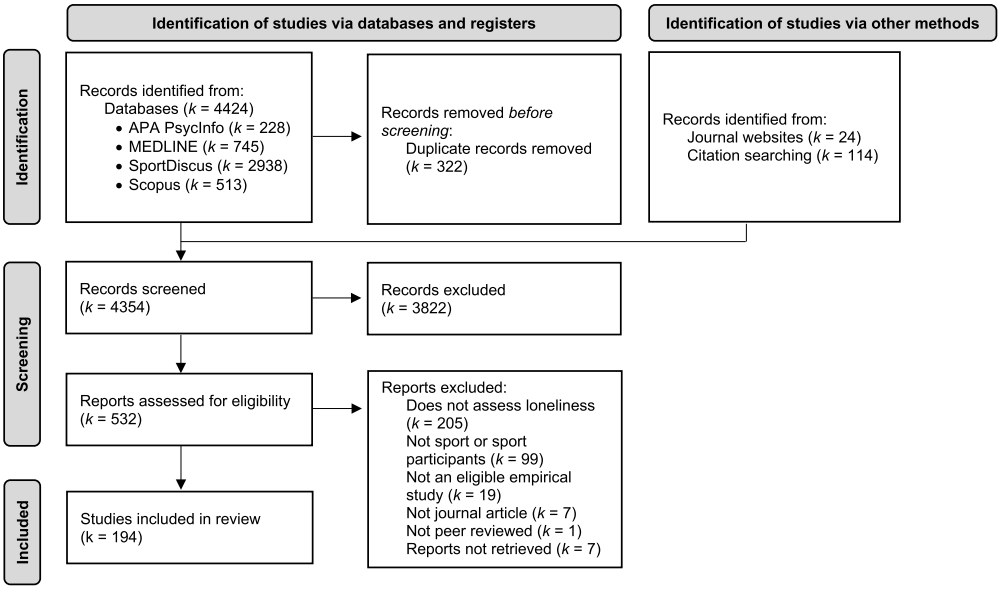

Figure 1. PRISMA flow chart documenting the search process.

Study characteristics

Sample characteristics

Two studies did not specify the number of sport participants recruited (Barber et al., 2001; Findlay & Coplan, 2008), but there were 88,516 participants (female/woman $n = 48{,}510$, 54.80%; male/men $n = 33{,}370$, 37.70%; non-binary $n = 689$, 0.78%; transman $n = 88$, 0.10%; transwoman $n = 51$, 0.06%; other or gender not reported $n = 5808$, 6.56%) in independent samples within studies that included demographic information for eligible participants. Almost two-thirds of participants (62.55%) were from one dataset (Edwards et al., 2022, 2023). Most participants were athletes (i.e. current, former, or coach-athletes; $n = 87{,}120$, 98.42%), followed by family members and friends ($n = 499$), coaches ($n = 300$) and match officials ($n = 263$). The remainder mainly comprised athlete support personnel (e.g. managers, administrators, sport psychologists). Multi-sport samples were recruited most frequently ($k = 69$), with the most-studied single sports including soccer ($k = 28$), Australian Rules football ($k = 5$), ice hockey ($k = 5$), and swimming ($k = 5$). Included studies mainly recruited participants in Europe ($k = 75$) or North America ($k = 62$), with fewer studies involving multi-nation samples ($k = 16$) or participants in Australasia ($k = 17$), Asia ($k = 11$) or South America ($k = 2$).

Study design and methods

Over two-thirds of studies employed qualitative methods (67.53%; $k = 131$), with quantitative (24.23%; $k = 47$) and mixed methods (8.25%; $k = 16$) used less frequently. Only one mixed-methods study reported quantitative and qualitative data on loneliness (Alschuler et al., 2020), with the remainder reporting qualitative data only. Loneliness was a primary outcome of focus in only 20.62% of studies (quantitative $k = 36$; qualitative $k = 3$; mixed methods $k = 1$). Most studies used cross-sectional designs ($k = 154$), with fewer collecting data at multiple timepoints ($k = 36$) or involving interventions ($k = 3$). Although we classified three studies as interventions, one did not target loneliness (Barry et al., 2024), while the remaining two studies (Lundqvist, 2020; Swettenham & Whitehead, 2022) reported on single-case studies with interventions not targeting loneliness. Thus, no study involved a loneliness intervention in a sport population. Interviews were the primary method of qualitative data collection, being used as a single method or in combination with other methods in 119 studies. Questionnaires measuring loneliness were used in all 47 quantitative studies and one mixed-method study. In total, 12.37% of studies (quantitative $k = 14$, qualitative $k = 8$, mixed methods $k = 2$) referred to collecting data during or emerging from lockdown periods in the COVID-19 pandemic.

Study quality

Information on study quality based on the MMAT is detailed in Appendix 9. Although there were few quality concerns with qualitative studies (6.87%), most of these studies contained limited data on loneliness. There was at least one quality concern with most quantitative studies (82.98%), which mainly surrounded the sample representativeness and potential for non-response bias. Just under one-third of mixed-methods studies had at least one quality concern (31.25%), which typically involved the absence of adequate justification for mixed methods. Overall, 17 studies did not achieve a 'yes' on three or more of the five criteria (quantitative $k = 12$; mixed methods $k = 5$).

Table 1. Categorisations of forms of loneliness from qualitative data on loneliness.

Form of loneliness	Example descriptions in qualitative studies
Unidimensional	• Loneliness • Feeling lonely
Emotional loneliness	• Lack of warm and loving close relationships • Not feeling close to anyone • Not feeling you can connect with others on the team • Lack of attachment to other members of a sport community • Feeling alienated or disconnected from old friends
Social loneliness	• Loss of social networks/friends • Feeling alone and without support • Lack of friends • Feeling of social isolation
Existential loneliness	• Feeling alone in one's experience

Main synthesis

The following sections present findings related to RQs 2–4. Due to the absence of interventions for loneliness in sport, we could not answer RQ 5. Additional information on data contributing to answering each RQ is presented in Appendix 10.

Conceptualisation of loneliness

In the 147 studies with qualitative data, we classified the form of loneliness described (Table 1) as mainly social loneliness ($k = 67$) or both social and emotional loneliness ($k = 38$). Thirty studies described loneliness as unidimensional, only using terms such as 'loneliness' or 'feeling lonely', while 10 studies referred only to emotional loneliness, and two studies focused on existential loneliness or isolation. Most quantitative studies with multi-item measures used items that tapped into emotional loneliness and social loneliness ($k = 21$), with the remainder only including items capturing social loneliness ($k = 7$) or a combination of loneliness and social loneliness ($k = 1$; Table 2). Nevertheless, most studies analysed loneliness as a unidimensional concept.

Measurement of loneliness

Of the 48 studies featuring quantitative measures (Table 2), 47 assessed loneliness in general, with only one study assessing loneliness during sport participation (Kim & Tamminen, 2023). Twenty-two studies used versions of the University of California Los Angeles Loneliness Scale (UCLA LS), with others using the Children's Loneliness Scale (CLS; $k = 4$), De Jong Gierveld Loneliness Scale (DJGLS; $k = 3$), and items from the isolation subscale in the Parenting Stress Index (PSI; $k = 1$). The UCLA LS, DJGLS, and PSI isolation subscale are considered 'indirect' measures of loneliness, due to not featuring the words 'lonely' or 'loneliness'. Conversely, the CLS combines indirect and 'direct' items representing loneliness. Of the remaining studies, 12 employed single-item measures of loneliness and one used a 2-item measure.

Prevalence of loneliness

Frequency statistics on the prevalence of loneliness were only available in 11 of the 48 articles (see Appendix 10 for further information), with the remainder either reporting loneliness as a mean score on a scale ($k = 26$) or not providing any loneliness scores (k

Table 2. Conceptualisation and measurement of loneliness in studies using quantitative measures included in the review.

Scale	Scale version	Conceptualisation of loneliness[1]	Direct/ indirect measure[1]	Number of studies
UCLA, revised versions, and shorter versions of this (22)	UCLA LS – Version 3 (Russell, 1996)	E + S	I	6
	3-item UCLA LS (Hughes et al., 2004)	S	I	5
	Turkish version (Demir, 1989) of the Revised UCLA LS (Russell et al., 1980)	E + S	I	4
	Revised UCLA LS (Russell et al., 1980)	E + S	I	3
	4-item version (Skarbø et al., 2006) of the Revised UCLA LS (Russell et al., 1980)	E + S	I	1
	7-item version of the UCLA LS (Allen & Oshagan, 1995)	E + S	I	1
	UCLA LS without reference to the specific scale[2]	No information provided	I	2
Children's Loneliness Scale (4)	Children's Loneliness Scale (Asher et al., 1984)	E + S	D + I	3
	Three items from the Children's Loneliness Scale (Asher et al., 1984)	S	D + I	1
De Jong Gierveld Loneliness Scale (3)	6-item De Jong Gierveld Loneliness Scale (De Jong-Gierveld & Tilburg, 2006)	E + S	I	3
Other multi-item measures (5)	Items assessing maternal isolation from the isolation subscale ('High scores on isolation indicate that parents are socially isolated and lack emotional support systems and would endorse statements such as "I feel alone and without friends"'. – Weiss, 2008, p. 245) in the Parenting Stress Index (Abidin, 1995)	Isolation (E + S)	I	1
	5-item loneliness scale from the Questionnaire on the Social and Personal Adjustment of Quebec Adolescents (Le Blanc et al., 1996)	No information provided	Unclear	1
	Korchagina (2008) loneliness measure	No information provided	Unclear	1
	Persian version of Loneliness Scale (Dehshiri et al., 2008)	E + S + L	Unclear	1
	Measure developed using items from an unpublished doctoral thesis	E + S	Unclear	1
Single-item measures (12)	Examples of terms used were: 'felt very lonely', 'greater feelings of loneliness', 'feeling lonely'	L	D	11
	Item was 'COVID-19 related changes to my golfing habits have made me feel more socially isolated'	S	I	1
2-item measure (1)	Items were 'felt lonely' and 'had trouble fitting in with others'	S + L	D + I	1
No information provided (1)	No information provided (Balyan et al., 2021)	No information provided	Unclear	1

Notes: (1) Conceptualisation of loneliness classified using the coding matrix proposed by Maes et al. (2022), with L = loneliness, S = social loneliness, and E = emotional loneliness, and D = direct and I = indirect; (2) two studies (Kizar et al., 2016; Malekian et al., 2015) did not state which UCLA was used; (3) abbreviation as follows: UCLA LS = University of California Los Angeles Loneliness Scale; (4) see Appendix 10 for further information on measurement tools.

= 11). As no single definition of problematic loneliness exists, we adapted criteria for problematic loneliness from past research (i.e. based on severity or chronicity; Surkalim et al., 2022), further details of which are presented in Table 3. Only three studies reporting

prevalence data used a validated, multi-item measure of loneliness (Dutertre & Fouillet, 2024; Knowles et al., 2021; Shapiro & Martin, 2014), with seven featuring single-item measures and one study not providing details on the measure employed (Balyan et al., 2021). Furthermore, two studies reported on the same dataset (Edwards et al., 2022, 2023). Due to the different response formats used, interpretations (e.g. cut-off scores or scale labels), and data presented, we could not pool prevalence data.

Five of the 11 studies reporting prevalence data were conducted during or emerging from COVID-19 pandemic lockdowns. As outlined in Table 3, there was significant variation in the prevalence of problematic loneliness. For instance, among non-COVID-19-pandemic studies, the prevalence of problematic loneliness ranged from 4.9% in Brazilian high-school athletes (Noll et al., 2016) to over 50% in Korean youth athletes who had attempted suicide in the previous year (Kwon & Jang, 2024) and in college student-athletes in the USA (Edwards et al., 2022, 2023). Overall, the significant heterogeneity in the measurement and reporting of loneliness in sport, which to date has focused exclusively on athletes, makes it difficult to draw firm conclusions about the prevalence of loneliness in this context. Nevertheless, the available evidence suggests problematic loneliness may be relatively common for some athletes.

Risk factors for loneliness

We categorised risk factors related to loneliness in sport into four analytical themes.

Loneliness is affected by the socio-cultural landscape. Evidence from qualitive studies revealed various social and cultural aspects that could result in loneliness. We identified considerable evidence suggesting loneliness could stem from over-conformity to the sport ethic, a term used to describe norms and values embedded in the sport community that define a 'real' sportsperson (Hughes & Coakley, 1991). For instance, loneliness could occur when sport was prioritised over other interests (e.g. preparation, training, sport specialisation) and when athletes or coaches conformed to norms of physical and emotional sacrifice (e.g. being averse to disclosing injuries or emotional issues). Intertwined with evidence of the sport ethic were the cultural scripts of masculinity and traditional masculine norms. The pressure to act 'manly' and conform to masculine norms, and thus behave in ways that satisfied societal expectations of men (e.g. emotional suppression and an aversion to asking for assistance), was intimately related to loneliness. The perceived pressure to conform to masculine cultural norms also resulted in loneliness among elite soccer coaches, a role described by some as 'the loneliest profession' (Higham et al., 2023, p. 5). Coaches felt expected to be self-reliant and were averse to approaching others for support or revealing their true selves due to fear that this would be interpreted as a sign of weakness, which could put them at risk of dismissal. There was also evidence that inequalities in sport could create loneliness. Black athletes, coaches and administrators spoke about loneliness in white-dominant sport settings, while female athletes and coaches described loneliness as stemming from gender stereotyping, ideologies, and inequality. There was also evidence that loneliness could be a particular risk for individuals at the intersection of these marginalised identities, with several studies pointing towards the salience of loneliness for Black females in sport settings. Finally, migrant athletes reported that loneliness stemmed from being in the minority in a new culture, communication barriers in their new host country, and feeling disconnected culturally. Together, this evidence shows

Table 3. Prevalence of loneliness within included studies.

Category	Author(s) (year)	Sample	Criteria used to assess problematic levels of loneliness[1]	Prevalence of problematic loneliness
Non-COVID-19 pandemic studies	Ballesteros and Tran (2020)	Racial-ethnic minority college student-athletes (African American $n = 108$, Latinos $n = 66$, Asian American $n = 67$)	At least one incidence of an intense experience: feeling 'very lonely' at least once in the past 12 months	22.00% of African American athletes 32.00% of Latin (x) American athletes 26.00% of Asian American athletes
	Edwards et al. (2022, 2023)	College student-athletes ($N = 54479$)	At least one incidence of an intense experience: feeling 'very lonely' at least once in the past 12 months	53.43%
	Kwon and Jang (2024)	Youth athletes who had attempted suicide ($N = 766$)	Frequency: 'often' or 'all the time'	52.48%
	Noll et al. (2016)	High-school athletes ($N = 251$)	Frequency: 'almost every day'	4.90%
	Shapiro and Martin (2014)	Primarily youth-aged athletes with physical disabilities ($N = 46$)	Frequency: 'always' or 'most of the time'	15.00%
Studies that took place during or emerging from COVID-19 pandemic lockdowns	Balyan et al. (2021)	Adult soccer players ($N = 306$)	Insufficient information in the paper presented to adjudicate if the measure captures frequency or intensity: 'high loneliness' referred to but no further information on how this was determined	17.00%
	Douglas et al. (2022)	Youth cheerleaders' parents ($N = 94$)	Frequency: 'feeling lonely from not seeing friends or teammates' 'often' or 'always'	83.40% in 17–18-year-olds 73.50% in 14–16-year-olds 67.10% in 11–13-year-olds 69.10% in 8–10-year-olds 76.70% in 5–7-year-olds
	Dutertre and Fouillet (2024)	University athletes ($N = 311$)	Frequency: reporting a score $\geq$ 5 was suggested as an indicator of mental health problems	18.60%
	Knowles et al. (2021)	Adult athletes ($N = 360$)	Intensity: 'extremely emotionally lonely' ($\geq$ 3), 'extremely socially lonely' ($\geq$ 3), or 'extremely lonely' (6)	24.90% 'extremely emotionally lonely' 17.40% 'extremely socially lonely' 9.10% 'extremely lonely'
	Valster et al. (2021)	College student-athletes ($N = 535$)	Frequency: 'almost every day' or 'constantly'	6.00% at the start of the semester 18.00% at the end of the semester

Note: We adapted criteria used in previous research (i.e. severity and chronicity – Surkalim et al., 2022) to interpret levels of loneliness as 'problematic'. Following our assessment of the scales used, we considered loneliness to be problematic if the labels suggested the experience was very regular (i.e. often or more frequently) and/or very intense (e.g. very lonely). Where authors provided information on the proportion of participants reporting scores above a cut-off score (Dutertre & Fouillet, 2024; Knowles et al., 2021), we considered these indicators of problematic loneliness.

loneliness in sport populations does not occur in a vacuum; rather, it is shaped by the socio-cultural landscape surrounding people in sport.

Loneliness can occur due to specific features, events, and experiences within sport. Substantial, primarily qualitative, evidence indicated how specific features, events, and experiences within sport institutions could contribute to loneliness. Transitions or key milestones in sport, including retirement, progression to senior level, and the conclusion of sporting events, were identified as precipitating events for loneliness among athletes. In these situations, loneliness was regularly attributed to insufficient support from sport institutions, with many describing feeling abandoned. Inadequate support at organisational levels was also reported by sport psychologists and referees, with this perceived lack of support leaving them feeling isolated and alone. Loneliness was also linked to challenges and concerns surrounding performance, including intra-team competition, underperformance, and isolating experiences prior to and during performances for athletes (e.g. training, making weight, travelling and performing alone) and referees (i.e. preparing and performing alone). Elite athletes and coaches also explained that the weight of competition pressure and performance expectations could foster loneliness. We also identified evidence suggesting loneliness could be triggered by adverse events within sport, such as: the occurrence of injury; disruptions brought about by the COVID-19 pandemic; and being a victim of bullying, maltreatment, or antisocial or problematic behaviours. With respect to the latter, athletes reported loneliness after being bullied by fellow athletes and maltreated by coaches, while referees spoke of the impact of problematic match-day encounters. Finally, sports team hierarchies and feeling as though one does not fit within a sporting environment (e.g. one where a coach prioritises different values) were further features of sport clubs that could contribute to loneliness. Collectively, these findings point towards the adverse impact of the sport setting on loneliness.

Loneliness involves negative interpersonal relationships. An abundance of evidence illustrated how the social environment could lead to and perpetuate loneliness. Influential interpersonal actors included individuals within sport (e.g. teammates, coaches) and outside sport (e.g. family, friends). Difficulties with social relationships were widely discussed, with loneliness fuelled by challenges with maintaining and forming friendships/relationships, disconnection from family/friends following migration, fractured relationships following injury, and a lack of empathy for one's situation or experiences (e.g. injury, illness, migration, making weight). There was also overwhelming evidence that loneliness stemmed from a lack of interpersonal support. Athlete loneliness due to a lack of interpersonal support was particularly prominent following transitions or adverse events. In contrast, coaches' loneliness stemmed from feeling unable to turn to others for guidance or having support from parents, while soccer referees highlighted the impact of not having adequate mentoring. Further causes of athlete loneliness were acts of social exclusion (e.g. cliques, being left out of social groups), being or feeling isolated, and separation from others. Isolation for athletes was most frequently linked to injuries. Finally, there was multi-study evidence suggesting that withdrawing oneself from others following adverse events (e.g. maltreatment, concussion, doping violation) could leave people feeling detached and alone. Overall, our interpretations illustrate the adverse impact of interpersonal relations inside and outside sport on loneliness.

A range of individual traits, cognitions and circumstances are related to loneliness. We identified some evidence of intrapersonal factors associated with loneliness, but most codes were based on a small number of studies (≤3 studies), were sometimes mixed, and were often drawn from cross-sectional, quantitative studies conducted during the COVID-19 pandemic. Living circumstances following migration were widely linked to loneliness, with athletes commenting on the difficulties of moving to a new location, being away from home, and living alone. Resonating with broader socio-cultural norms within sport, athletes reported that not reaching out to others for help and trying to cope alone (e.g. a captain taking on lots of responsibility) rather than disclosing emotions could lead to loneliness, with this latter association supported quantitatively by a significant, moderate relationship between emotional loneliness and expressive suppression among competitive youth athletes. There was some evidence that identity issues, including identity loss, inauthenticity, and a strong athletic identity, were related to loneliness, with such issues appearing particularly salient following adverse events, such as injury. Further correlates of loneliness among athletes were neuroticism and psychological inflexibility. Some qualitative studies also suggested that stressful experiences outside sport (e.g. lack of structure in daily life) could contribute to loneliness. Although there was evidence of females reporting loneliness in sport settings, our confidence in findings concerning gender differences between female and male athletes was low and they were therefore deemed inconclusive. Lastly, evidence was mixed and limited concerning the relationship between social media usage and loneliness.

Protective factors for loneliness

There was less evidence on protective factors for loneliness in comparison to risk factors, with our synthesis generating two analytical themes.

Positive interpersonal relations can protect against loneliness. Our analysis indicated positive social relationships could protect against loneliness. For instance, athletes spoke about the importance of building a social network, making friends, and having welcoming people who treat them like family upon moving to a new location. Among athletes who had migrated to a new country, spent long periods of time abroad as professional athletes, or were injured, connecting with those who had similar experiences helped them to socially identify with others, easing loneliness. Moreover, sport psychology practitioners who studied abroad and black women coaches spoke about the importance of meeting others from similar backgrounds. Speaking with family members and having support networks in the host country also helped to ease post-migration loneliness. Finally, qualitative findings pointing towards the benefits of social support for reducing athlete loneliness were supported by quantitative evidence suggesting large, significant relationships between loneliness and social support. Overall, this analytic theme highlights the importance of interpersonal relationships to prevent and ease loneliness.

Individual attributes, and coping strategies and actions, can help to alleviate loneliness. Most codes for this category were based on quantitative, cross-sectional evidence, most of which had mixed or null findings. Nevertheless, there was some evidence to suggest that individual-level factors were related to lower loneliness. The highest number of studies examined the role of sport participation. We identified considerable evidence among qualitative studies suggesting sport involvement could reduce

loneliness in various groups, including disabled athletes, caregivers of athletes with intellectual disabilities, older adult athletes, and refugee athletes. Complementing these insights, quantitative evidence generally indicated small differences between athletes and non-athletes, suggesting loneliness in general was higher in non-athletes. Moreover, cross-sectional data also indicated that athletes who had been involved in sport for longer tended to be less lonely. There was literature to suggest that some coping strategies were related to lower loneliness. We identified qualitative evidence that loneliness could be alleviated by sharing struggles with others, and being open to and seeking support. Furthermore, some athletes stated that engaging in hobbies reduced loneliness, with some quantitative evidence suggesting a small-to-moderate relationship between physical activity and loneliness. However, cognitive reappraisal or protective behavioural strategies demonstrated mixed or no associations with loneliness. In terms of demographics, although the evidence tended to point towards loneliness in males being lower than in females, we had low confidence in this finding and therefore judged it as inconclusive. Similarly, the evidence concerning personality traits and loneliness, much of which was based on data collected during the COVID-19 pandemic, was generally inconclusive, but there was cross-study evidence of a small relationship between conscientiousness and loneliness among athletes.

Outcomes associated with loneliness

We synthesised outcomes associated with loneliness into four analytical themes.

Loneliness can impair mental health and well-being. The most commonly reported outcomes associated with loneliness involved impaired mental health and well-being. There was substantial cross-study evidence during the COVID-19 pandemic of large relationships between loneliness and depression, with qualitative evidence suggesting that loneliness and subsequent depression followed major competitions, injury, migration, and retirement. In qualitative studies, athletes reported that loneliness led to anxiety, but quantitative results were mixed and solely drawn from COVID-19 pandemic data. Researchers also found that feelings of isolation during the COVID-19 pandemic were linked with suicidal ideation, while there was quantitative evidence indicating loneliness significantly and moderately predicted suicidal ideation, partially mediating a relationship with inadequate social support. Several studies reported loneliness was linked to clinically-related behaviours, including gambling, eating psychopathology, and self-harming. In addition, there was evidence of associations between loneliness and heightened exhaustion, lower vigour, and reduced mental well-being. Lastly, loneliness was associated with sleep issues among athletes, but findings came from only two studies, one of which was conducted during the COVID-19 pandemic.

Loneliness is linked to negative cognitive, affective, and motivational outcomes. This analytic theme captured adverse cognitive, affective or motivational outcomes associated with loneliness in sport. Loneliness was often associated with reduced motivation, with athletes describing apathy, lower sport enthusiasm, and decreased motivation to engage in sport-related behaviours. There was cross-study evidence indicating relations between loneliness and negative self-perceptions (e.g. lower confidence, feelings of worthlessness, changes in self-image) and unpleasant emotions (e.g. sadness, unhappiness, lower enjoyment). Finally, loneliness was linked to

decreased intentions to continue in sport among athletes and led some to question their decision to migrate for sport.

Loneliness can lead to maladaptive behavioural outcomes in sport. Insights into behavioural outcomes were drawn mainly from qualitative data. Cross-study evidence indicated that loneliness was associated with performance issues, including reduced performance in elite-level athletes. There was also considerable evidence that loneliness could result in sport withdrawal. Athletes reported quitting their sport after feeling lonely following the retirement of other players, being made to feel like an outsider following underperformance, and when they felt in the minority. Relatedly, longitudinal evidence suggested that heightened loneliness among youth athletes significantly predicted decreased odds of sport participation at follow-up (Brière et al., 2018), although data from the Netherlands Longitudinal Lifecourse Study suggested this longitudinal relationship might be more complex when migration backgrounds are considered. Specifically, van den Broek (2024) found that the significant inverse association observed between loneliness at baseline and sport participation 3–5 years later in individuals of Turkish and Moroccan origin was not found in native Dutch participants, albeit the latter reported lower levels of loneliness and higher levels sport participation at the respective timepoints. Overall, this evidence demonstrates the deleterious impact of loneliness on athlete performance and participation.

Loneliness can result in adverse social outcomes. Evidence across multiple qualitative studies illustrated negative social consequences of loneliness in sport. Athletes reported that feeling lonely and isolated led to difficulties with social relationships, such that it became a barrier to connecting with teammates and could result in difficulties with forming or maintaining social relationships, further perpetuating loneliness. We also found evidence linking loneliness to social withdrawal and specifically the avoidance of social contacts. For example, athletes reported isolating themselves from teammates and avoiding contact with others when trying to 'make' weight, while elite female athletes withdrew from social encounters because of loneliness following adverse events. Finally, there was some evidence that loneliness and feelings of isolation increased vulnerability in sport spaces. For instance, some athletes attributed experiences of sexual abuse and harassment to their isolation and loneliness, which some felt made them more susceptible to the attention of their coach (i.e. perpetrator). Overall, this shows that loneliness can contribute to further negative consequences associated with interpersonal relationships in sport.

Sensitivity analysis and assessment of confidence

All information on our sensitivity analysis and assessment of confidence in the cumulative evidence is presented in Appendix 11. Overall, our confidence in the findings within individual codes was high ($n = 50$), moderate ($n = 29$), or low ($n = 6$). The codes we had low confidence in were: being female (risk factor); social media usage (risk factor); being male (protective factor); and lack of vigour, sleep issues, and life satisfaction (outcomes). Conclusions for these codes were generally mixed, and the removal of these codes would therefore have had limited impact on the overall findings reached. However, after considering the low confidence in findings for both gender-related codes, we concluded that quantitative evidence for both codes was inconclusive.

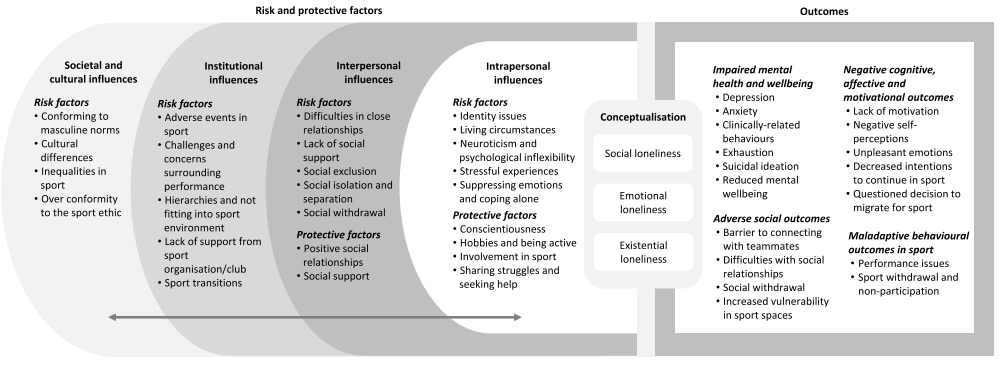

Figure 2. A conceptual model of loneliness in sport.

Synthesis of findings

The conceptual model in Figure 2 offers a visual summary of our interpretations of the available evidence guided by socio-ecological frameworks, and illustrates linkages within and between analytical themes constructed. In mapping our analytical themes into this model, we only included descriptive themes where our confidence in the cumulative evidence was high or moderate. While the different risk-factor and protective-factor levels are presented as distinct, these are not discrete. Rather, these different levels are interdependent and impact on one another. Our model, therefore, provides a platform for future research, policy, and intervention development, by illustrating how loneliness can be influenced at multiple levels (and vice versa).

Discussion

Through a systematic review of 194 studies, 122 of which were published in 2019–2024 (see Appendix 12 for publication trend), we provide the first comprehensive synthesis of empirical research on loneliness in sport. Although most research has focused on athletes, there is growing evidence of loneliness across various roles in the sport community. Based on the synthesis of findings comparing athlete to non-athlete groups, the balance of evidence largely suggested loneliness *in general* was lower among athlete groups. Nevertheless, we found abundant evidence of loneliness among a variety of sporting populations, including athletes, coaches, and sport officials, and identified numerous, sport-specific risk factors that can trigger or perpetuate loneliness. Therefore, individuals within sport are not only at risk of experiencing loneliness and associated negative outcomes, but may also be at risk of experiencing loneliness in part because of unique, sport-specific risk factors they encounter.

Conceptual and methodological reflections

Within the mainstream literature on loneliness, there has been considerable interest in the conceptualisation and measurement of loneliness (e.g. Hudiyana et al., 2022; Maes et al., 2022; Mund et al., 2023). This review highlights conceptual and methodological issues in loneliness research within sport that could be addressed in future research. First, our

review indicated that studies using quantitative measures have generally assessed levels of loneliness *in general*, with only one study (Kim & Tamminen, 2023) assessing loneliness during sport participation. However, we interpreted the context-specificity of loneliness from our synthesis of qualitative data, with this evidence suggesting that loneliness can relate to specific socio-cultural and sport contexts, relationships, and physical and personal contexts. Thus, our review illustrates that loneliness is psychological and contextual. Consequently, future studies should consider assessments of loneliness within and outside the context of sport to allow examination of trans-contextual effects between in-sport and out-of-sport loneliness, which could advance understanding of the interdependency and interlinkages between loneliness (and other mediators and moderators) inside and outside of sport.

Second, our review highlights a need to extend measurement tools used to assess loneliness in sport and improve reporting of psychometric data. Researchers have tended to use *frequency* for loneliness severity, but have overlooked other relevant aspects, such as the *intensity*, *duration*, and *emotional burden* of loneliness (Lazuras et al., 2024; Qualter et al., 2021). These aspects could be especially pertinent in sport as, for example, some risk factors for loneliness might be felt more intensely at certain time periods (e.g. the acute phase of cultural adaptation following migration) or could range from days (e.g. travelling alone to one tournament) to more prolonged time periods (e.g. long-term injuries). Therefore, we suggest consideration of different aspects of loneliness in future research to enable differentiation between low-, moderate-, and high-intensity bouts of loneliness, and between periods of briefer, transient loneliness and those that are chronic and more troublesome (e.g. Martín-María et al., 2020). Related to this, we also call for researchers to shift beyond cross-sectional designs and to conduct more longitudinal studies of loneliness in sport. Examining loneliness over time can provide novel insights into temporal dynamics of loneliness and how specific events might lead to changes in loneliness (e.g. transitions, adverse events).

Third, we identified issues with the reporting of prevalence data on loneliness in sport. Specifically, less than one-quarter of studies presented data that allowed inferences about the prevalence of loneliness, the majority of which stemmed from single-item measures. In addition, there was also significant heterogeneity in the response formats used, which made it more difficult to synthesise prevalence data in a meaningful way. To enable comparison between studies and across populations within sport in the future, we encourage researchers to use validated measures of loneliness, and to consistently report loneliness prevalence data (e.g. proportion of participants rating each scale item or recording scores above a cut-off point). A further issue connected to the prevalence of loneliness is how to determine an experience of loneliness as 'problematic' (e.g. what criteria might be used?) or 'chronic' in nature, issues that have yet to be resolved in the literature on loneliness (Maes & Vanhalst, 2024; Surkalim et al., 2022). Being able to conceptualise and operationalise problematic and chronic loneliness is important because of the differential impacts of contrasting patterns of loneliness (e.g. Maes & Vanhalst, 2024; Martín-María et al., 2020). Capturing more nuanced insights into people's experiences of loneliness (i.e. in terms of frequency, intensity, duration, and emotional burden) in future, both in sport and outside of sport, could progress understandings of what constitutes problematic loneliness (i.e. conceptualisation and operationalisation) and how prevalent it is within the sport community. Doing so can not only help to safeguard against the overpathologising of

loneliness, but also ensure that those who genuinely need help receive the support they require.

Fourth, although only a small number of qualitative studies explicitly referred to loneliness as a primary objective, the corpus of qualitative evidence provided novel insights into the complexity and intricacies of loneliness in sport. Whereas most quantitative studies tended to solely focus on intrapersonal and interpersonal units of analysis, we identified abundant qualitative data illustrating the powerful influence of societal, cultural, institutional, interpersonal, and intrapersonal factors on loneliness. Furthermore, whereas quantitative studies focused almost entirely on the recruitment of athletes, findings from qualitative studies provided evidence of loneliness among other members of the sport ecosystem. As such, we suggest that researchers should continue to study loneliness in non-athlete populations within sport (e.g. coaches, officials, support entourages) and to embrace a range of methodologies and methods, including qualitative and mixed methods, to expand understandings of loneliness in sport. Finally, our review identified no interventions specifically targeting the prevention or reduction of loneliness among sport participants. Based on the present findings, we suggest that loneliness interventions in sport represent an important line of inquiry for future research, with the conceptual model presented in this review offering a potential platform to develop multi-level interventions.

Theoretical implications

Prominent models of loneliness in the general population (e.g. Cacioppo & Cacioppo, 2014) focus on individual-level factors, with an emphasis on social-cognitive processes, examining how people with higher levels of loneliness perceive and interpret social situations as more threatening and, thereby, become increasingly socially inhibited and isolated over time. Our review contributes to, and extends, theoretical understanding of loneliness in the following ways. First, our findings clearly indicate that loneliness in sporting populations is associated with a broad range of risk factors that encompass socio-cultural, institutional, interpersonal, and intrapersonal influences. By using a socio-ecological model to interpret our findings, the review extends understanding of loneliness as it helps us to theorise about the processes underlying loneliness and identify relevant moderator and mediator factors, across different levels of influence. To illustrate, our review indicated that masculine norms (societal and cultural factor), a perceived mismatch between athletes and their sporting environment (institutional factor), and a tendency to cope alone (intrapersonal factor) were reported as contributing factors to loneliness. It is highly likely that these variables are mutually influential, entailing cumulative, multiplicative, or mediation effects. For example, the State Authenticity as Fit to the Environment (SAFE; Schmader & Sedikides, 2018) framework suggests that perceived mismatch with one's social environment can lead to perceived lack of 'authenticity' (or *inauthenticity*), which, in turn, can lead to reduced motivation to connect with others and a perception of social relationships as less meaningful and rewarding. Relatedly, theoretical work has indicated that superlative social identities emanating from group membership can be associated with loneliness and adverse mental health outcomes, as long as these identities do not provide for social support, purpose, and meaning to the individual (Haslam et al., 2022). The lack of meaningful social relationships, regardless of the number of

social connections, is central to experiencing loneliness (Wigfield et al., 2022). Stemming from the present results, future research could investigate the ways socio-cultural, institutional, interpersonal, and intrapersonal factors jointly influence loneliness experiences and associated outcomes in sport populations.

Second, the present findings indicate that loneliness experiences can be contextualised and understood within the given social context in which they occur. Specifically, stressors unique to competitive sport performers (e.g. Arnold & Fletcher, 2012) appeared to precipitate loneliness experiences. Notable stressors included migration, injury, negative interpersonal behaviours, performance-related concerns, and sport transitions. It is unclear in what contexts these stressors might lead to loneliness, whether they have a cumulative effect on loneliness and associated well-being outcomes, and which protective factors might buffer against them to prevent or ease loneliness when they are encountered. Researchers have shown that being exposed to more frequent and more severe sport-related stressors was associated with poorer well-being outcomes, including higher depression and anxiety symptoms, and with disruption in developing intimate and trusting social relationships (McLoughlin et al., 2021). Relevant conceptual models of context-specific stressors as antecedents of loneliness have been proposed for non-sporting professional contexts (Wright & Silard, 2021), but context-specific theorising in sport remains underdeveloped. Future research could examine how chronic sport-related stressors, at different levels of severity, contribute to loneliness experiences directly or indirectly, via their negative impact on the capacity to develop and maintain meaningful social relationships.

Third, our review has identified protective factors that can mitigate the negative impact of loneliness on well-being. While evidence of protective factors was restricted to interpersonal and intrapersonal levels in our model, institutional, community, and policy levels are likely to have the potential to protect against loneliness. Further research is needed to establish protective factors against loneliness at these levels to enable policymakers, communities and sport organisations to structure sport environments in ways that prevent and reduce loneliness. Regarding the available evidence, interpersonal factors pertained mostly to receiving (or perceiving) social support, and connecting with significant others, including friends, family, and, more broadly, people with similar characteristics. Generally, social support from significant others, including coaches, family, and peers, has been associated with more adaptive and positive outcomes in sport (Sheridan et al., 2014). Perceived social support in non-sport contexts has also been negatively associated with loneliness, depending on the source of support, locality, and socio-demographic factors (Lee & Goldstein, 2016; Zhang & Dong, 2022). Future studies could examine the sources of social support that can mitigate loneliness, as well as the processes that explain the relationship between social support and loneliness.

Most evidence on intrapersonal protective factors was null or mixed, but there was qualitative evidence suggesting loneliness could be alleviated among athletes by actively seeking support and disclosing one's difficulties to others. For athletes, self-disclosure and the act of help-seeking has often been stigmatised, with stigma presenting as a common barrier to athletes seeking help (e.g. Gulliver et al., 2012). As demonstrated in our review, the masculine norms and cultural scripts embedded within sport can lead to a culture of silence and trepidation about revealing one's authentic self, which can, in turn, lead to loneliness. The potential value of self-disclosure, help-seeking behaviour, and a feeling

of safety to be one's authentic self for preventing and easing loneliness also resonates with proposed characteristics of psychologically safe environments in elite sport and how these might contribute to enhanced mental health (Walton et al., 2024). That is, sport environments that feel nurturing, compassionate, and safe could encourage more people to reveal their true selves in ways that can reduce loneliness and foster meaningful social connections. In future, researchers could examine the influence of psychological safety in sport environments on the perceived capacity to meaningfully connect with others and to seek help from them within sport settings, and, in turn, how this might influence loneliness.

Limitations of the review

Notwithstanding the efforts made to maximise the quality and rigour of the review, we note several limitations. First, our review included studies published in the English language, and therefore our review could be susceptible to publication and language bias. Second, we did not conduct a meta-analysis due to the small number of studies for most outcomes and the heterogeneity of measures, but as research continues to accumulate, a quantitative integration of literature on loneliness in sport could be beneficial. Third, our search specified that articles needed to include variants of loneliness or social isolation, but it is possible that some relevant literature might have been missed because studies did not explicitly refer to these terms (e.g. disconnected from friends).

Applied implications

Actions that can prevent and reduce loneliness can benefit all individuals in sport. Consistent with our conceptual model, we suggest efforts to prevent and mitigate against loneliness in sport should go beyond individual strategies and consider wider relational, organisational, and socio-cultural drivers of loneliness. First, we suggest a tripartite approach to preventing loneliness, comprising interventions at primary, secondary, and tertiary levels (Crowe et al., 2024). To give an example, primary prevention could focus on preventing loneliness for all members of a sport community (e.g. via initiatives that nurture and strengthen social connections), secondary prevention could target at-risk individuals (e.g. via support mechanisms for at-risk individuals), and tertiary prevention could concentrate on individuals already experiencing loneliness (e.g. minimise damaging consequences for someone experiencing loneliness). Second, our conceptual model highlights the complexity of interpersonal relationships and how these can impact loneliness. Particular attention should be directed towards nurturing socially supportive relationships and ensuring actions do not exclude, isolate, segregate, discriminate, or cause harm. Third, at the institutional level, sport organisations should be aware of the negative outcomes associated with loneliness, as well as its antecedents. Consideration of risk and protective factors for loneliness within organisational structures and practices could, in turn, help to prevent and mitigate loneliness. Furthermore, sport organisations and staff should be aware of precipitating events for loneliness and implement relevant support mechanisms. Fourth, at the socio-cultural level, we encourage members of the sport community to reflect on dominant norms and narratives in sport that might contribute to loneliness and to consider alternatives that emphasise health and interpersonal

dimensions. Finally, we suggest there is value in considering loneliness within policy and education initiatives related to mental health in sport. For instance, it would seem relevant to ensure that athletes, athlete support personnel, and other support networks (e.g. parents) understand the antecedents of loneliness in sport, and its negative outcomes.

Conclusions

This systematic mixed studies review has, for the first time, synthesised research on loneliness in sport. We hope that it can clarify current understanding of loneliness in sport and offer a platform for researchers to develop stronger research programmes. In future, more consideration should be given to methods for assessing loneliness and determining its prevalence across different sport populations. It is equally important to address multi-level risk and protective factors for loneliness and how these interact to elicit, perpetuate, or prevent and reduce loneliness among members of the sport ecosystem. Ultimately, the development of more robust evidence on antecedents, mechanisms, and consequences of loneliness across members of the sporting community can inform policies and practices that enable sportspeople to build and sustain meaningful social relationships with others.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The authors confirm that the data supporting the findings of this study are available within the article and its supplementary materials.

ORCID

Patricia C. Jackman http://orcid.org/0000-0002-5756-4494
Rebecca M. Hawkins http://orcid.org/0000-0002-5816-8186
Matthew D. Bird http://orcid.org/0000-0001-5098-179X
Ollie Williamson http://orcid.org/0000-0001-8192-646X
Stewart A. Vella http://orcid.org/0000-0003-0537-9366
Lambros Lazuras http://orcid.org/0000-0002-5075-9029

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