Investigating the Mental Health of Elite-Level Coaches to Guide Early Intervention

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Abstract

Background: Research indicates that elite-level coaches encounter specific performance, organisational and personal stressors that can influence their mental health. To date, however, little is known about their mental health experiences and factors that influence mental health help-seeking. Such information is needed to guide the development of evidence-based supports, particularly those that focus on early intervention strategies, to protect the mental health of elite-level coaches.

Aims and objectives: This thesis aims to advance the current discourse by investigating four research aims, including: (1) examining rates of mental health symptoms; (2) identifying risk and protective factors that shape mental health outcomes; (3) investigating perceptions and attitudes regarding mental health; and (4) exploring factors that influence mental health help-seeking among elite-level coaches.

Methods: Five studies were conducted to address the research questions, beginning with a systematic scoping review to assess what is currently known about the mental health of elite-level coaches (*Chapter 2*). Using a qualitative research design, 14 semi-structured interviews were then performed to explore the perceived risk and protective factors that influence the mental health of Australian elite coaches (*Chapter 3*). Such insights were utilised to inform a cross-sectional online survey, examining rates of mental ill-health and associated organisational risk factors among an international sample of elite coaches (n=158) (*Chapter 4*). The survey also explored perceptions and attitudes that elite coaches (n=143) hold regarding mental health, investigating their ability to identify depression and burnout, beliefs regarding sources and methods of support, and perceptions of mental health stigma among coaches and athletes, using a

vignette methodology (*Chapter 5*). Lastly, a group concept mapping study was conducted with 10 Olympic/Paralympic coaches and 9 mental health professionals to identify perceived challenges to mental health help-seeking among Olympic and Paralympic coaches (*Chapter 6*).

Results: The systematic scoping review indicated that current research has primarily investigated burnout and mental wellbeing compared to mental health symptoms and disorders among elite coaches. Several multi-level risk and protective factors were also identified using a socio-ecological framework. Insights from *Chapter 3* supported these findings, as Australian coaches described a range of individual, interpersonal and organisational factors that shaped their mental health. Notably, participants primarily reported demands emanating from organisational sources, such as job insecurity and poor work-life balance. Findings from *Chapter 4* indicated that the minority of elite coaches reported experiencing depressive and anxiety symptoms, risky alcohol consumption and suicidal ideation, with job insecurity the only organisational risk factor associated with symptoms of anxiety and depression. In *Chapter 5*, findings indicated that elite coaches could detect depression among athlete and coach vignettes more accurately than burnout. Additionally, coaches viewed medical/psychological interventions (e.g. talking to a mental health professional) to be more helpful for coaches and athletes experiencing depression, while activity-based interventions (e.g. taking leave) were considered more appropriate for burnout. When seeking help, the 'pressures and instability within high-performance sports environments' were identified as the most important but least feasible barrier to address for Olympic and Paralympic coaches in *Chapter 6*.

Conclusions: The studies from this thesis suggest that tailored mental health supports are needed to safeguard the mental health of elite-level coaches, with a particular emphasis on organisational factors, such as job insecurity. Given the range of mental health symptoms reported by participants, limitations with levels of mental health literacy and perceived barriers to help-seeking, sports organisations should make efforts to develop psychologically safe environments where elite coaches can disclose mental health challenges when they arise, promote early intervention strategies so that coaches know how (and from whom) to access help when needed, and work to establish high-performance cultures that minimise – as far as possible – factors that can undermine or damage the mental health of their coaching staff.

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Declaration

I, Joshua Benjamin Frost, declare that this thesis:

1. contains no material which has been accepted by me for the award of any other degree at any other university or equivalent institution.
2. to the best of my knowledge, contains no material previously published or written by another person except where appropriate reference is made in the thesis.

I certify that the intellectual content of this thesis is the product of my own work and that all assistance received in preparing this thesis and the sources have been acknowledged in the text.

Signed:

Date 31/10/2025

Preface

This thesis is organised into five manuscripts, each presented as a separate chapter. I took the lead author role for all five manuscripts, working in collaboration with colleagues from Australia and abroad. A summary of each author's contributions is presented below.

Chapter 2: The mental health of elite-level coaches: A systematic scoping review. Published in *Sports Medicine - Open* (https://doi.org/10.1186/s40798-023-00655-8) in February 2024. I was the review lead and contributed towards screening, data charting, quality appraisal and preparation of the manuscript. CW, RP and SR helped conceptualise the review and were involved in shaping the manuscript. CW and KF assisted with screening processes, and KG and MK independently charted the data. All authors read, edited and approved the final manuscript.

Chapter 3: "The players are the focus, it's never spoken about as coaches": Perceived factors influencing the mental health of Australian elite-level coaches. Under review at *Psychology of Sport and Exercise* in October 2025. I was the research lead, overseeing conceptualisation, data collection, data analyses and manuscript drafting. CW assisted with data analyses. CW, SR and RP were all involved in conceptualising the study. All authors contributed towards reading, editing and approving the final manuscript.

Chapter 4: Organisational risk factors for depression, anxiety, and alcohol use among elite-level coaches. Published in the *International Journal of Sport and Exercise Psychology* in September 2025 (https://doi.org/10.1080/1612197X.2025.2547365). I

was the research lead, overseeing conceptualisation, data collection, data analyses and manuscript drafting. CW, SR and RP were involved in conceptualising the study. CD was involved in guiding data analyses. All authors contributed towards reading, editing and approving the final manuscript.

Chapter 5: Mental health literacy in elite-level coaches: Recognition and management of depression and burnout. Accepted for publication at the *Journal of Applied Sport Psychology* in October 2025. I was the research lead, overseeing conceptualisation, methodology, formal analysis, manuscript drafting, review, editing, visualisation and project administration. RP and SR contributed to conceptualisation, methodology and manuscript review and editing. KT and VG were involved in methodology, providing resources and reviewing and editing the manuscript. WA contributed to investigation, resources and manuscript review and editing. CW was involved in conceptualisation, methodology, formal analysis, and manuscript review and editing. All authors contributed towards reading, editing and approving the final manuscript.

Chapter 6: Olympic and Paralympic coaches' perceived barriers to mental health help-seeking: A concept mapping study. Published in the *British Journal of Sports Medicine* in June 2025 (https://doi.org/10.1136/bjsports-2024-109247). I was the research lead, overseeing conceptualisation, data collection, data analyses and manuscript drafting. All authors made substantial contributions towards the study, including the conceptual design (JF, CW, SR and RP), concept mapping process (JF and AD), data analysis (JF and AD) and interpretation of results (JF, CW, AD and RP). All authors read, edited and approved the final manuscript.

Research Outputs Included in This Thesis

Frost, J., Walton, C.C., Purcell, R., Fisher, K., Gwyther, K., Kocherginsky, M. and Rice, S.M. (2024). The Mental Health of Elite-Level Coaches: A Systematic Scoping Review. *Sports Medicine - Open, 10*(1), 16. https://doi.org/10.1186/s40798-023-00655-8

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Frost, J., Walton, C.C., Donaldson, A., Rice, S.M. and Purcell, R. (2025). Olympic and Paralympic coaches' perceived barriers to mental health help-seeking: a concept mapping study. *British Journal of Sports Medicine, 59*(15), 1063. https://doi.org/10.1136/bjsports-2024-109247

*Cited **1** times since publication in June 2025* **(Chapter 6)**

Frost, J., Walton, C. C., Rice, S. M., Davey, C., & Purcell, R. (2025). Organisational risk factors for depression, anxiety, and alcohol use among elite-level coaches: a cross-sectional study. *International Journal of Sport and Exercise Psychology*, 1–17. https://doi.org/10.1080/1612197X.2025.2547365

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Accepted for publication in October 2025 **(Chapter 3)**

Related Research not Included in This Thesis

Walton, C.C., Purcell, R., Henderson, J.L., Kim, J., Kerr, G., **Frost, J.**, Gwyther, K., Pilkington, V., Rice, S. and Tamminen, K.A., 2024. Mental health among elite youth athletes: a narrative overview to advance research and practice. *Sports Health*, 16(2), pp.166-176. https://doi.org/10.1177/19417381231219230

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Purcell, R., **Frost, J.**, & Pilkington, V. (2024). Mental Health of Elite Sport Coaches and Entourage. *Clinics in Sports Medicine*, 43(1), 199–211. https://doi.org/10.1016/j.csm.2023.06.005

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Conference Presentations During Candidature

Frost, J., 2022, November. The mental health of elite-level coaches: A systematic scoping review. Oral Presentation – GAMeS Conference 2022 (Australia).

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Frost, J., 2023, November. *The mental health of elite-level coaches: A systematic scoping review*. Oral Presentation – Mental Health PhD Conference 2023: University of Melbourne (Australia).

Frost, J., 2024, July. *The mental health of elite-level coaches: A systematic scoping review*. Oral & Poster Presentation – FEPSAC- Congress 2024 (Austria).

Frost, J., 2024, October. *Improving mental health help-seeking among Olympic & Paralympic coaches: A concept mapping study*. Oral Presentation – CYMH Graduate Research Conference 2024 (Australia)

Additional Activities

October 2024: Centre for Youth Mental Health Graduate Researchers Conference 2024 Runner Up Award.

May 2024: Irish Sport and Exercise Sciences Association Webinar: Supporting the Mental Health of High-Performance Coaches & Support Staff.

March 2024: The Sport Psych Show Podcast w/ Dan Abrahams – The Mental Health of Elite-Level Coaches.

January 2024: Interviewed for Esquire Magazine article: The crucible of coaching in professional sport.

January 2024: Delivered a talk on Elite Coach Mental Health at Stellenbosch University (South Africa).

December 2023: Awarded the International Olympic Committee's (IOC) Olympic Studies Centre's 2024 PhD Students and Early Career Academics Research Grant (USD 4,500).

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Notably, I want to thank all the participants who contributed towards this doctoral thesis in some shape or form. Without your insights and involvements, none of this would have been possible. I'd also like to thank all the sports organisations across the world who helped promote and support this research. Ultimately, I hope these insights help to shape a future where elite coaches' mental health is not only acknowledged, but truly

valued and nurtured in high-performance settings.

Finally, a word from myself. Back in 2020 I wrote a quote on the back of a post-it note that read, “the two most important days of your life are the day you are born, and the day you find out why”. As an individual who has been through my own mental health journey, this PhD has helped me discover that *why*. I always wanted to channel my personal experiences to help support others, however that looked. While a PhD is undoubtedly challenging, this project has afforded me that opportunity, and in doing so, given me a tremendous sense of purpose that has shaped who I am today. For that reason, I am deeply grateful to everyone who has supported me along the way, enabling me to discover my passion and meaning. I hope my story encourages others going through their own mental health journey to find meaning and purpose from their experiences.

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Chapter 1: Introduction: The Empirical Foundation of Elite Coaches' Mental Health

Chapter Overview

This chapter will establish the empirical foundation of elite coaches' mental health research to contextualise the thesis. At present, research has primarily focused on understanding the mental health needs and outcomes of elite athletes, with limited attention directed towards elite coaches. As such, this chapter will examine the existing discourse and unpack the current state of mental health in elite sports, the demands and pressures that elite coaches encounter, what is known about the mental health of elite coaches, and the importance of early intervention. This chapter will identify gaps in the research and provide a clear rationale for the thesis. Lastly, the chapter will conclude with an overview of the thesis and outline the significance of this research program.

Introduction

As a profession, coaches who occupy roles in elite or professional sports settings may face myriad stressors that have the potential to influence or compromise their mental health. These demands stem from delivering technical, tactical and strategic expertise, while concurrently fulfilling the wide-ranging roles of educator, motivator, counsellor and even friend in high-performance environments (Knights & Ruddock-Hudson, 2016; Lyle, 2002; Olusoga et al., 2009). Elite-level coaches are commonly perceived to primarily shape the performance outcomes of athletes or sports teams. However, a revised narrative now exists, acknowledging that elite-level coaches should also be recognised as 'performers' in their own right, considering their responsibilities in delivering performance outcomes, implementing effective training programs, preparing tactics and handling team selections (Frey, 2007; Gould et al., 2002; Thelwell et al., 2008). Besides performance stressors, elite-level coaches also encounter several organisational demands, including high workloads, dealing with organisational leaders, job insecurity and media scrutiny, as well as various personal stressors, including periods of isolation, family conflicts and relationship issues (Didymus, 2017; Knights & Ruddock-Hudson, 2016; Olusoga et al., 2009; Thelwell et al., 2008).

Much like the elite athletes they coach, this combination of performance, organisational and personal stressors may impact the mental health of elite coaches, potentially leading to mental ill-health. Mental health challenges have increasingly been discussed in the public domain, with high-profile coaches such as Jurgen Klopp (soccer), Pep Guardiola (soccer), Thierry Henry (soccer), Craig Bellamy (soccer), Justin Langer (cricket), Damien Hardwick (Australian Rules football) and Simon Goodwin (Australian Rules football) having openly shared their experiences of exhaustion, burnout, anxiety and depression in coaching. The deaths by suicide of Gary Speed (soccer), Paul Green (rugby league), Graham Thorpe (cricket) and Danny Frawley (Australian Rules Football), alongside

others, have highlighted the more tragic outcomes that are associated with mental ill-health among elite coaches, including in retirement. It is critical that research empirically examines the mental health experiences of elite-level coaches, in order to best equip this population with adaptive coping strategies and robust organisational supports that protect and optimise their mental health (Olusoga et al., 2010; Thelwell et al., 2010).

Over the past decade, research investigating the mental health of elite sportspeople has garnered increasing attention from researchers and organisations. A large proportion of the high-performance discourse has investigated mental health among elite athletes (Gouttebarge et al., 2019; Poucher et al., 2021; Rice et al., 2016), particularly since the majority of elite athletes are young adults (16-25) and in the phase of life when the onset of mental ill-health is most prevalent (Solmi et al., 2022). These insights into the mental health of elite athletes bear importance, as elite coaches operate in these same high-performance environments, while arguably shouldering a greater set of responsibilities in relation to management duties and having to deliver performance outcomes. In comparison to elite athletes, coaches have received considerably less empirical attention to date. However, a burgeoning literature indicates that elite coaches are susceptible to mental ill-health, and may experience symptoms associated with depression, anxiety and risky alcohol consumption, among others (Bilgoe et al., 2024; Kegelaers et al., 2021; Pilkington et al., 2022). Given elite coaches are also responsible for cultivating an organisational or team environment that facilitates optimal performance and wellbeing (Thelwell et al., 2017), the mental health outcomes, experiences and literacy of elite coaches should not be overlooked or underestimated. Elite-level coaches hold prominent leadership roles that not only have the potential to shape the psychological states and mental health outcomes of athletes, coaching colleagues and other support staff, but also influence the cultural and institutional attitudes affiliated with mental health (Bissett et al., 2020; Gorczynski et al., 2020).

Accordingly, this doctoral thesis seeks to enrichen our understanding of elite coach mental health through five studies (a systematic scoping review and four empirical studies) that each build upon the other to investigate the mental health experiences of elite-level coaches. Specifically, this thesis investigates rates of mental health symptoms, factors that contribute towards such symptoms within an ecological systems framework, the ability of elite coaches to detect symptoms of mental ill-health, their views regarding mental health and the perceived effectiveness of various supports and interventions, and their attitudes towards seeking mental health support. This project has been designed to guide future mental health frameworks for elite-level coaches, with a particular emphasis upon early intervention approaches. To increase the effectiveness of such strategies, researchers have called for a greater body of empirical research to inform the development of targeted and evidence-based mental health frameworks tailored for elite-level coaches (Frost et al., 2023; Kenttä et al., 2023; Leprince et al., 2024).

The following sections provide a comprehensive overview of mental health in elite sport, with a focus on key definitions and concepts, the demands and pressures that elite-level coaches face, what is known about the mental health of elite coaches and the role of early intervention in supporting mental health promotion and prevention approaches.

Mental Health in Elite Sports

Conceptualising Mental Health

Mental health has been conceptualised and operationalised using various definitions throughout the fields of sport psychology and psychiatry. Mental health has been defined by the World Health Organization (WHO) as "a state of well-being in which an individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully and is able to make a contribution to his or her community"

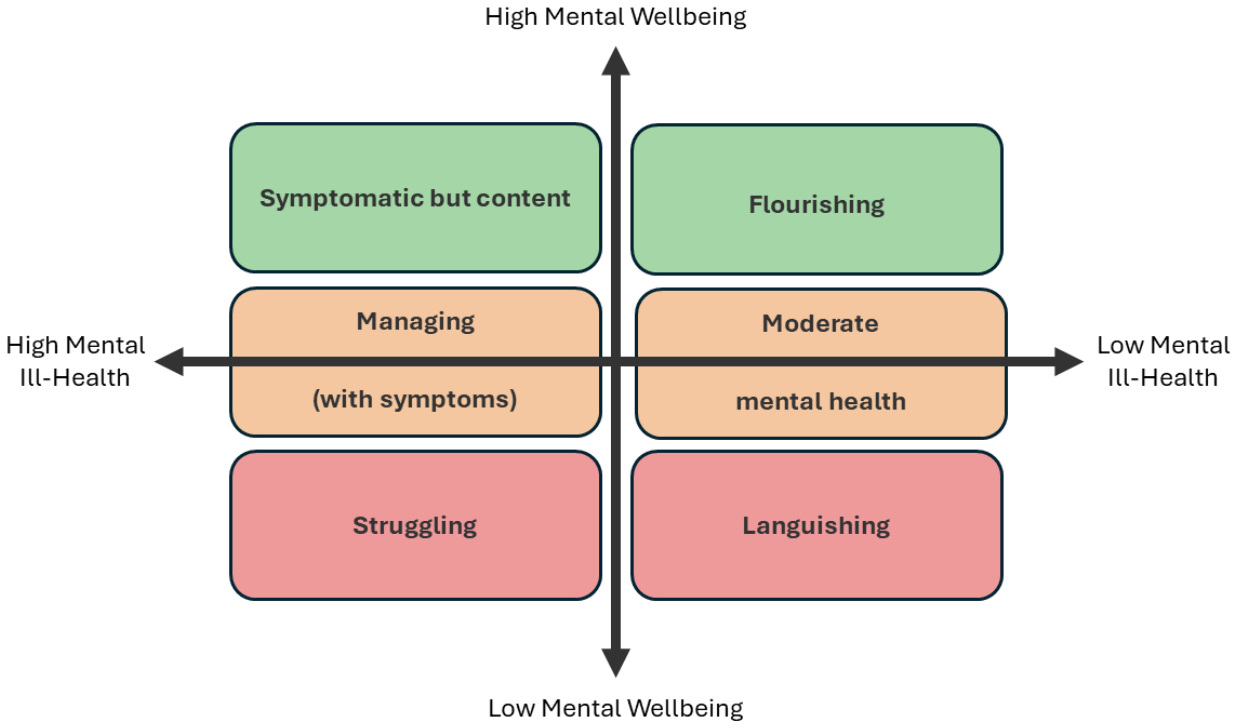
(World Health Organization, 2005, pg. 12). Although this definition overlooks cultural and social considerations (Galderisi et al., 2015), this definition moves beyond the traditional deficit-based views of mental health that focus on the absence of mental ill-health, and embraces proponents of positive psychology and human flourishing (Westerhof & Keyes, 2010). While a range of theoretical models have been employed to conceptualise mental health in elite sports, single- and dual-continuum models incorporating positive aspects of mental health and mental ill-health remain widely endorsed (Lundqvist & Andersson, 2021).

Single-continuum models conceptualise mental health on a spectrum, enabling individuals to shift bi-directionally between states of healthy functioning, early symptom presentation and mental ill-health (Haggerty & Mrazek, 1994). To date, single-continuum models have served as the primary framework to assess and promote mental health in elite sports (Henriksen et al., 2024; Lundqvist & Andersson, 2021; Purcell et al., 2019). These models offer a useful framework to conceptualise the dynamism of mental health in elite sports, recognising that athletes, coaches and support staff may experience shifts in mood, functioning, social activity and psychological harm, reflecting one's position upon the mental health spectrum. Notably, these models suggest that those experiencing mental ill-health can recover and return to healthy functioning, helping to reduce stigma and normalise mental ill-health in elite sport. While single-continuum models help to capture psychological variation and functioning, these models have been argued as being limited in elite sports settings (Lundqvist & Andersson, 2021). This is because emotion-related symptoms (e.g. anxiety, stress) may naturally arise in pursuit of goals in elite sports, and may be misinterpreted as presentations of mental ill-health among athletes, coaches and support staff, potentially leading to variation in symptom interpretation based upon the individual judgement and expertise of researchers and practitioners (Lundqvist & Andersson, 2021). Furthermore, single-continuum models imply that high-level functioning and mental ill-health cannot co-

exist, which is problematic, since research indicates that elite athletes report flourishing despite experiencing symptoms of mental ill-health (Kuettel et al., 2022; Kuettel et al., 2021). As such, dual-continuum models have sought to facilitate clearer distinctions between indicators of wellbeing and mental ill-health in elite sports, garnering increasing empirical attention.

Originally established by Keyes (2002, 2005), the dual-continuum model of mental health asserts that mental health should be perceived as a complete state encompassing two distinct yet related phenomena: the presence and absence of mental wellbeing and mental ill-health. Mental wellbeing is situated on the bivariate model's vertical axis, reflecting both the presence of positive emotions (i.e. hedonic wellbeing) and purpose and fulfilment in one's life (i.e. eudaimonc wellbeing) (Figure 1). This dimension is shaped by an individual's level of emotional (e.g. affective states), psychological (e.g. individual functioning) and social (e.g. societal functioning) wellbeing (Westerhof & Keyes, 2010). Conversely, the model's horizontal axis represents the presence or absence of symptoms and disorders associated with mental ill-health (e.g. anxiety disorder, depression, eating disorders).

Figure 1: Keyes' dual continuum-model of mental health adapted by Purcell et al. (2022)



As illustrated in Figure 1, the proposed dual-continuum model suggests that mental health exists across spectrums of mental wellbeing and mental ill-health. In elite sport, subgroups have been developed along these spectrums to aid mental health policy development and assessments (Kuettel et al., 2021; Purcell et al., 2022; Van Slingerland et al., 2018), as the descriptors can be utilised to predict individuals who may be susceptible to mental ill-health (Iasiello et al., 2020; Keyes et al., 2010). Accordingly, those with high emotional, psychological and social wellbeing without mental ill-health are widely considered as *flourishing* (Keyes, 2002, 2005; Keyes & Lopez, 2002), while those experiencing high mental wellbeing and mental ill-health have been described as *symptomatic but content* (Iasiello et al., 2020). Conversely, individuals experiencing low wellbeing without symptoms of mental of mental ill-health have been characterised as *languishing*, yet those with reduced mental wellbeing and presentations of mental ill-health may be *struggling* (Iasiello et al., 2020). Those positioned in between have been conceptualised as experiencing *moderate mental health* or *managing (with symptoms)*.

According to this framework, an individual may experience positive affective states regularly, or be able to function effectively at work, despite the diagnosis of a mental disorder (Iasiello et al., 2020; Westerhof & Keyes, 2010). This conceptualisation helps to destigmatise the notion that those diagnosed with a mental disorder cannot experience emotional, psychological and social wellbeing. Crucially, the dual-continuum model has been empirically validated by several studies across elite sport (Kuettel et al., 2022; Kuettel et al., 2021; Van Slingerland et al., 2018), substantiating the model's conceptual utility. Thus, the dual-continuum model of mental health will be employed throughout this research as a framework for conceptualising mental health.

Defining "Elite"

The term 'elite' has historically evaded a conceptually unified definition throughout sport. Swann and colleagues (2015) established a five variable framework comprising of an athlete's highest standard of performance, highest level of success, experience at the highest level, competitiveness of sport in the athlete's country and global competitiveness of the sport. Swann's model is effective in grouping athletes into semi-elite, competitive-elite, successful-elite and word-class elite categories, however there are logistical challenges associated with applying the framework in practice (e.g. collecting data for each criteria). In the context of this research, the framework cannot be directly translated or applied to elite-level coaches, due to the athlete specific criteria incorporated within the taxonomy.

The criteria for defining an 'elite' or 'high-performance' coach has also been widely contested among researchers. Previous definitions have operationalised elite coaches as individuals who guide professional, Olympic, international or nationally significant athletes or teams to competition (Grey et al., 2020). While this definition addresses the competitive variation of elite coaches (e.g. Olympics, professional), it fails to consider differences between coaching roles, such as head coaching positions or strength and conditioning coaches. In addition, the operationalised definition does not consider the involvement of university or collegiate sport within the classification of elite sports. With the increasing professionalisation of collegiate sport, particularly in North America (i.e. National Collegiate Athletic Association; NCAA), this thesis aligns with the International Olympic Committee's (IOC) recognition of collegiate sportspeople and their involvement in elite sport (IOC, 2021; Reardon et al., 2019). Accordingly, elite-level coaches will be characterised throughout the thesis as "individuals who operate as part of the management team or leadership group, and regularly work to enhance the performance of athletes or teams competing at the Olympic, Paralympic, international, national, professional, or NCAA Division I level" (Frost et al.,

2023, pg. e1). This definition stipulates that an elite-level coach should have responsibilities affiliated with leadership or management duties. Coaches whose primary responsibility involves some form of physical, medical or scientific role might be considered as members of the support staff (e.g. strength and conditioning coaches) rather than the management group. Furthermore, those operating at the NCAA Division II and III level are excluded from the definition due the regional emphasis and affiliations of these competitions (National Collegiate Athletic Association, 2023, 2023).

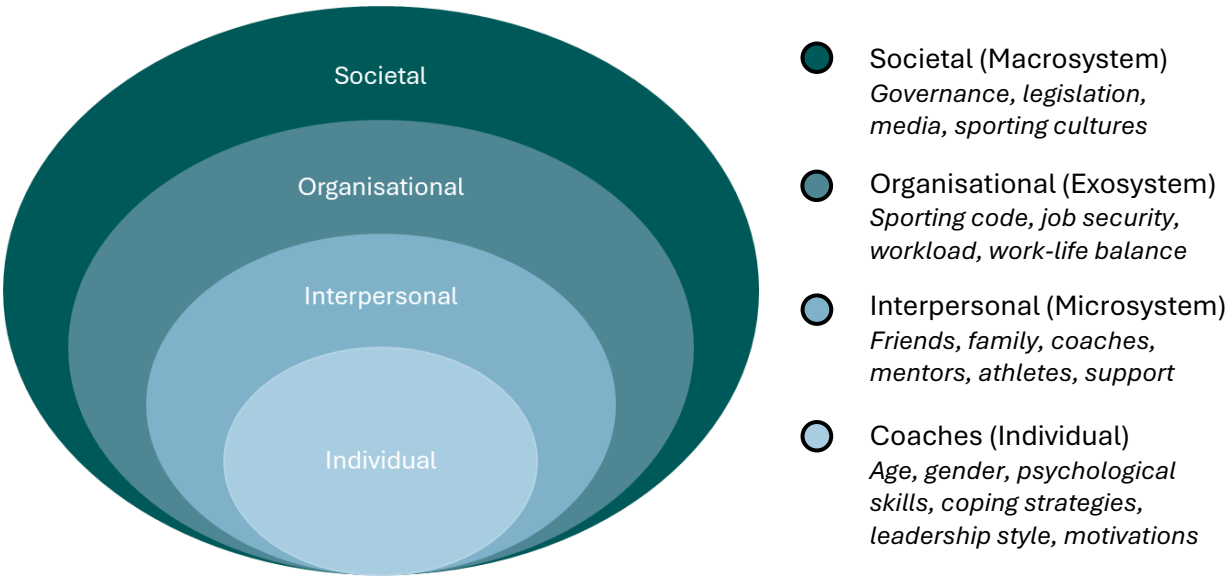
Ecological Systems in Elite Sport

To gain a comprehensive understanding of factors affecting the mental health of elite coaches, holistic models have been endorsed and embraced in elite sports settings (Lundqvist & Andersson, 2021). Originally established by Bronfenbrenner (1992), the ecological systems theory was developed to contextualise the complex interactions between the individual and environment in child development. This framework has been applied across many health-related fields, including mental health (Eriksson et al., 2018). Purcell et al. (2019) applied this ecological framework to elite sport, highlighting that individual, interpersonal (microsystem), organisational (exosystem) and societal factors (macrosystem) can interact to shape the mental health of elite athletes, as well as coaches (Figure 2).

Across the multi-level ecological model, a range of factors affecting the mental health of elite coaches have been identified. At the individual level, coaches' may possess specific factors that increase or reduce their risk of poor mental health, including their age, dominant/external coaching identities or leadership style (Hassmén et al., 2019; Pilkington et al., 2022; Ryska, 2009). A coach's interpersonal network, including their family, friends, colleagues and mentors may also offer emotional and practical support to protect their mental health (Olusoga & Kenttä, 2017; Pilkington et al., 2022). From an exosystem perspective, both the sport and broader sporting organisations in which an elite coach operates in may

impact their workload, job security and work-life balance (Bentzen et al., 2020; Bentzen et al., 2016). Lastly, societal influences such as public attitudes (e.g. stigma towards poor mental health), the media or sporting cultures (e.g. hypermasculinity) can protect or exacerbate the mental health challenges faced by elite coaches (Kenttä et al., 2016; Olusoga & Kenttä, 2017; Roberts et al., 2019).

Figure 2: An ecological systems model for elite coaches' mental health



While few studies in elite sport have examined risk and protective factors through a socioecological lens, this holistic framework offers a comprehensive view of the diverse factors influencing the mental health of elite athletes, coaches and support staff, minimising the risk of pathologising the individual for their mental health outcomes. As such, ecological systems frameworks should be utilised in research to investigate the range of multi-level factors influencing the mental health of elite coaches. Recognising the interplay between these systems can help sporting organisations and bodies to develop system-targeted intervention strategies focused on supporting the mental health of elite-level coaches. Following this model, an ecological systems framework will underpin this research program to investigate factors influencing the mental health of elite coaches.

The Multi-Faceted Roles and Challenges of Elite-Level Coaching

What is Elite Coaching?

At its essence, elite coaching is a dynamic profession that blends pedagogical practices with relational development (Kenttä et al., 2023). Elite coaches function as leaders, learners and performers that are responsible for nurturing the development, performance and wellbeing of athletes (Côté & Gilbert, 2009; Kenttä et al., 2023; Rynne et al., 2017). Unlike recreational or community coaches, elite coaching is often characterised by fostering long-term coach-athlete relationships, consistent engagement with athletes (e.g. daily or weekly training), long-term goal setting, motivation, frequent and intense training sessions, goal-oriented relationships, attempting to control performance variables to enhance performance outcomes, planned progression and individualised athlete development (Lyle, 2002; Mallett, 2010). To fulfil these criteria, elite coaches may be responsible for undertaking a range of tasks. These may include the planning of short- and long-term training and competition schedules (e.g. weekly, monthly, annual, 4-year cycle plans), establishing performance goals and indicators with athletes (e.g. speed or endurance tests), data collection and analysis (e.g. monitoring physical, psychological and emotional wellbeing), recruiting athletes and staff, liaising with funding and governance stakeholders, reporting to organisational leaders (e.g. CEO, sporting director), public engagement via the media and seeking funding and sponsorship for athletes (Mallett, 2010).

While tasks and characteristics may vary among elite coaches, researchers have emphasised that leadership and management remain core aspects of the vocation (Grey et al., 2020; Mallett, 2010). Depending on the sport type, high-performance environment and coaching role, elite coaches may direct their leadership solely towards athletes. In other cases, coaches may also oversee the entourage and support staff, including strength and conditioning coaches, tactical analysts and sports medics (Mallett, 2010). Elite coaches may

exercise leadership by adopting a variety of leadership styles, including transformational, transactional or laissez-faire (non-leadership) approaches (Bass & Riggio, 2006). In a sporting context, transformational leadership develops athletes by inspiring and empowering them to reach higher levels of performance without coercion or force (Lara-Bercial & Mallett, 2016). Transactional leadership involves rewarding or punishing athletes based upon their performance, while laissez-faire leadership represents an absence of leadership altogether, characterised by avoiding or delaying decision making (Bass & Riggio, 2006).

These leadership styles can influence a range of factors, including coaching effectiveness (Lara-Bercial & Mallett, 2016), the stress and mental health of elite coaches (Lumpkin & Anshel, 2012; Ryska, 2009), and the physical (e.g. injuries) and mental health of elite athletes (Ekstrand et al., 2018; Lundqvist et al., 2025). While specific leadership styles may be more appropriate and effective in different performance environments, in recent years, there has been a growing shift from transactional to transformational leadership styles (Grey et al., 2020). This collaborative approach allows athletes to have more influence and share greater responsibility for their actions and performances. There is some evidence to suggest these collaborative leadership styles may lead to improved team cohesion and performance in elite sports environments (Callow et al., 2009; Lara-Bercial & Mallett, 2016). Although further research is needed, preliminary evidence also suggests that transformational leadership styles may also reduce burnout in elite-level coaches compared with controlling leadership styles (Ryska, 2009).

Defining Coaching Effectiveness

Considering the diverse roles and responsibilities of elite coaches, achieving coaching effectiveness (or quality coaching) is typically perceived as a core component of the vocation. Often shaped by varying subjective and contextual objectives, the performance, quality and effectiveness of an elite coach can be assessed in myriad ways. The evaluation of

performance for example can fluctuate between intrapersonal and interpersonal viewpoints, as well as continuous (e.g. times and distance) and ordinal (e.g. ranking or league position) metrics (Raysmith et al., 2019). Moreover, the quality of a coach can arguably be assessed by their longevity, knowledge, competence (e.g. problem solving skills) or defining characteristics (e.g. leadership, charisma) (Mallett et al., 2024). In previous research, coaching effectiveness has largely been operationalised by Côté and Gilbert's (2009) proposed definition. Comprised of three integrated components, coach effectiveness is referred to by Côté and Gilbert (2009, p.316) as "the consistent application of integrated professional, interpersonal and intrapersonal knowledge to improve athletes' competence, confidence, connection, and character in specific coaching contexts". Recently however, Lyle (2021) has contested that coaching effectiveness should be considered as a superordinate concept as opposed to a root definition. Lyle argues that the interplay between a coach's ambition and environmental context should determine their efficacy. Effectiveness should subsequently be attainable for all coaches, regardless of whether success has been achieved or a coaching blueprint has been followed. Rather, it is argued that context should play a more decisive role in determining coach effectiveness than the measurement of standardised criteria (e.g. enhancing athlete confidence).

At present, little is known about the relationship between mental health and coaching effectiveness among elite coaches. This might be attributed to the complex variations in how mental health and coaching effectiveness is defined, conceptualised and measured. Despite this, there is some preliminary evidence connecting the psychological experiences of elite coaches to their coaching effectiveness. For example, in a study comprising of elite taekwondo coaches from South Korea (n = 210), Seo et al. (2022) found that burnout was negatively associated with presenteeism. In response to high levels of stress, Frey (2007) revealed NCAA Division I collegiate coaches (n = 10) experienced impaired focus,

indecisiveness and emotional outbursts, while Olusoga et al. (2010) reported British world-class coaches (n = 12) experiencing a lower quality of work and communication with their athletes. Although research exploring the links between mental health and coaching effectiveness is limited, initial research suggests this relationship should be examined, to assess the extent to which positive and negative mental health impacts performance.

Given the paucity of research exploring the relationship between the mental health of elite coaches and coaching effectiveness, this thesis will employ a broad conceptualisation of coaching effectiveness, referring to coaches' drawing upon their expertise in the context of their specific ambition and environment. This conceptualisation draws upon potential factors and processes that may influence coaching gains and performance outcomes, while acknowledging that these factors may not necessarily produce results associated with success or excellence. These factors may include but are not limited to elements (e.g. resources, strategies, reasoning, actions) associated with coaching practices, coach education and coach development.

Considering performances and the delivery of performance outcomes are considered a central feature of operating as an elite coach, further research may highlight whether a bi-directional relationship exists between mental health and coaching effectiveness. While preliminary evidence suggests that a coach's mental health may influence aspects of coaching effectiveness (e.g. presenteeism), a greater body of evidence is needed to confirm this relationship. Such insights are of value, as coaching effectiveness might be employed as a 'hook' to engage elite coaches in greater consideration and appreciation of mental health in elite sport settings.

The Demands and Pressures of Elite Coaching

To achieve coaching effectiveness, the increasing professionalisation of elite sport in recent decades has led to growing demands and pressures placed upon coaches. Several

studies have identified stressors that elite-level coaches encounter across various sports, coach types and geographical regions (Baldock et al., 2021; Chroni et al., 2016; Didymus, 2017; Kegelaers et al., 2021; Knights & Ruddock-Hudson, 2016; Kovács et al., 2022; Levy et al., 2009; Olusoga et al., 2009; Powell et al., 2022; Rhind et al., 2013; Sarkar & Hilton, 2020; Srem-Sai et al., 2022; Thelwell et al., 2008). Research indicates these stressors typically emerge from performance, organisational and personal sources (Sarkar & Fletcher, 2014). Performance-based stressors refer to the "the environmental demands associated primarily and directly with competitive performance" (Mellalieu et al., 2009, pg.3) and may stem from the performance of either athlete or coach (Thelwell et al., 2008). By comparison, organisational stressors can be operationalised as the "the environmental demands associated primarily and directly with the organisation within which an individual is operating" (Fletcher et al., 2006, pg.9), emerging from leadership, team and environmental sources (Levy et al., 2009; Thelwell et al., 2008). Lastly, personal stressors can be defined as "the environmental demands associated primarily and directly with personal "nonsporting" life events", and may include family issues and social isolation (Sarkar & Fletcher, 2014, pg. 1423).

While elite coaches encounter demands (e.g. workload, travelling) that are akin to those in other leadership roles (e.g. teachers, corporate CEOs), there are distinct stressors that arguably make elite coaching unique. Given the cut-throat and results driven nature of elite coaching, job security can be a major source of stress for coaches (Olusoga et al., 2009; Rhind et al., 2013). In elite sport, the performance of an athlete or team usually dictates whether a coach remains in their role or not, particularly among head coaches (Arnulf et al., 2012). If an athlete or team starts to underperform, elite coaches may be at risk of being dismissed, creating stress and anxiety as they navigate performance expectations set by sports organisations.

While turnover rates may vary by sport type, gender and competition, turnover rates are typically high among elite coaches. Research indicates the average tenure of a professional soccer coach is approximately 453 and 733 days in European and North American leagues, respectively (Bryson et al., 2021; Semmelroth, 2021). In Brazilian professional soccer leagues, multilevel modelling revealed that approximately 26.3% of coaches remain in their role until the end of the season without facing dismissal (Tozetto et al., 2019). By comparison, a longitudinal study found a turnover rate of 8.7% per year among coaches in NCAA Division I women's sports (LaVoi & Silva-Breen, 2022). While turnover rates may vary by coach type and sporting code, job security can persist as a chronic stressor for elite-level coaches.

In adding to job insecurity, which is prevalent among other vocations, elite coaches largely perform their roles and responsibilities in the public eye. While leadership positions in other fields also involve key decision-making, elite coaches are subject to the criticisms of pundits, public figures and fans, where team selections, tactics and their relationships with athletes play out in the public spotlight (Kenttä et al., 2023). With the rise of digital and social media platforms, fans have greater accessibility to voice their opinions on a coach's performance or effectiveness. As such, elite coaches may regularly hear these criticisms and internalise them, potentially influencing their mental health.

Considering the pressures discussed, there is a need to identify how elite coaches protect their mental health against the demands of the profession, to better understand the types of coping strategies employed, as well as their potential effectiveness in response to such stressors. In addition, further research may also seek to identify which factors pose the greatest threat to the mental health of elite coaches. Such information may enable researchers to develop targeted interventions that promote adaptive coping strategies, while sports

organisations may look to establish supports that protect the mental health of elite coaches against notable stressors.

Elite-level Coaches and Stress

While stressors uphold the potential to influence the mental health of elite-level coaches, stress is considered a process. Throughout the coaching discourse, stress has been operationalised with several frameworks, including Smith's (1986) Cognitive-Affective Model (Frey, 2007; Georgios & Nikolaos, 2012; Nikolaos, 2012) to Lazarus'(1999) Cognitive-Motivational-Relational Theory (CMRT) (Baldock et al., 2021; Didymus, 2017) and Ursin and Eriksen's (2004) Cognitive Activation Theory of Stress (CATS) (Chroni et al., 2016). Stress in elite coaching has primarily been examined through Lazarus and Folkman's (1984) transactional model of stress (de Sousa Pinheiro et al., 2021; Kellmann et al., 2016; Olusoga et al., 2009; Olusoga et al., 2010; Thelwell et al., 2010; Thelwell et al., 2017; Thelwell et al., 2008). This model positions stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus and Folkman, 1984, p. 19). The theory postulates that stress operates as a process comprising of three components, including stressors, appraisals (primary and secondary) and coping mechanisms. As such, stress is not solely influenced by the presence of stressors, but rather how these stressors are appraised and the subsequent effectiveness of coping strategies. Elite coaches who appraise stressors as threatening or harmful or employ ineffective coping strategies may be at greater risk of poor mental health outcomes (Baldock et al., 2022; Lee, 2021).

Previous research has examined how stressors are appraised by elite-level coaches. Considering Lazarus and Folkman's (1984) three identified appraisal mechanisms, comprising of threat, challenge and harm (benefit is also considered in some research), Baldock et al. (2021) found that English professional soccer coaches (n = 8) were most likely

to perceive performance, organisational and personal-related stressors as threats through casual network analysis. Conversely, Chroni et al. (2016) reported that Norwegian Olympic coaches (n = 7) appraised stressors as challenges as opposed to threats, while Didymus (2017) learned that Olympic and international coaches (n = 15) were likely to appraise stressors as both challenging and threatening to the same extent. Importantly, Didymus (2017) discovered that situational properties may underpin the appraisal process, and subsequently dictate how a coach interprets a stressor. Considering these findings, it is critical to ensure all components of the appraisal process are considered when examining stress among elite-level coaches.

Elite-level coaches employ a diverse set of coping strategies to manage threatening, harmful and challenging appraisals. Researchers have adopted several conceptual frameworks to evaluate coping processes, ranging from Lazarus and Folkman's (1984) emotion and problem-focused coping strategies (Levy et al., 2009; Olusoga et al., 2010; Thelwell et al., 2010), to Skinner et al.'s (2003) twelve coping families (Baldock et al., 2021; Didymus, 2017). While coping is a highly individualistic process, a review found that elite-level coaches were more likely to employ problem-focused coping compared to emotion-focused coping strategies when managing stressors (Olsen et al., 2021). Research has identified several problem-focused coping strategies to manage stressors, including strategies such as structuring, planning, information seeking or discussing issues with athletes or the management team (Levy et al., 2009; Olusoga et al., 2010; Thelwell et al., 2010). Similarly, a number of emotion-focused strategies have been identified, including self-talk, emotion regulation and managing acceptance (Didymus, 2017; Levy et al., 2009; Thelwell et al., 2010).

Whilst these studies offer valuable insights into the types of coping strategies employed, it is important to assess coping effectiveness and examine the prevalence of

adaptive and maladaptive coping mechanisms among elite-level coaches. Levy et al. (2009) longitudinally examined coping effectiveness in an elite British aquatic sport coach over a 28-day period, finding that the perceived effectiveness of coping strategies was largely effective, but declined over time. Ultimately, further research with larger samples and more objective measures are needed to identify the most effective coping strategies among elite coaches for specific stressors across varying time periods.

In addition, research has also started to examine the prevalence of maladaptive coping strategies, including risky alcohol consumption among elite-level coaches. Current rates of adverse alcohol use range from 19% to 53% (Bilgoe et al., 2024; Pilkington et al., 2022), with the upper range suggesting that some elite-level coaches may consume alcohol to manage the pressures and demands of the role. Given preliminary evidence indicates that rates of risky alcohol consumption are greater among elite coaches than athletes (Pilkington et al., 2022), sports organisations should pay particular attention to drinking habits during periods when elite coaches face high stress and pressure.

While increasing empirical attention has been devoted towards understanding the process of stress among elite coaches, research is needed to examine how the demands and subsequent coping strategies employed contribute towards mental health outcomes among elite-level coaches. As such, further research is needed to identify the range of coping strategies and self-management approaches that elite-level coaches might utilise when managing common mental health issues such as burnout, as well as more severe symptoms or disorders associated with mental ill-health (e.g. depression). Such research should also investigate the prevalence of maladaptive coping strategies, such as excessive alcohol consumption, that have been reported within the current evidence base.

What is Known About the Mental Health of Elite-Level Coaches

Considering the demands and pressures of elite coaching discussed, the extant research to date indicates that elite-level coaches experience varying levels of mental wellbeing, and are susceptible to a range of symptoms and disorders associated with mental ill-health. While a more extensive review of the literature is presented in *Chapter 2*, the following section provides a brief overview of mental health outcomes among elite coaches.

Mental Wellbeing

Mental wellbeing has been operationalised using multiple definitions and frameworks throughout the extant coaching discourse. Although wellbeing is often perceived as a naturally broad and multifaceted construct in sports settings (Lundqvist, 2011; Trainor & Bundon, 2023), researchers have explored wellbeing among elite-level coaches using conceptualisations connected to subjective wellbeing (e.g. positive affect) (Diener, 1984) and hedonic and eudamonic frameworks (Ryan & Deci, 2001). Notably, quantitative research generally indicates that elite-level coaches experience high mental wellbeing. For instance, Carson et al. (2019) found that a sample Australian elite coaches (n = 128 elite coaches) reported high levels of mental wellbeing on the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). This finding has also been supported by Kaski and Kinnunen (2021), where a sample of elite Finnish coaches (n = 499) generally reported good levels of well-being (i.e. work engagement) on the Utrecht Work Engagement Scale (UWES).

Several correlates of mental wellbeing have also been identified among elite-level coaches, including emotional detachment (Balk et al., 2019), sleep quality and duration (Balk et al., 2019), workload (Bentzen et al., 2016), autonomy (Bentzen et al., 2016), autonomy support (Bentzen et al., 2016), relatedness (Bentzen et al., 2016) and job insecurity (Bentzen et al., 2020). Notably, Baldock et al. (2021) found that British elite soccer coaches (n = 8) reported coping with organisational stressors ineffectively, thus contributing to poor hedonic

and eudamonic wellbeing among participants. By comparison, performance and personal stressors were reportedly managed more effectively, potentially indicating that stressors emanating from organisational sources may exert the greatest level of influence upon the mental wellbeing of elite-level coaches. Considering the range of factors influencing mental wellbeing, future research might examine whether wellbeing is associated with or influences the presence of mental health symptoms among elite coaches.

Burnout

Despite not being classified as a mental disorder (World Health Organization, 2024), burnout among elite coaches has garnered considerable empirical attention (Olusoga et al., 2019). Characterised by emotional exhaustion, depersonalisation and reduced personal accomplishment, current rates of emotional exhaustion and burnout range from 7% to 24% among elite-level coaches, respectively (Hjälm et al., 2007; Lundkvist et al., 2022). With regards to influencing factors, in a qualitative study conducted with 'highly exhausted' professional sports coaches from Denmark and Norway (n = 4), Bentzen et al. (2014) learned that a coach's perception of their sports organisation (e.g. poor relations with upper management and leaders) and their everyday work environment (e.g. high workload and athlete win or loss records) operated as risk factors for the onset of burnout. Similarly, Hassmén and colleagues (2019) conducted a longitudinal study over a period of 10 years, examining symptoms and recovery processes of Swedish elite-level coaches at risk of burnout (n = 8). Findings suggested that taking time off, departing the coaching profession or stepping down to a lower competitive division helped reduce emotional exhaustion scores greatly. Hassmén et al. (2019) state that by removing oneself from the coaching environment, participants were able to reduce their workload and gain greater autonomy, which subsequently led to reduced symptoms of burnout. These results illustrate that preventative measures and appropriate organisational and social supports need to be established, in order

to ensure withdrawal from the profession is not perceived as the optimal resolution to aid a coach experiencing burnout.

While research examining burnout has gained attention, little is known about its relationships with mental ill-health among elite coaches, including whether burnout operates as a risk factor for mental ill-health in elite coaches. Furthermore, while burnout is commonly examined and discussed in elite coaching, there is a lack of understanding as to whether coaches can accurately identify symptoms of burnout among themselves, or their athletes. To develop targeted mental health literacy interventions that help elite coaches reliably detect mental health issues among themselves and athletes, further research is needed to assess how elite coaches perceive presentations of burnout, and the coping strategies employed or suggested to manage these symptoms.

Mental Ill-Health

Despite the growing body of research exploring burnout and mental wellbeing in elite coaching, there is a paucity of research investigating symptoms and disorders associated with mental ill-health among elite coaches. A handful of studies have assessed the prevalence of mental ill-health among elite coaches, cross-sectionally examining rates of symptoms associated with anxiety, depression, psychological distress, risky alcohol consumption, sleep disturbance, substance use and disordered eating. For instance, in a study of 119 Dutch and Flemish national coaches, results indicated that 55.5% of participants endorsed self-reported symptoms for at least one common mental health disorder (Kegelaers et al., 2021).

Most research to date has focused on examining symptoms of anxiety and depression. Using the General Health Questionnaire (GHQ-12), 39.5% of Dutch and Flemish elite coaches reported symptoms of anxiety and depression that met validated cut-offs. This finding aligns with the rate of probable caseness (43.6%) reported using the GHQ-28 in a sample of 78 elite coaches coaches from Australia (Pilkington et al., 2022). By contrast,

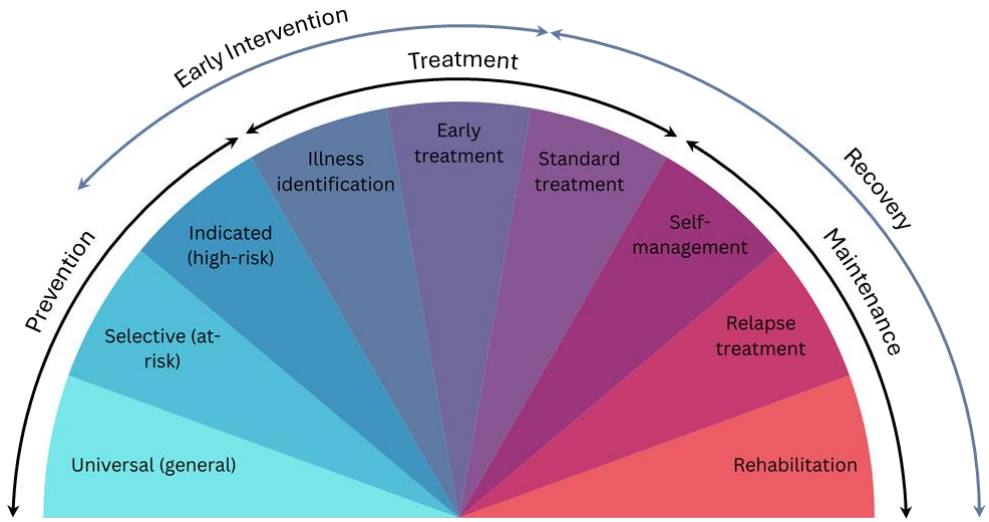
Bilgoe et al. (2024) and Kim et al. (2020) reported considerably lower rates of reported symptomatology among their cohorts from the Netherlands (n = 95; depression = 4.7%, anxiety = 4.7%) and New Zealand (n = 69; depression = 14.1%), respectively, using validated cut-offs on the Patient Health Questionnaire-9 (PHQ-9), Generalised Anxiety Disorder-7 (GAD-7) and Center for Epidemiologic Studies Depression Scale (CESD-R). The variability in the prevalence of depression and anxiety reported by elite coaches warrants further research, ideally with larger sample sizes that are comparable to those involving elite athletes (Gouttebarge et al., 2019; Rice et al., 2016). The diverse range of psychometric tools utilised to assess rates of mental ill-health among elite coaches' also limits cross-sample comparisons.

Beyond rates of mental ill-health, correlates and antecedents have also been explored among elite coaches, albeit scarcely. Kim et al. (2020) found that contemplating retirement and having a family history of a mood disorder were associated with self-reported symptoms of moderate or major depression among elite New Zealand coaches. Pilkington et al. (2022) revealed that satisfaction with life and social support were negatively associated with symptoms of anxiety, depression and psychological distress among Australian elite-level coaches. Notably, Kegelaers et al. (2021) reported that organisational stressors were significantly associated with self-reported symptoms of depression and anxiety, while performance and personal stressors failed to achieve the same impact among a sample of Dutch and Flemish coaches. Considering organisational stressors (e.g. long working hours, job security) might be considered more structurally embedded compared to the transient nature of performance and personal demands (Kegelaers et al., 2021), further research is needed to investigate the influence of various organisational factors upon the presence of mental health symptoms among elite-level coaches.

Early Intervention to Promote and Protect the Mental health of Elite-Level Coaches

As discussed, elite-coaches are susceptible to a range of symptoms and disorders associated with mental ill-health. With public anecdotal accounts detailing mental health crises among elite coaches, including reports of suicide, there is a need to move away from crisis responding, prioritising earlier forms of intervention. To best manage the mental health of elite-level coaches it is critical to ensure appropriate interventions and treatment plans are provided when specific presentations emerge across varying timepoints. Haggerty and Mrazek (1994) proposed a spectrum of interventions for mental health, including prevention, treatment and maintenance stages (Figure 3). Prevention refers to reducing the risk of the onset, impact and severity of symptoms of mental ill-health. Treatment, which is therapeutic in nature, refers to those experiencing symptoms of mental ill-health, where interventions aim to reduce the length of time, severity or recurrence of symptoms or disorders. Lastly, the maintenance phase, which is supportive, educational and/or pharmacological in nature, are provided on a longer-term basis to those experiencing mental ill-health.

Figure 3: Mental health promotion spectrum developed by Haggerty and Mrazek (1994) and adapted by Purcell et al. (2019)



Haggerty and Mzarek's mental health intervention model has been adapted to incorporate early intervention, integrating approaches from both prevention and treatment phases (Campbell & Robards, 2013; Purcell et al., 2019). Early intervention involves detecting mental ill-health at the earliest possible stage (even pre-symptomatically) to prevent or delay symptom progression (McGorry et al., 2018). In mental health settings, evidence supports the effectiveness of early intervention approaches among various populations (e.g. young people) (McGorry & Mei, 2018) and mental disorders (e.g. psychotic disorders) (McGorry, 2015; Stafford et al., 2013). This extends to those in elite sport, where early intervention has been advocated for supporting the mental health of athletes (Purcell et al., 2019), youth athletes (Purcell et al., 2023) and coaches (Frost et al., 2023).

Several early intervention strategies might be explored to support the mental health of elite coaches. Frost and colleagues (2023) proposed four early intervention recommendations to support elite coaches, including (1) mental health screening, (2) improving mental health literacy, (3) cultivating psychologically safe environments and (4) providing mental health pathways to support (Table 1). While these recommendations have shown promise in elite sports settings (Gorczynski et al., 2021; Pilkington et al., 2025; Rice et al., 2020; Walton et al., 2024), there remains limited evidence regarding the tailored development and implementation of such strategies for elite coaches. For instance, while mental health literacy has been explored among the broader coaching community (including community, colleague and elite-level coaches) (Beebe & Petrie, 2024; Gorczynski et al., 2020; Mitchell et al., 2024; Sullivan et al., 2019), there is a paucity of research examining elite coaches' ability to detect symptoms of mental ill-health, their attitudes towards various supports and interventions, and their perceptions regarding mental health stigma. With such knowledge, evidence-based mental health literacy interventions tailored to the abilities, needs and interests of elite coaches can be developed to maximise user relevancy and engagement.

Table 1: Recommendations for early interventions strategies (Frost et al., 2023)

Early Interventions	**Mental Health Screening**	**Mental Health Literacy**	**Psychological Safety**	**Mental Health Supports**
Purpose	To identify mental health symptoms and disorders in elite-level coaches.	To understand the beliefs and attitudes that elite-level coaches hold towards mental health and help-seeking.	To cultivate high-performance environments that protect coaches from mental ill-health, support openness and connection, and encourage individuals to seek mental health services.	To provide elite-level coaches with pathways and access to evidence-based mental health supports and services.
Recommendations	In the absence of a specific mental health screening tool, the Sport Mental Health Assessment Tool 1 (SMHAT-1) could be used as a guide to assess general mental health symptoms and disorders in elite-level coaches (e.g. anxiety and depression) (Gouttebarge et al., 2021).	Given mental health literacy has not been studied exclusively in elite-level coaches, research is needed to better understand coaches' beliefs and attitudes towards mental health and help-seeking. Mental health literacy levels could also be examined using the Mental Health Literacy Survey (MHLS) (O'Connor & Casey, 2015).	Future research should examine how elite-level coach's perceive psychological safety in their high-performance environments. The Sport Psychological Safety Inventory (SPSI) could be used as a measure to assess and benchmark psychological safety in coaching cohorts (Rice et al., 2022).	Since preliminary evidence indicates there may be an appetite for elite-level coaches to engage with psychological services, tailored referral pathways and mental health services should seek to optimise coach-specific support (e.g. how and with whom?)

A similar lack of research exists regarding mental health help-seeking pathways for elite-level coaches. While there is a growing understanding of help-seeking rates, barriers (e.g. stigma, low mental health literacy) and facilitators (e.g. normalising help-seeking) among elite athletes (Cosh et al., 2024), knowledge regarding elite coaches remains scarce.

Despite the implementation of formal mental health pathways in elite sports among various developed countries, including Australia (Olive et al., 2021; Pilkington et al., 2025; Rice et al., 2020), Canada (Van Slingerland et al., 2020) and Sweden (Kenttä & Hyland, 2021), these services were originally targeted for elite athletes, and may not cater for the specific help-seeking preferences of elite coaches. To design pathways and networks that meet the specific demands, schedules and responsibilities of elite coaches, further research investigating factors influencing mental health help-seeking is warranted.

Thesis Overview

To inform the development of future mental health frameworks for elite-level coaches, this thesis aims to elicit insights that can be utilised to guide evidence-based early intervention strategies. Drawing on the extant literature discussed, this thesis aims to address key research gaps among elite-level coaches by:

I. Examining rates of mental ill-health;
II. Identifying risk and protective factors that shape mental health outcomes;
III. Investigating perceptions and attitudes regarding mental health; and,
IV. Exploring factors that influence mental health help-seeking.

This thesis aims to address these research gaps with five studies via publication. The studies are summarised below for clarity.

To examine what is currently known about the mental health of elite-level coaches, *Chapter 2* presents findings from a systematic scoping review undertaken to identify and synthesise the existing evidence base. This review serves as an empirical foundation for the thesis, highlighting what is known about the mental health of elite coaches, identifying key research gaps. Keyes' dual-continuum model was employed to investigate elite coaches experience of mental wellbeing and the nature and prevalence of mental ill-health. Risk and protective factors influencing the mental health of elite coaches were also identified using an

ecological systems approach. Additionally, the relationship between mental health and coaching effectiveness was explored, including the ways in which coaching effectiveness is conceptualised from a mental health perspective.

Building upon the extant literature, *Chapter 3* adopted a qualitative research design to investigate perceived factors influencing the mental health of Australian elite-level coaches. Drawing upon the review's findings, semi-structured interviews questions were guided by the socio-ecological framework to investigate systems-level influences. Through reflexive thematic analysis a range of risk and protective factors were identified.

Next, *Chapter 4* examined symptoms of mental ill-health among an international sample of elite-level coaches. Using an online survey, a quantitative cross-sectional study was conducted to explore rates of depressive symptoms, anxiety symptoms, risky alcohol consumption and suicidal ideation using measures from the SMHAT-1. Several individual (e.g. age, gender) and organisational (e.g. workload, job security) risk factors identified in *Chapter 2* and *3* were also examined to assess their association with symptoms of mental ill-health. As such, this chapter sheds light upon symptoms of mental ill-health elite-level coaches may be susceptible to, as well as key risk factors that may contribute towards these symptoms

To advance the development of mental health literacy interventions for elite coaches, *Chapter 5* unpacks the perceptions and attitudes that elite coaches hold regarding mental health. Insights from both quantitative and qualitative data were elicited through a cross-sectional vignette study using an online survey with an international sample of elite-level coaches. The chapter aims to specifically examine elite coaches' ability to recognise symptoms of depression as compared to burnout, perspectives regarding the appropriate sources for support, beliefs about the appropriateness of specific people, medical, activity and treatment-based interventions, and views regarding mental health stigma. Since elite-level

coaches are well positioned to monitor and support the mental health of elite athletes, differences in the recognition and supports of mental health issues between elite athletes and coaches was also investigated.

Lastly, in *Chapter 6*, a mixed-methods concept mapping study was conducted to investigate barriers towards mental health help-seeking among Olympic and Paralympic coaches worldwide. Gaining insights from Olympic coaches, Paralympic coaches and mental health professionals who work with these coaches, challenges associated with mental health help-seeking were identified, including which of those were considered most and least important and feasible to address. Insights may be utilised to reduce short- and long-term barriers towards help-seeking among Olympic and Paralympic coaches.

Significance of This Research

This doctoral thesis employs various methodologies to capture primary data from a range of elite coaching communities. These findings help to improve our understanding of the mental health experiences, perceptions and outcomes of elite-level coaches worldwide. Crucially, by identifying rates of mental health symptoms, contributing factors towards mental health outcomes, perceptions and attitudes regarding mental health and barriers towards help-seeking, insights from this research program may guide and inform the development of early intervention strategies targeted for elite-level coaches. Considering the increasing number of elite coaches publicly disclosing serious accounts of mental ill-health (including depression and suicidal ideation), coupled with a growing recognition of concerning rates of mental health symptoms, particularly risky alcohol consumption, sports organisations who engage and employ elite coaches should seek to nurture and protect the mental health of these key leaders. As such, the findings from this thesis may provide an empirical foundation for future mental health frameworks and guidelines for elite-level coaches.

Chapter 2: The mental health of elite-level coaches: A systematic scoping review

Chapter Overview

This chapter unpacks the current discourse to examine what is known about the mental health of elite-level coaches. The review sought to understand elite-level coaches experience of mental wellbeing, the nature and prevalence of mental ill-health, what factors shape the mental health of elite-level coaches, how coaching effectiveness is conceptualised from a mental health perspective and the relationships between mental health and coaching effectiveness. A systematic search was undertaken, identifying 42 studies that met the inclusion criteria. Through a critical review of the existing research, this chapter outlines gaps for future research to better understand elite coaches' mental health, and its influence upon coaching effectiveness. This review was published with *Sports Medicine - Open* (IF: 5.9) in February 2024 and has been cited 29 times.

Sports Medicine - Open

SYSTEMATIC REVIEW Open Access

The Mental Health of Elite-Level Coaches: A Systematic Scoping Review

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Abstract

Background Elite-level coaches are exposed to multiple performance, organisational and personal stressors which may contribute to reduced mental health and wellbeing. This systematic scoping review examined the current body of evidence to explore what is known about the mental health of elite-level coaches (i.e. wellbeing and mental ill-health), the risk and protective factors that influence coach mental health, and the relationship between mental health and coaching effectiveness.

Methods The review adhered to the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines. A systematic search was undertaken and updated in September 2022 using six electronic databases.

Results 12,376 studies were identified and screened, with 42 studies satisfying the inclusion criteria. Despite the paucity of high-quality research, findings indicated that 40% of the included studies examined themes connected to wellbeing, with 76% assessing the nature or prevalence of mental ill-health in elite-level coaches. Among studies exploring mental ill-health, coach burnout was the primary focus, while scant research examined symptoms associated with clinical disorders (e.g. anxiety and depression). Overall, psychological outcomes for elite-level coaches were shaped by risk and protective factors operating at the individual, interpersonal, organisational and societal level. Preliminary evidence was also found to suggest that poor mental health may contribute to reduced coaching effectiveness. It is proposed that coaching effectiveness could therefore be employed as a 'hook' to engage elite-level coaches in greater consideration of their mental health needs.

Conclusion Alongside the development of methodologically robust research, there is a need to examine dynamic individual (e.g. psychological skills), interpersonal (e.g. strong social supports) and organisational (e.g. workload) factors that aim to preserve the mental health and optimise the efficacy of elite-level coaches.

Key Points

- At present, there is lack of high-quality research investigating the mental health of elite-level coaches. Limited research has also focused on understanding the nature and prevalence of mental disorders in elite-level coaches, with greater attention directed towards themes associated with wellbeing and burnout.

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- Current evidence indicates that a variety of risk and protective factors operating at the individual, interpersonal, organisational and societal level may influence the mental health of elite-level coaches. Further research is required to determine which factors contribute most significantly towards mental health outcomes.
- Despite the paucity of research, preliminary evidence indicates that mental health may impact coaching effectiveness, including both a coach's own and team/athlete's functioning. Robust research is needed to examine this relationship in greater depth, to assess whether coaching effectiveness could be employed as a 'hook' to engage elite-level coaches in greater consideration of their mental health needs.

Keywords Coaches, High-performance, Sports psychology, Wellbeing, Coaching effectiveness

Background

Coaches who operate in elite and professional sports encounter a range of stressors that have the potential to influence or compromise mental health. These demands emanate from the diverse set of roles and responsibilities elite-level coaches are required to perform and fulfil. In addition to their technical, tactical, and strategic expertise, coaches also serve as educators, motivators, counsellors and even friends [1–4]. Despite the perception that coaches primarily shape the performing outcomes of an athlete or sports team, researchers have proposed that elite-level coaches should also be considered as performers in their own right (e.g. competition preparation and psychological state) [5, 6]. On top of performance pressures, elite-level coaches also encounter multiple organisational challenges, including long working hours, job insecurity, media scrutiny and pressures to satisfy board/management expectations [1, 6–9]. Similarly, coaches are also confronted with various personal stressors, including social isolation and relationship issues [4, 6, 10–12]. Much like the elite athletes they coach, this combination of performance, organisational, and personal-related stressors may contribute to a coach's experience of mental health. With exposure to these multiple stressors, it is critical to ensure that coaches possess appropriate coping or stress management strategies, in conjunction with robust social networks and organisational supports that look to protect and preserve the mental health of elite-level coaches [13, 14].

Over the past decade, research into the mental health of elite sportspeople has gathered considerable momentum. To date, research has primarily examined the mental health outcomes of elite athletes [15–18], with comparatively less research focusing on understanding these psychological experiences among coaches [19]. This is significant as coaches operate in the same elite-level environments as athletes, but arguably possess a greater set of performance and organisational responsibilities, given they are often expected to manage and oversee the performances of multiple athletes [7], whilst simultaneously acting as the public face and cultural identity of a sporting organisation [1]. Although coaches who operate within community and recreational settings encounter a variety of stressors that may threaten an individual's mental health (e.g. parental pressures, lack of participation) [20], elite-level coaches generally operate within high-pressure environments, where the margin between success and failure may be scrutinised by a range of individuals who operate within the public domain (e.g. fans, the media, former elite sportspeople) [21, 22], and can negatively impact one's employment status if a coach is perceived to have regularly underperformed [23, 24]. The mental health experiences and literacy of elite-level coaches should therefore not be overlooked or underestimated. Moreover, given these individuals hold prominent leadership roles, coaches play a role in cultivating an organisational or team environment that facilitates optimal wellbeing [25]. This may include a decisive role in shaping the cultural and institutional attitudes towards mental health in elite sports organisations (e.g. help-seeking) [26, 27].

The evolving fields of sports psychology and psychiatry have operationalised mental health in myriad ways. Keyes' [28, 29] dual-continua model of mental health has emerged as a prominent theoretical framework throughout elite sport [30, 31]. This framework employs a bivariate conceptualisation to assert that mental health should be perceived as a complete state comprising of two distinct but related phenomena: mental wellbeing and mental ill-health. For instance, the model's first dimension is characterised by an individual's level of mental wellbeing. This dimension broadly reflects the experience of positive feelings and happiness (i.e. hedonic wellbeing), as well as the satisfaction and perception of purpose within one's life (i.e. eudaimonic wellbeing). This dimension can be generally determined by a combination of emotional (e.g. affective states), psychological (e.g. individual functioning) and social (e.g. societal functioning) wellbeing [32]. Keyes' model postulates that these three factors determine whether an individual is experiencing high (flourishing), moderate or low (languishing) mental wellbeing. In contrast, the model's second dimension refers to the presence or absence of symptoms and diagnoses associated with mental ill-health (e.g. anxiety

disorders, depression). This dimension can be perceived as a spectrum, ranging from the absence of symptoms to the manifestation of mild to severe symptoms of mental ill-health. With both dimensions in mind, when alluding to mental health, this review will subsequently employ Keyes' holistic conceptualisation, and refer to mental health as a complete state determined by the presence and absence of both *wellbeing* and *mental ill-health* [32, 33]. It is emphasised that a coach can therefore experience high levels of wellbeing and flourish within their profession (e.g. career progression and strong social connections) despite the diagnosis of a mental disorder (e.g. generalised anxiety disorder) [34].

In the extant literature, several reviews have explored the psychological health and experiences of coaches. These studies have summarised key concepts around stressors [21, 22, 35, 36], wellbeing [21, 35, 36], coping strategies [3, 21, 36] and burnout [37]. In adding to these, this review provides a unique overview of coach mental health by addressing current research gaps in four distinct ways. This is achieved by exploring mental health using an empirically supported framework, assessing elite-level coaches exclusively, exploring the risk and protective factors that influence coach mental health, and examining the relationship between mental health and coaching effectiveness.

Given previous reviews have failed to adopt a mental health framework to contextualise findings, the present review seeks to employ Keyes' empirical framework to uniquely investigate the mental health of elite-level coaches. The model sets the review apart, as novel insights associated with the presence and prevalence of clinical symptoms and disorders in elite-level coaches will be considered concurrently with experiences of mental wellbeing for the first time. In adding to this, previous reviews have also largely examined coach mental health across various competitive levels, including those operating in both community and elite sports environments [21, 22, 36, 37]. In line with Olsen et al.'s [3] systematic review investigating coping among elite-level coaches, the present review will solely examine the mental health of elite-level coaches, to refine and focus the findings to a specific subset of the coaching population.

Beyond the exploration of mental health outcomes, the review will also seek to examine the various risk and protective factors that shape and influence the mental health of elite-level coaches. Purcell et al. propose that an ecological systems approach is beneficial to assess the various influences that impact the mental health of an elite athlete [38]. This socioecological approach asserts that an athlete's mental health is influenced by factors that operate at the individual, microsystem (interpersonal), exosystem (organisational) and macrosystem (societal) level. Previous studies have employed this ecological approach to assess the risk and protective factors that contribute to the mental health of elite sportspeople [39]. Given the value of this socioecological approach, this review will seek to identify the various influences that operate as risk and protective factors for the mental health of elite-level coaches.

Finally, the present review seeks to examine the relationship between mental health (i.e. both wellbeing and mental ill-health) and coaching effectiveness. Often shaped by varying subjective and contextual objectives, coaching effectiveness is a term that has been expressed in multiple forms. The evaluation of performance for example, can fluctuate between intrapersonal and interpersonal viewpoints, as well as continuous (e.g. times and distance) and ordinal (e.g. ranking or league position) metrics [40]. Previous research has largely operationalised coaching effectiveness by employing Côté and Gilbert's [41] proposed definition, "the consistent application of integrated professional, interpersonal and intrapersonal knowledge to improve athletes' competence, confidence, connection, and character in specific coaching contexts" (Côté and Gilbert (2009, p.316). Recently however, Lyle [42] has suggested that coaching effectiveness should be considered as a superordinate concept as opposed to a root definition. Lyle argues that effectiveness should refer to the application of a coach's expertise with the resources made available, rather than the satisfaction or achievement of certain criteria, whether that be process (e.g. improving athlete's confidence) or outcome-oriented (e.g. performance output) objectives. This conceptualisation refrains from confining effectiveness to the achievement or satisfaction of a particular set of standardised criteria (as put forward by Côté and Gilbert), but rather shifts the focus towards a broad and non-exhaustive range of factors that may influence the satisfaction of specific and relative goals and objectives set by a coach or sports organisation. These objectives may encompass targets associated with coaching practices, coach development and even performance-related outcomes. Ultimately, this perspective implies that effectiveness should be attainable for all coaches, and that excellence should not solely be confused with or utilised as a proxy for effectiveness.

Considering the importance of performing effectively, there may be an opportunity to utilise coaching effectiveness as a 'hook' to engage elite-level coaches in greater consideration of their mental health needs. It has been proposed that future research should examine coaching effectiveness from a wellbeing perspective [43], since preliminary evidence indicates that mental health may contribute positively and negatively towards factors such as productivity and motivation [13, 44–46]. Given elite-level

coaches generally experience time-related challenges due to internally and externally imposed pressures [1, 4, 8], coaches may not consider the management of their own mental health as a competitive priority when compared with other influences (e.g. tactical advantages) [47]. Exploring the link between mental health and coaching effectiveness could therefore have potential value from a performance and ecological perspective. Coaches with a vested interest in mental health may subsequently enhance both their own psychological wellbeing and coaching effectiveness, as well as the mental health of individuals and communities who operate within their interpersonal environment (e.g. athletes and support staff).

Considering the features discussed, the present review aims to discern: (1) elite-level coaches' experiences of mental wellbeing; (2) the nature and prevalence of mental ill-health in elite-level coaches; (3) the risk and protective factors that influence coach mental health; (4) how coaching effectiveness is conceptualised from a mental health perspective; and (5) the relationship between mental health and coaching effectiveness.

Methods

A systematic scoping review methodology (as opposed to a systematic review) was employed due to the nascence of the field [48]. The study protocol was pre-registered via the Open Science Framework platform on the 9th of December 2021 (https://osf.io/zm63q/). Given the broad and emerging nature of the current discourse, this review was undertaken to gauge what is currently known about the mental health of elite-level coaches, and identify gaps that should be addressed by future research [48]. This provided an opportunity to generate a broad set of research questions aimed at mapping out the current evidence associated with elite coach mental health [49]. The study implemented a scoping review framework developed by the Joanna Briggs Institute (JBI) [50], and was consistent with the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines [51] (see Additional file 1). Evidence-based and field-specific scoping review guidelines proposed by Sabiston et al. [49] were also considered, including the registration of a study protocol and the performance of a quality appraisal.

Eligibility Criteria

The inclusion and exclusion criteria were established using the Population-Concept-Context (PCC) framework developed by the JBI Scoping Review Methodology Group [50, 52]. The population was classified as elite-level coaches who operate as part of the management team or leadership group, and regularly work with athletes or teams competing at the Olympic, Paralympic, international, national, professional or National Collegiate Athletic Association (NCAA) Division I level [53]. Although the term 'elite' has historically evaded a conceptually unified definition throughout sport, this research aligns with the International Olympic Committee (IOC) [54] and Reardon et al.'s [55] conceptualisation of elite sport. This definition was employed since previous characterisations and taxonomies tailored for elite athletes could not be directly translated or applied to elite-level coaches [56]. In addition, previous definitions of elite-level coaches have also failed to incorporate individuals operating at collegiate levels [57]. Given a number of previous studies have advocated for the inclusion of U.S. collegiate competitions as part of the elite sports domain [16, 56, 58, 59], this review sought to incorporate NCAA Division I coaches, but excluded those operating within Division II or III due to the regional emphasis of these competitions [60, 61]. Although this study's conceptualisation may vary with other research, it has been argued that conceptual transparency is key, given the challenges of achieving a unified consensus due to the multi-faceted nature of elite sport (e.g. training time, individual versus team sport and professionalism) [62]. Coaches were also required to operate as part of a management or operational team. This criterion subsequently excluded backroom or support staff (e.g., sports psychologists and physiotherapists), as well as coaches whose primary responsibility involves some form of medical practice (e.g., strength and conditioning coaches). Both academy and retired coaches were also included within the review, as these individuals can offer prospective and retrospective insights respectively. Research that included heterogeneous samples (e.g. athletes, support staff, retired/academy coaches, or non-elite coaches) was only considered if they reported findings for elite-level coaches exclusively. Studies that failed to meet this criteria were subsequently excluded.

Conceptually, the present review employed Keyes' [28, 29] dual-continua model of mental health to guide the classification of results, given this framework has been endorsed in an elite sports context [34, 63, 64] and empirically validated across a range of studies in the general population [32, 65, 66]. Findings associated with wellbeing were determined by various indices relating to an elite coach's emotional, psychological and social wellbeing (e.g. quality of one's life, positive functioning). Conversely, findings affiliated with mental ill-health were distinguished by criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013), including symptoms associated with anxiety disorders, depression, post-traumatic stress disorders and substance use disorders for example. Psychological indicators and syndromes

Table 2 Inclusion criteria

(1) Published in a peer-reviewed journal
(2) Published after January 2000
(3) Conducted primary research
(4) Published in English
(5) The full-text version was available (and if unavailable contact with the lead author was made, and if no response was received within two weeks the study was excluded)
(6) The study collected data from elite or high-performance coaches who manage athletes at the Olympic, Paralympic, national, international, professional or NCAA Division I level
(7) The study explored coaches who operate in leadership or management positions exclusively (e.g. head/assistant/senior coaches) or provide group findings separately where a heterogeneous sample (e.g. strength & conditioning coaches) is utilised
(8) The study explored coaches exclusively or provided group findings separately where a sample beyond coaches (e.g. athletes or support staff) was utilised
(9) The study explored elite coaches exclusively or provided group findings separately where a heterogeneous sample (e.g. elite and non-elite) was utilised
(10) The study reported on the mental health (mental wellbeing or mental ill-health) of elite-level coaches

perpetuating (and often underlying) mental ill-health were also considered as part of this classification (e.g. burnout and distress). Despite the fact that indicators such as burnout are not typically considered to represent a mental disorder, there is considerable overlap between symptoms of burnout and depression [68]. Given this review's broad and exploratory approach to mapping out the current body of evidence regarding elite coach mental health, it was deemed premature to exclude findings connected to burnout.

Although evidence associated with coaching effectiveness was not a prerequisite to satisfy the inclusion criteria, this review operationalised coaching effectiveness using Lyle's [42] superordinate conceptualisation. Rather than adopting a root definition that may focus on meeting certain criteria or characteristics (e.g. performance outcomes or athlete connection) associated with coaching effectiveness, in line with the review's expansive and investigative approach, this study employed a broad conceptualisation that referred to coaches' drawing upon their expertise in the context of their specific ambition and environment. This conceptualisation focuses on potential factors and processes that may influence coaching gains or performance outcomes, but ultimately may not yield results and outcomes associated with success or excellence. These factors may encompass but are not constrained to various elements (e.g. resources, strategies, reasoning, actions) associated with coaching practices, coach education and coach development.

With regards to context, although elite-level coaches from specific demographics, sports or environments were not considered, the review required research to have been published in English and either during or after the year 2000. The decision to incorporate English-only studies was made as English was the first language of all authors. Studies published post-2000 were also selected exclusively in the attempt to incorporate and synthesise the most up-to date evidence. Other required details include being peer-reviewed, providing primary data, and having access to the full-text. The complete inclusion criteria can be observed in Table 2.

Search Strategy

A systematic search for peer-reviewed studies was undertaken at the end of December 2021 (Professional abstracts were also included providing the inclusion criteria was satisfied and results were interpretable.) Five electronic databases were selected, including: PsycINFO, MEDLINE, CINAHL, SPORTDiscus and Scopus. A university librarian was initially consulted to assist with developing keywords and search terms: "('Elite' OR 'High-performance' OR 'Olympic') AND ('Mental disorders' OR 'Mental health' OR 'Wellbeing') AND ('Coach' OR 'Manager' OR 'Director')" (see Additional file 2 for the full search string). To ensure key studies were identified, a limited pilot search was conducted using PsycINFO, CINAHL and SPORTDiscus. Following the pilot search, the search strategy was modified to exclude terms associated with sport, athletes or specific sporting codes, as the search string was failing to detect key studies. In conjunction with the five electronic databases, Google Scholar was also utilised as a supplementary database, with the first 200 listings being examined to ensure all relevant studies had been identified [69].

Once all searches had been complete, each list was imported into Covidence review software and duplicates were initially removed [70]. The first author (JF) completed the title and abstract screening of all records. An additional reviewer (KF) independently screened 10% of records from a random sample to calibrate results.

Where disagreements arose between authors, a discussion on whether a study should undergo full-text screening was settled between reviewers. Once the entire set of records had been examined at the title and abstract level, the first author (JF) engaged in full-text screening. A second author was consulted (CW) where the first author was uncertain about the eligibility of studies (16 studies). Following data charting, the first author (JF) conducted backward snowballing to ensure all relevant records had been identified within the included studies [71]. A secondary systematic search was also conducted in September 2022 to ensure newly published studies were incorporated within the review.

Data Charting

After full-text screening was complete, information was charted using a data extraction tool adapted from Willis et al. [72] and the JBI's extraction template [73] (see Additional file 3). Data extracted included information and findings associated with the author, study design, study objectives, participant details, conceptual frameworks, data analysis and results concerning the review's research questions, amongst others. The tool was initially piloted on five relevant studies, where modifications were made to ensure key criteria were incorporated within the extraction form. Following this, each study that satisfied the full-text screening process underwent data charting by the first author (JF). Additionally, a secondary set of reviewers (KG and MK) independently charted data from 50% of the total studies each. After double extraction was completed, findings were inserted into a spreadsheet. A narrative synthesis was then undertaken to summarise and describe the current evidence base [74].

Quality Appraisal

In line with recommendations put forward by Sabiston et al. [49], a quality appraisal was performed to critically examine the methodological rigour of studies that met the inclusion criteria. While quality assessments are not mandatory for conducting scoping reviews, quality appraisals offer transparency to the review process and help to contextualise findings that emerge from the included studies [49]. As a result, this review employed Hong et al.'s [75] Mixed Methods Appraisal Tool (MMAT), as the instrument provides reviewers with a single tool to assess quantitative, qualitative and mixed methods research, and has shown improved content validity over recent years [76]. The MMAT assesses five varying methodological criteria contingent upon the study design selected [75]. For this review, each study was initially categorised into either qualitative, randomised controlled, nonrandomised, quantitative descriptive or mixed method research designs. Once classified, a reviewer (JF) assessed whether the selected study had met the requirements to satisfy the proposed criteria. Parameters were interpreted and determined using Hong et al.'s proposed indicators and explanations to assess the relevant criteria (see the MMAT's user guide for further clarification [77]). The reviewer then judged each criterion by providing a 'Yes', 'No' or 'Can't Tell' response to evaluate whether the criteria had been satisfied. Once complete, to assess the methodological robustness of each study, the 'Yes' responses were tallied up and converted into percentages to examine the proportion of criteria that had been satisfied.

Results

The systematic search yielded a total of 18,068 records, of which, 5,692 were identified as duplicates (Fig. 4). As a result, 12,376 records were screened at the title and abstract level, before 134 studies were deemed eligible for full-text screening. From there, 97 studies failed to satisfy the overall inclusion criteria, leaving a total of 42 studies eligible for data charting (5 studies were identified from backward snowballing). Of the included studies, 5 were classified as either a professional abstract [78–81] or editorial letter [82].

Study Characteristics

Of the 42 included studies, 29 were quantitative (69.1%), 10 qualitative (23.8%) and 3 adopted a mixed-methods approach (7.1%). Nineteen studies were cross-sectional (45.2%), 11 longitudinal (26.2%), 4 employed a case study methodology (9.5%) and 3 were experimental (7.1%). The quality appraisal revealed that 6 studies met 100% of criteria (14.3%), whilst 3 met 80% (7.1%), 8 met 60% (19%), 16 met 40% (38.1%), 7 met 20% (16.7%) and 2 met 0% (4.8%) of criteria (see Additional file 4).

Across the 42 studies there were 4,576 participants in total (Table 3). Twenty-one studies included a mixed sex sample (50%), 13 explored males exclusively (31%), 2 reported on females exclusively (4.7%), and 6 failed to specify sex or gender (14.3%).[1] Of the 4,576 participants, 3,325 were male (72.7%), 821 were female (17.9%) and 1 was gender diverse (< 0.1%). Coaches ranged from 18 to 74 years of age, and most studies possessed a mean age range between 35 to 44 ($n = 16$, 38.1%). Europe served as the primary setting for most studies ($n = 27$, 64.3%), followed by Oceania ($n = 8$, 19%) and North America ($n = 5$, 11.9%). Two studies were

[1] Although sex and gender are considered as distinct constructs, to assist the interpretation and categorisation of findings sex and gender were merged to characterise the overall sample (e.g. male/men or female/women).

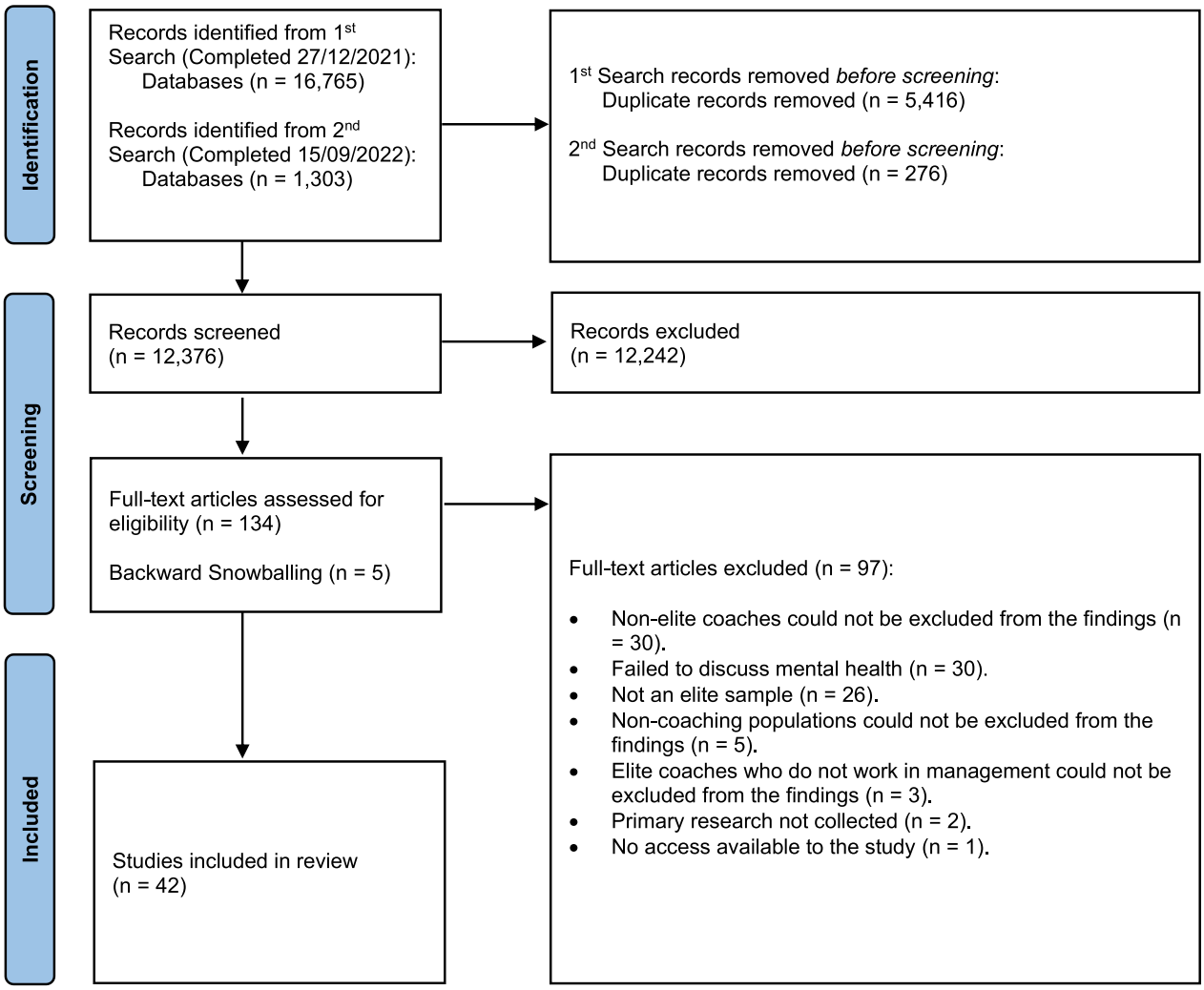

Fig. 4 PRISMA-ScR flow diagram

also conducted in Asia ($n=2$, 4.8%) and 1 was carried out in South America ($n=1$, 2.4%).

When identifying the type of sports that participants coached, 18 (42.9%) studies assessed elite-level coaches who managed team sports exclusively. Nine (21.4%) studies reported coaches managing athletes from both individual and team sports, and only one study explored a coach managing an individual sport (2.4%). Frequently cited sporting codes included soccer/football ($n=17$, 30.4%), swimming ($n=7$, 12.5%) and basketball ($n=9$, 10.7%). Regarding the 'elite' criteria, 31 (73.8%) included studies examined coaches operating at the national level. This was followed by international ($n=13$, 31%), professional ($n=12$, 28.6%), NCAA Division I ($n=5$, 11.9%), Olympic ($n=4$, 9.5%) and Paralympic ($n=1$, 2.4%) samples.

What are Elite-Level Coaches' Experiences of Wellbeing?

This review found that 17 (40.5%) studies explored wellbeing in elite-level coaches. Seven of these studies investigated wellbeing using semi-structured interviews [10, 13, 24, 83–86]. A number of measures were also utilised to explore the various dimensions of wellbeing, including the Satisfaction with Life Scale (SWLS; $n=3$) [12, 87, 88], Positive and Negative Affect Schedule (PANAS, multiple versions; $n=3$) [89–91], Warwick-Edinburgh Mental Well-being Scale (WEMWBS; $n=2$) [83, 92], Subjective Vitality Scale (SVS; $n=2$) [87, 88], Utrecht Work Engagement Scale (UWES; $n=2$) [90, 93], Recovery-Stress-Questionnaire (RESTQ, multiple versions; $n=2$) [94, 95] and Brunel Mood Scale ($n=1$) [91]. The findings indicate that elite-level coaches generally experience moderate to high levels of mental wellbeing [83]. Carson et al. for

Table 3 Summary of included studies

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Åkesdotter et al. [108]	Quantitative, Cross-sectional; 40%	34 (23:11)	Alcohol-Related Disorders Anxiety, Depression, Eating Disorders, Substance-Related Disorders	Various; Sweden	International	Of the 34-treatment seeking high-performance coaches, 93% were diagnosed with any anxiety disorder, 28% were diagnosed with a major depressive disorder (single episode or recurrent), and 14% were diagnosed with an alcohol-related disorder. Less than 5 coaches were diagnosed with either an eating, bipolar, or substance-related disorder
Baldock et al. [10]	Qualitative; 100%	8 (8:0)	Wellbeing	Soccer; United Kingdom	National, Professional	Coaches largely appraised performance, organisational and personal-related stressors as threats. These demands were predominantly met with ineffective coping strategies, which subsequently led to negative states of wellbeing. Conversely, when effective coping strategies were employed, coaches usually experienced high levels of wellbeing
Baldock et al. [83]	Mixed-Methods, Longitudinal; 80%	18 (18:0)	Burnout, Wellbeing	Soccer; United Kingdom	National, Professional	Using four time points across a competitive season, coaches reported moderate levels of wellbeing and low to medium levels of burnout. Wellbeing was at its lowest at the beginning of the season, whilst emotional exhaustion and depersonalisation were highest at the end of the season

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Balk et al. [90]	Quantitative, Longitudinal; 60%	31 (30:1)	Wellbeing	Various; Australia and The Netherlands	International, National	Emotional detachment (the previous day), sleep quality and sleep duration contributed towards a coach's experience of positive affect the following morning. Coaches who reported greater positive affect were also more likely to experience high levels of work engagement
Bentzen et al. [97]	Qualitative; 40%	4 (4:0)	Burnout	Not Specified; Denmark and Norway	Professional	Organisational and performance-related stressors contributed towards a shift in the quality of motivation maintained by a coach. A shift from autonomous to controlled motivation operated as an antecedent to burnout. Coaches also experienced a range of symptoms associated with burnout, including affective, cognitive and behavioural changes
Bentzen et al. [96]	Quantitative, Longitudinal; 40%	299 (274:25)	Burnout (Emotional Exhaustion)	Various; Norway and Sweden	National	A significant increase in emotional exhaustion was reported by elite-level coaches over the course of a season. Although the majority of the sample reported low levels of exhaustion throughout the season (71%), 24.4% of coaches met the criteria for high levels of exhaustion. High workload and work-home interference were associated with high levels of exhaustion, and high levels of recovery, intrinsic regulations and identified regulations were associated with low levels of emotional exhaustion

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Bentzen et al. [87]	Quantitative, Longitudinal; 40%	343 (313:30)	Burnout, Wellbeing	Various; Norway and Sweden	National	A small to moderate increase in burnout and decrease in wellbeing occurred in elite-level coaches over the course of a competition season. No significant relationship was identified between burnout and season length, thus suggesting that the length of a season may not be a contributing factor towards burnout
Bentzen et al. [88]	Quantitative, Longitudinal; 40%	299 (274:25)	Burnout, Wellbeing	Various; Norway and Sweden	International, National	Coaches who reported high levels of job insecurity in the middle of the season were more likely to experience low levels of mental wellbeing and high levels of exhaustion and cynicism at the end of the season. Job value incongruence did not significantly impact levels of wellbeing and burnout over the season
Bentzen et al. [24]	Qualitative; 100%	6 (5:1)	Wellbeing	Soccer; Norway	National	Coaches experienced a decrease in occupational wellbeing when fired. They also experienced a range of negative (e.g. frustration) and positive (e.g. gratitude) emotional responses throughout the process
Carling et al. [82]	Quantitative, Experimental; 20%	6 (N/A)	Anxiety, Sleep	Soccer; France	National	The developed music intervention helped significantly shorten the time required to fall sleep, as well as reduce symptoms of anxiety among elite-level coaches

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Carson et al. [92]	Quantitative, Cross-sectional; 40%	128 Elite (464 Overall) (N/A)	Wellbeing	Not specified; Australia	International, National	Australian high-performance coaches generally reported high levels of wellbeing on the Warwick-Edinburgh Mental Wellbeing Scale (M = 51.7, SD = 8.3)
de Sousa Pinheiro et al. [94]	Quantitative, Longitudinal; 40%	26 (26:0)	Wellbeing	Soccer; Brazil	National	Coaches reported significantly higher levels of stress in competition and during training periods when compared with vacation periods. No significant differences in stress levels were observed between competition and training periods. With regards to recovery, results were only significantly higher in vacation periods compared to competitive periods
Foretić et al. [109]	Quantitative, Case Study; 40%	1 (N/A)	Anxiety	Handball; Qatar	National, Professional	Coaches experienced significantly greater post-match anxiety when compared with anxiety levels post-training. These findings were physiologically corroborated with biomarkers, as cortisol, alpha-amylase and heart rate levels were significantly higher prior to matches as opposed to training. These findings demonstrate evidence of a 'pre-competitive' effect amongst elite-level coaches

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Gencay and Gencay [101]	Quantitative, Cross-sectional; 40%	65 (55:10)	Burnout	Judo; Turkey	National, Professional	Elite-level judo coaches experienced medium levels of burnout on average. No significant associations were identified between gender; however, a positive correlation was discovered between emotional exhaustion and years of coaching experience. Coaches were also more likely to be protected from burnout if they perceived themselves as being supported by their sports administrators
Georgios and Nikolaos [102]	Quantitative, Cross-sectional; 20%	164 (164:0)	Burnout	Track & Field; Greece	National	Hardiness, competitive trait anxiety and satisfaction with support all negatively predicted a coach's perception of stress, whilst hardiness and satisfaction with support negatively predicted burnout. Competitive trait anxiety and perceived stress also positively predicted burnout
Hägglund et al. [84]	Qualitative, Experimental, Longitudinal; 60%	18 (7:11)	Wellbeing	Athletics and Figure Skating; Sweden	International, National	The mindful self-reflection intervention contributed towards an increase in practices associated with well-being (e.g. self-compassion) amongst elite-level coaches. These behaviours were still being implemented at 6- and 12-month follow-ups post-intervention

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Hassmén et al. [98]	Mixed-Methods, Longitudinal; 20%	8 (8:0)	Burnout	Soccer; Sweden	National	Coaches experienced fluctuating levels of emotional exhaustion and depersonalisation over the 10-year study period. Withdrawal from the profession led to significant reductions in emotional exhaustion
Hjälm et al. [99]	Quantitative, Cross-sectional; 80%	47 (47:0)	Burnout	Soccer; Sweden	National, Professional	71% of coaches managing soccer teams from the Women's Premier League in Sweden reported moderate to high levels of emotional exhaustion. Conversely, only 23% and 45% of coaches managing teams within the Swedish Men's Premier League and Men's Second League reported moderate to high levels of emotional exhaustion respectively
Kaski and Kinnunen [93]	Quantitative, Cross-sectional; 40%	499 (384:115)	Burnout; Wellbeing	Not Specified; Finland	International, National	Although Finnish coaches generally experienced good levels of wellbeing (work engagement), 22% of coaches met the criteria for mild symptoms of burnout, and 2% met the criteria for severe symptoms of burnout. A lack of job resources was found to predict burnout and work engagement more effectively than the presence of job demands

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Kegelaers et al. [11]	Quantitative, Cross-sectional; 40%	119 (97:22)	Anxiety, Depression, Risky Alcohol Consumption, Sleep, Psychological Distress	Not Specified; Belgium and The Netherlands	International, National	39.5% of the coaching sample reported symptoms associated with depression or anxiety, and 19.3% indicated experiences of distress. 19.3% of coaches met the caseness criteria for adverse alcohol use and 25.2% reported sleep disturbance
Kellmann et al. [95]	Quantitative, Longitudinal; 60%	6 (6:0)	Wellbeing	Australian Football; Australia	National, Professional	On average, coaches maintained low to moderate levels of stress over the course of a season, whilst recovery levels were low to moderate and declined throughout the season. Vacations also seemed to contribute to a temporary recovery effect for coaches. Sleep quality however was consistently low throughout the season
Kenttä et al. [86]	Qualitative, Case-Study; 100%	1 (0:1)	Wellbeing	Swimming; Sweden	International, Olympic	The coaches relieved from their duties experienced compromised mental wellbeing (cognitive and emotional) including symptoms associated with anxiety and distress post-termination. Effective psychological skills and strong social supports were perceived as important protective factors during this process

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Kenttä et al. [85]	Qualitative; 60%	37 (0:37)	Wellbeing	Various; Sweden	National	Although female coaches largely experienced the same challenges as male coaches, a unique set of sex-specific stressors emerged from the study, including proving oneself to male counterparts, lack of acceptance in the coaching role, and receiving less support at home due to family-related responsibilities. Participants revealed adapting to the stereotypical male culture of sport in order to protect their mental wellbeing, as opposed to challenging cultural norms
Kim et al. [111]	Quantitative, Cross-sectional; 60%	69 (53:15 – 1 gender diverse)	Depression	Soccer and Various; New Zealand	International, National	14.1% of coaches met the criteria for at least moderate symptoms of depression. Contemplating retirement and having a family history of a mood disorder was significantly associated with symptoms of moderate or major depression. A strong association was also discerned between the total and severity of daily life hassles and symptoms associated with depression

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Lee and Chelladurai [89]	Quantitative, Cross-sectional; 40%	430 (278:152)	Burnout (Emotional Exhaustion), Wellbeing	Not Specified; U.S	NCAA Division I	Positive affectivity predicted 3 forms of emotional labour (surface acting, deep acting, genuine expression), whilst negative affectivity predicted surface acting amongst coaches. Positive affectivity, negative affectivity, surface acting, and genuine expression all predicted emotional exhaustion too. The relationship between surface acting and emotional exhaustion was also significantly moderated by emotional intelligence
Lee [103]	Quantitative, Cross-sectional; 60%	203 (115:88)	Anxiety, Burnout (Emotional Exhaustion)	Various; U.S	NCAA Division I	Goal incongruence positively predicted and coping efficacy negatively predicted subjective ratings of anxiety amongst NCAA Division I coaches. In addition, self-reported levels of anxiety also positively predicted self-reported emotional exhaustion
Longshore and Sachs [91]	Mixed-Methods, Experimental; 20%	20 (8:12)	Anxiety, Wellbeing	Not Specified; U.S	NCAA Division I	Coaches experienced significantly less positive affect, negative affect and trait anxiety following the Mindfulness Training for Coaches Program. Greater emotional stability contributed towards enhanced wellbeing and coach-athlete interactions

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Lundkvist et al. [100]	Qualitative; 100%	8 (8:0)	Burnout	Soccer; Sweden	National	Two profiles of burnout were identified in elite-level coaches. Those who burned out due to the performance culture of elite sport experienced behavioural changes (e.g. passive and asocial). Conversely, coaches who experienced considerable work-home challenges (i.e. life-situation profile) experienced high levels of exhaustion (e.g. fatigue and mental overload)
Lundkvist et al. [104]	Quantitative, Cross-sectional; 60%	97 Elite (336 Overall) (N/A)	Burnout (Emotional Exhaustion)	Soccer; Sweden	International, National, Professional	In alignment with MBI and clinical cut-offs, this cohort of coaches presented low levels of emotional exhaustion in comparison to normative samples
Nikolaos [105]	Quantitative, Cross-sectional; 20%	170 (170:0)	Burnout	Basketball; Greece	National	On average, coaches experienced moderate levels of emotional exhaustion and depersonalisation, and low levels of personal accomplishment. Coaching level, social support and coaching issues significantly predicted the stress appraisal, whereas stress appraisal, social support and coaching issues significantly predicted burnout
Olusoga et al. [13]	Qualitative; 100%	12 (6:6)	Wellbeing	Various; United Kingdom	International, Olympic	Coaches revealed that perceived stress contributed towards negative affective states, including feelings associated with emotional fatigue and depression

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Olusoga and Kenttä [45]	Qualitative, Case Study; 80%	2 (2:0)	Burnout	Not Specified, Sweden	National, Olympic	Burnout generally occurred due to a lack of recovery time for coaches, as opposed to the overload of performance, organisational and personal-related stressors. Departing the coaching role and possessing adequate social support were key factors in recovering from burnout
Pilkington et al. [12]	Quantitative, Cross-sectional; 40%	78 Coaches (252 including High-Performance Support Staff) (59:19)	Anxiety, Depression, Risky Alcohol Consumption, Sleep, Psychological Distress, Wellbeing	Not Specified; Australia	International, National	43.6% of coaches met the probable caseness criteria for anxiety and depression, whereas 48.1% and 10.3% met the caseness criteria for risky alcohol consumption and psychological distress respectively. 34.6% of coaches also revealed they had sought psychological treatment at some stage throughout their life
Roberts et al. [110]	Qualitative, Case Study; 100%	1 (1:0)	Depression, Risky Alcohol Consumption	Not Specified, United Kingdom	International	The head coach described concealing their experiences of depression and alcoholism due to the stigma associated with mental ill-health in elite sport. The coach also revealed a desire to conceal their mental health status in order to ensure future employment was a possibility

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Ruddock et al. [78]	Quantitative, Cross-sectional; 0%	142 (N/A)	Anxiety, Burnout, Depression, Psychological Distress	Australian Football; Australia	National, Professional	Findings revealed that emotional exhaustion was the only component of burnout that could predict levels of anxiety, depression and stress amongst professional AFL (Australian Football League) coaches. Greater levels of emotional exhaustion contributed towards higher levels of anxiety, depression and stress
Ruddock et al. [79]	Quantitative, Longitudinal; 20%	115 (115:0)	Anxiety, Burnout, Depression, Psychological Distress	Australian Football, Australia	National, Professional	Emotional exhaustion, stress and overall DASS and GHQ scores significantly increased from pre-season to mid-season. Emotional exhaustion was also identified as the strongest predictor of mental ill-health, as high levels of stress, anxiety and depression were all significantly predicted by emotional exhaustion
Ruddock et al. [80]	Quantitative, Longitudinal; 20%	50 (N/A)	Anxiety, Burnout, Depression, Psychological Distress	Australian Football; Australia	National, Professional	Concomitant increases of emotional exhaustion, depression and stress occurred between February and August when contract renewal was approaching. These levels started to decrease in November once the competitive season had concluded

Table 3 (continued)

Study	Study Design; MMAT Quality Score	N (male: female)	Themes	Sport; country	Definition of elite	Key findings
Ryska [106]	Quantitative, Cross-sectional; 40%	345 (267:78)	Burnout	Various; U.S	NCAA Division I	Coaches generally reported low levels of burnout. Those who pursued prestige goals and public relations using a high strategic-low collaborative relationship were more likely to experience burnout, whereas those who pursued personal growth and athletic excellence with a low bureaucratic-high collaborative leadership were less likely to suffer burnout
Seo et al. [107]	Quantitative, Cross-sectional; 60%	210 (151:59)	Burnout	Taekwondo; South Korea	National	Workplace conditions negatively predicted burnout, whereas burnout positively predicted presenteeism in South Korean National coaches. Those operating within a positive working environment were less likely to suffer burnout and presenteeism
Smith et al. [81]	Quantitative, Cross-sectional; 0%	21 (7:14)	Eating Disorders	Cheerleading; U.S	NCAA Division I	38.1% of coaches were considered to be at risk of an eating disorder. Pathogenic behaviours included risk of using laxatives, diet pills or diuretics (33.3%), loss of 20 or more pounds in a month (9.5%), risk of vomiting (9.5%) and risk of binge eating (4.8%)
Smith et al. [113]	Quantitative, Cross-sectional; 40%	35 Elite (202 Overall) (25:10)	Various Mental Illnesses	Various; United Kingdom	Olympic, Paralympic	45.7% of high-performance coaches from the sample had experienced or were currently experiencing a mental disorder
Vinberg et al. [112]	Quantitative, Cross-sectional; 40%	401 Coaches (317:79–5 missing)	Gambling Disorders	Various; Sweden	National, Professional	6% of coaches demonstrated at-risk gambling behaviours

instance [92] found that elite-level coaches from Australia reported high levels of mental wellbeing on the WEMWBS. This outcome was supported by Kaski and Kinnunen [93], where a sample of elite-level Finnish coaches generally reported good levels of positive functioning on the UWES.

Amongst correlates and predictors of wellbeing, in comparison to performance and personal-related stressors, preliminary evidence indicates that demands emanating from organisational sources may contribute most significantly towards coaches' experience of low hedonic and eudaimonic wellbeing [10]. Despite the proliferation of stressors, Baldock et al. found that coping effectiveness was perceived to have the largest influence on a coach's experience of mental wellbeing. Other reported correlates and antecedents of high wellbeing include psychological detachment from coaching [90], adequate sleep quality and duration [90], autonomy [96], autonomy support [96] and relatedness [96]. Conversely, excessive workloads [87] and persistent job insecurity [24] were associated with low levels of wellbeing.

With these factors in mind, two experimental investigations examined whether levels of mental wellbeing could be improved amongst elite-level coaches. Longshore and Sachs found that coaches experienced significantly reduced negative affect after undertaking a 6-week mindfulness training program [91]. Given the small and non-randomised sample however ($n=20$), results should be interpreted with caution. Hägglund and colleagues found similar results when elite-level coaches were presented with a daily or weekly text message containing a mindful self-reflection [84]. Findings revealed that coaches experienced greater engagement with their mental wellbeing after the intervention (e.g. self-awareness, vulnerability and self-compassion), with lasting behaviours extending up to 12 months.

What is the Nature and Prevalence of Mental Ill-Health in Elite-Level Coaches?

Thirty-two (76.2%) of the included studies examined themes associated with mental ill-health. Studies that satisfied the inclusion criteria explored symptoms associated with burnout ($n=21$, 50%) [45, 78–80, 83, 87–89, 93, 96–107], anxiety ($n=10$, 23.8%) [11, 12, 78–80, 82, 91, 103, 108, 109], depression ($n=8$, 19%) [11, 12, 78–80, 108, 110, 111], psychological distress ($n=5$, 11.9%) [11, 12, 78–80], risky alcohol consumption/disorders ($n=4$, 9.5%) [11, 12, 108, 110], sleep disturbance/disorders ($n=3$, 7.1%) [11, 12, 82], eating disorders ($n=2$, 4.8%) [81, 108], substance abuse ($n=1$, 2.4%) [108] and gambling disorders ($n=1$, 2.4%) [112]. Nine studies (21.4%) [11, 12, 81, 93, 96, 99, 111–113] also examined the prevalence of mental ill-health amongst general elite-level coaching populations, and one study (2.4%) [108] explored the prevalence of psychiatric disorders in a treatment-seeking population.

Anxiety and Depression

Among the included studies, 10 examined symptoms associated with anxiety and 8 explored symptoms associated with depression. Symptoms of both anxiety and depression were measured using the General Health Questionnaire (GHQ, 12- and 28-item; $n=4$) [11, 12, 78, 79] and Depression Anxiety Stress Scale (DASS-21; $n=3$) [78–80], whilst the State-Trait Anxiety Inventory (STAI; $n=2$) [91, 109] and Sport Emotion Questionnaire (SEQ; $n=1$) [103] were employed to assess symptoms of anxiety, and the Center for Epidemiologic Studies Depression Scale—Revised (CESD-R; $n=1$) [111] was utilised to examine symptoms of depression. Clinical interviews ($n=1$) [108] and semi-structured interviews ($n=1$) [110] were also employed to investigate symptoms of anxiety and depression.

Three studies examined the prevalence of anxiety and depressive symptoms in the broader elite-level coaching population. Kegelaers and colleagues reported that symptoms of depression and anxiety were reported by 39.5% of a Dutch and Flemish sample ($n=119$) [11], aligning with the probable caseness percentages (43.6%) reported by 78 elite-level coaches from Australia [12]. In contrast, Kim and colleagues [111] found that only 14.1% of a New Zealand coaching sample ($n=69$) met the cut-off criteria for at least moderate symptoms of depression. In addition to the broader elite-level coaching population, Åkesdotter and colleagues also found that 69% of a treatment-seeking coaching sample ($n=34$) were experiencing clinical levels of anxiety, and 28% had met the diagnostic criteria for a major depressive disorder.

A number of correlates and antecedents associated with symptoms of anxiety and depression were identified within the included studies. For instance, both goal incongruence and coping efficacy were found to be significant predictors of self-reported anxiety [103], whereas contemplation of retirement, a family history of a mood disorder, and the frequency of daily hassles were identified as significant predictors of depressive symptoms [111]. One relationship of growing importance includes the association between burnout and anxiety/depression. It was found that emotional exhaustion, for example, predicted symptoms of anxiety and depression amongst two samples of professional Australian Rules coaches [78, 79].

Burnout

The included studies reported heterogeneous rates of burnout. The results ranged from low [83, 93, 96, 104–106], to moderate [83, 99, 101, 105], to high [99]

levels of emotional exhaustion, depersonalisation and personal accomplishment. These findings were predominantly measured using a version of the Maslach Burnout Inventory (MBI), including a non-specified version ($n=9$) [78–80, 89, 101, 102, 104–106], the MBI-General Scale (MBI-GS) ($n=4$) [87, 88, 93, 96], MBI-Educators Survey (MBI-ES) ($n=2$) [98, 99] and MBI-Coach (MBI-C) survey ($n=1$) [83]. Other measurement tools included the Coach Burnout Questionnaire (CBQ) ($n=1$) [103] and Coach Burnout Affect Survey ($n=1$) [107]. In addition to quantitative measures, 5 studies also utilised semi-structured interviews to explore burnout [45, 83, 97, 98, 100].

When examining prevalence rates, Kaski and Kinnunen conducted a cross-sectional study and found that 22% and 2% of a Finnish coaching sample satisfied the criteria for mild to severe symptoms of burnout, respectively ($n=499$) [93]. The results however also indicated that 76% of the coaching sample were not experiencing burnout. Another cross-sectional study carried out with 'highly exhausted' coaches at risk of burnout [97], found that a coach's perception of their sports organisation (e.g. poor relations with upper management and leaders) and their everyday work environment (e.g. high workload and athlete win or loss records) was associated with the onset of burnout. Similarly, Hassmén and colleagues [98] explored the symptoms and recovery processes of elite-level coaches at risk of burnout over a period of ten years. They found that taking time off, departing the coaching profession, or stepping down to a lower competitive division was associated with lower levels of emotional exhaustion. By removing oneself from the coaching environment, participants were able to reduce their workload and gain greater autonomy, which subsequently lead to reduced symptoms of burnout.

Psychological Distress

Five of the included studies explored symptoms associated with psychological distress. Psychometric instruments included the DASS-21 ($n=3$) [78–80], Kessler-10 (K-10, $n=1$) [12] and Distress Screener ($n=1$) [11]. Rates of high psychological distress ranged from 10.3% to 19.3% in elite-level coaches. A number of correlates were found to lower psychological distress, including satisfaction with life balance (i.e. wellbeing), satisfaction with social support and older age [12], whereas emotional exhaustion [78, 79] and depersonalisation [79] were correlated with high levels of psychological distress. Longitudinal research also found that professional Australian Rules Football coaches experienced significantly higher levels of psychological distress mid-season when compared to pre-season [79].

Sleep Disturbance

Two cross-sectional studies explored the prevalence of sleep disturbance amongst elite-level coaches, reporting comparable rates ranging from 23.4% (moderate to severe sleep disturbance) to 25.2% (presence of sleep disturbance) [11, 12]. These rates were identified using the Athlete Sleep Screening Questionnaire (ASSQ) and Patient Reported Outcomes Measurement Systems (PROMS) respectively. Findings also revealed that sleep disturbances were associated with symptoms of burnout [45, 97, 100], and that sleep quality has the potential influence a coach's mental wellbeing (e.g. positive affect) [90]. There is some evidence to suggest however, that music could be utilised as a tool to assist elite-level coaches falling asleep [82].

Other Mental Disorders

A range of other symptoms associated with mental ill-health have also been explored among elite-level coaches. Two studies examined rates of risky alcohol consumption in elite-level coaches using the Alcohol Use Disorder Identification Tool-Concise (AUDIT-C), where the prevalence of symptoms ranged from 19.3% to 48.3% [11, 12]. Comparatively, Åkesdotter and colleagues also found that 17% of a treatment-seeking population met the clinical diagnosis for a psychoactive substance-use disorder (e.g. alcohol or substance-related disorder) [108]. Beyond substance use, Smith and colleagues identified 38.1% of a NCAA Division I coach sample ($n=21$) being at risk of an eating disorder using the Eating Attitudes Test (EAT-26) 81]. Frequent pathogenic behaviours included risk of using laxatives, diet pills or diuretics (33.3%), loss of 20 or more pounds in a month (9.5%), risk of vomiting (9.5%) and risk of binge eating (4.8%). Furthermore, in a sample of professional coaches from Sweden ($n=401$), it was reported that 6% met the criteria for risky gambling behaviours on the Problem Gambling Severity Index (PGSI) [112].

What Risk and Protective Factors Contribute to Mental Health Amongst Elite-Level Coaches?

In line with the socioecological approach described by Purcell and colleagues [38], this review identified a variety of factors influencing coach mental health from within the broader ecology of elite sport (see Additional file 5). At the individual level, effective psychological skills or emotional regulation (e.g. hardiness and resilience) ($n=6$), effective coping strategies ($n=5$), exercise ($n=2$), high levels of mental wellbeing ($n=2$), coaching experience/age ($n=2$), working full-time/part-time ($n=2$), external non-coaching identities ($n=2$), high intrinsic and identified motivations ($n=1$)

and collaborative leadership styles ($n=1$) were considered protective. Conversely, risk factors included stress-related factors ($n=7$), ineffective coping strategies ($n=3$), mental ill-health comorbidity (e.g. symptoms of burnout) ($n=3$), coaching experience/age ($n=3$), low autonomous motivations ($n=2$), maladaptive perfectionism ($n=2$), gender (women) ($n=2$), transitional phases (e.g. retirement) ($n=2$), low levels of wellbeing ($n=1$), low emotional intelligence ($n=1$), controlling leadership styles ($n=1$), working full-time ($n=1$), family history of a mood disorder ($n=1$) and a dominant coaching identity ($n=1$). Beyond the individual, at the microsystem level, findings revealed that strong social support (e.g. partners, families, colleagues, athletes and mentors) ($n=8$) and engaging with a psychologist ($n=2$) operate as key protective mechanisms, whilst a lack of social support is considered a risk factor ($n=3$).

From an exosystem perspective, protective factors were associated with the perceived working environment, including support provided by organisations and federations ($n=6$), sufficient recovery (e.g. psychological and physical) ($n=2$) and a reduced workload ($n=1$). Similarly, risk factors were associated with negative perceptions of the working environment, including a high workload ($n=6$), lack of organisation and federation support ($n=4$), lack of recovery (e.g. psychological detachment or relaxation) ($n=4$), poor work-life balance ($n=2$), job insecurity ($n=2$), excessive organisational interference ($n=1$) and sport type (e.g. team sports) ($n=1$). At the macrosystem level, no protective factors were identified, but stigma towards help-seeking ($n=2$), the sporting culture (e.g. hypermasculinity, constant pressure to perform) ($n=2$) and media scrutiny ($n=1$) were identified as risk factors.

What are the Various Ways Coaching Effectiveness is Conceptualised from a Mental Health Perspective, and How is Mental Health Associated with Coaching Effectiveness?

This review found preliminary evidence to suggest that a coach's mental health may impact their ability to coach effectively. Results indicated that an elite coach's mental health may influence either their own or athlete/team's functioning (see Additional file 6). There was some support among the included studies to suggest that a coach's mental health might impact their own psychological/emotional state, standard of work and coaching style. Psychological and emotional impacts ranged from changes in focus ($n=3$), decision making ($n=1$), emotional regulation ($n=1$) and confidence ($n=1$). For example, it was reported that elite-level coaches experiencing symptoms associated with anxiety may encounter challenges in pursuing short- and long-term goals [100, 103]. Furthermore, the findings also showed that a coach's mental health may impact one's standard of performance and coaching style. Several studies found that an elite coach's mental health may influence their motivation ($n=1$), presenteeism ($n=1$) or work engagement ($n=1$). For instance, it was found that burnout significantly increased presenteeism [107], and emotional exhaustion contributed towards a decrease in motivation amongst elite-level coaches [45]. Further analysis revealed that an elite-level coach's mental health may impact their coaching style, including changes in verbal communication ($n=1$) and leadership styles ($n=1$). Lundkvist et al. reported that coaches who were experiencing burnout may adopt a passive style of leadership, where coaches tended to be quieter when addressing or interacting with their athletes [100].

In contrast, research assessing a coach's impact upon their athlete or team's functioning was scarce. The limited findings however, suggested that a coach's mental health may influence an athlete/team's standard of performance ($n=1$). Olusoga and Kenttä found that elite-level coaches experiencing symptoms associated with burnout reported struggling to get the best out of their athletes [45].

Discussion

This scoping review identified and synthesised peer-reviewed evidence exploring the mental health of elite-level coaches. The findings shed light upon the mental health outcomes of elite-level coaches, as well as the various factors that shape and influence levels of mental well-being and symptoms of mental ill-health. The review also sought to explore the relationship between mental health and coaching effectiveness, where findings can potentially be utilised to inform areas of further research, and supply elite-level coaches with preliminary evidence that may incentivise engagement with mental health awareness and practices. Overall, 42 studies were identified, with 40% and 76% of studies exploring themes associated with wellbeing and mental ill-health, respectively. Quality appraisal scores also suggest the field lacks sufficiently high-quality evidence to date. In particular, there is need to ensure that quantitative research is conducted with validated and reliable measures, and that researchers outline sampling strategies (e.g. snowball or purposive sampling) and sample size justifications (e.g. a priori power analyses) to ensure transparent and valid reporting.

Given 72% of the overall sample were male, it is important to acknowledge that the results may not generalise to other sexes or genders. The over-representation of male coaches in the current evidence base conforms to the broader sex/gender representation and imbalance that prevails throughout the field of sports psychology [114]. Although this underrepresentation may reflect

the true proportion of coaches that identify as female in elite sport [115], more research is required to understand how female and non-binary coaches experience mental health to assist with targeted interventions. It is worth acknowledging however, that the proportion of male and female elite-level coaches may vary between sporting codes and elite settings. Certain sports (e.g. gymnastics) and specific elite environments (e.g. NCAA Division I) for instance, may feature a more balanced representation between male and female coaches, while others might be dominated by female coaches.

From a wellbeing perspective, the results revealed that elite-level coaches generally reported moderate to high levels of mental wellbeing. A number of individual-level factors were found to improve an elite coach's wellbeing, including robust psychological skills, effective coping strategies, strong intrinsic and identified regulations, experience as a coach and regular exercise. Although individual-level factors such as self-compassion and self-awareness can be altered and improved to promote the wellbeing of elite-level coaches [84, 91], it should be noted that organisational and societal influences may pose a greater risk to a coach's wellbeing due to the systemically entrenched nature of these factors. Bentzen and colleagues for instance, found that workload negatively predicted vitality and satisfaction with life in elite-level coaches [87]. Since excessive workloads have been identified as common stressors among elite-level coaches [8, 10, 100], organisations need to ensure that coaches are provided with manageable workloads to preserve their mental wellbeing (e.g. devolvement of responsibilities). As coaches are cognisant of the high demands that arise from the role, and usually acknowledge and accept the persistent job insecurity associated with the profession [88], organisations and federations must also establish ways to manage job insecurity and provide support to coaches who depart from their role or are relieved from their duties. This is critical as preliminary evidence indicates that job insecurity may negatively predict a coach's hedonic and eudaimonic wellbeing [88], with job dismissals leading to emotional distress and negative affective states [24, 86]. Given these organisational factors tend to be structurally embedded [11], organisations and federations need to be mindful of the pressures they exert and the support they can provide in influencing an elite coach's mental wellbeing. This support should also be extended to help address and manage broader cultural factors, as hypermasculine cultures for example, have been reported to impact the mental wellbeing of elite coaches, particularly among those who identify as women [85].

Understanding the wellbeing of elite-level coaches is important to both researchers and practitioners, as evidence suggests that low levels of wellbeing may increase the risk of experiencing mental ill-health over time [116–118]. There is some evidence to support this relationship in a coaching context, as Lee and Chelladurai found that positive affectivity negatively predicted emotional exhaustion, and negative affectivity positively predicted emotional exhaustion in NCAA Division I coaches [89]. Given the limited evidence base, future research would benefit from pursuing a broader and more rigorous evaluation of the relationships between wellbeing (e.g. hedonic and eudaimonic domains) and mental ill-health in an elite-level coaching context. For instance, researchers could replicate studies evaluating the mental health profiles of elite athletes, to examine whether coaches who are flourishing have greater protection against symptoms of mental ill-health than those languishing [66, 119].

To date, an emphasis has been placed upon investigating burnout-related symptoms in elite-level coaches, highlighted by 50% of the included studies focusing on burnout. Symptoms were predominantly evaluated using the MBI, or components thereof (76%). It is recommended that future research should incorporate all dimensions of the MBI to accurately determine the severity and presentation of burnout dimensions in elite-level coaches [37].

Comparatively, 33% of the included studies investigated symptoms related to a variety of mental disorders (e.g. anxiety, depression). Given the paucity of symptom-level research, a greater body of evidence is needed to fully comprehend the extent to which elite-level coaches experience symptoms associated with mental disorders, and the array of factors that may influence the onset of a disorder. The prevalence of mental disorders among elite coaches is also poorly understood, as studies reporting prevalence rates are scarce, varied (e.g. rates of depressive symptoms range from 14 to 44%) and employ diverse methodologies (e.g. varying measures utilised and timing of assessments). In addition, all studies measuring the prevalence of mental ill-health registered quality appraisal scores of 60% or below. Common issues included low response rates (< 60%), low reliability ($\alpha < 0.70$) and unvalidated measures [120]. In order to draw accurate and reliable comparisons across coaching samples and communities (e.g. elite athletes and the general population), researchers are encouraged to employ consistent and validated measures to foster methodological coherence (measures proposed by Gouttebarge et al. [121] may serve as useful starting point). It is also recommended that researchers should seek to evaluate the prevalence of mental ill-health using longitudinal study designs that incorporate larger sample sizes. The majority of prevalence studies were cross-sectional in nature

(89%) and generally reported findings with less than 100 participants (67%), which risks reporting biases. In order to fully understand the extent to which elite-level coaches experience symptoms of mental ill-health, future research should seek to identify periods where coaches may experience heightened symptomatology, and also utilise more representative coaching samples ($n > 100$) [17].

Much like research examining wellbeing, numerous risk and protective factors operating at the individual, interpersonal, organisational and societal level were found to impact symptoms of mental ill-health in elite-level coaches. Commonly cited protective factors included effective psychological skills/emotional regulation, robust social supports and strong organisation or federation supports. Conversely, frequently referenced risk factors included excessive workloads and stress-related factors (e.g. proliferation of stressors). These findings however largely emerged from evidence examining burnout in elite-level coaches. Further research is subsequently needed to identify the prominent risk and protective factors that can make a coach susceptible or protected from the emergence of a mental disorder. Preliminary research for instance has found organisational stressors and daily life hassles positively predict symptoms of depression and anxiety in elite-level coaches [11, 111]. Although prospective research is needed to identify the range of factors that may influence coach mental health, future research should continue to adopt these quantitative approaches (e.g. regression models) to discern which factors significantly contribute to the presence or absence of a mental disorder. These findings may allow policymakers to generate supports and reduce threats that mitigate the onset of a mental disorder. Researchers are encouraged to employ a socioecological framework to examine risk and protective factors (see Olive et al. [39]), as this may help to establish interventions which adopt a systems level approach that specifically target the varying domains of influence.

Finally, when examining the relationship between mental health and coaching effectiveness, preliminary evidence indicates that an association may exist. Findings were operationalised through a coach's own or athlete/team's functioning, and largely implied that poor mental health contributed towards reduced coaching effectiveness. Since only 14% of the included studies explored themes associated with coaching effectiveness, research should seek to specifically examine this relationship in greater detail, due to the limited evidence base that predominantly sought to examine this relationship as a secondary line of inquiry or arose as an incidental outcome. Thelwell et al. for instance, investigated ways that stress experienced by elite-level coaches may impact the coach-athlete relationship (including coach effectiveness) [25]. Based on the findings, it was suggested that a coach's experience of stress could impact a coach's psychological/emotional state (e.g. emotional regulation), standard of performance (e.g. organisational skills) and coaching style (e.g. changes in body language). In addition, stress was also found to shape an athlete's psychological/emotional state (e.g. confidence), standard of performance (e.g. development) and behaviour (e.g. increased introversion). Since the coach-athlete relationship is argued to operate at the heart of coaching [122], further research is needed to explore how mental health outcomes could affect ways in which both coaches and athletes function. Given the multiple confounding variables that may influence a subjective construct like coaching effectiveness, it would also be valuable for future research to utilise validated measures to examine this relationship in further detail (e.g. the Coaching Behavior Scale for Sport; see Côté et al. [123] and Mallett and Côté [124]). The field would also benefit from exploratory qualitative research, to investigate the potential bi-directional relationship between a coach's effectiveness and mental health.

Recognising the link between mental health and coaching effectiveness has important implications for the elite sports sector, as potential coach-related gains could be used to leverage broader interest and buy-in amongst elite-level coaches in consideration of their own mental health needs. If coaches become appreciative of the role mental health plays in their own or athlete/team's functioning, coaches may seek to actively preserve and prioritise their psychological health. It is critical to ensure however, that individuals who are experiencing low wellbeing or mental ill-health are not discriminated against or ostracised from the elite sports environment. It is therefore important to be cognisant of the potential ramifications implied by this relationship, given that the desire to appear efficacious may reinforce stigma or reduce help-seeking in elite-level coaches.

Limitations

There are limitations that may impact the utility of this review. Firstly, terms such as 'coaching effectiveness' and 'elite' are generally broad and ill-defined within the literature. This review's inclusion criteria may have disregarded studies or excluded evidence that would have satisfied alternative definitions. Notwithstanding the challenges previously discussed, a unified set of definitions would generate a conceptual framework that promotes consistency and clarity throughout the field. Since the roles and responsibilities of athletes and coaches vary in elite-level environments, definitions that seek to address conceptualisations of 'elite-level coaches' should be cognisant of the differences between both populations. Moreover, despite efforts to group elite-level coaches together, it is

important to recognize that an Olympic coach's experiences may vastly differ from an NCAA Division I coach for example. These role and pressure-related discrepancies should be considered when interpreting findings.

Other search-related limitations include the review's language and time bias. Since the review sought to include studies that were published in English post-2000, the search strategy may have overlooked subsequent research outside of this criterion. Furthermore, given scoping reviews are considered to be descriptive and thematic in nature [49], it was beyond the scope of the review to perform a statistical synthesis. It is therefore suggested that the field would benefit from a future meta-analysis, that examined the prevalence of mental ill-health in elite athletes compared with the general population. Although technically a minimum of two studies are required to perform this analysis [125], given the small number of prevalence studies evaluating the proportion of elite-level coaches that experience specific outcomes associated with mental ill-health, it is suggested that the field would benefit from a future meta-analysis that is not limited to a small number of studies (< 5 studies) due to challenges associated with estimating the between-study variance [126]. Overall, further research should be undertaken to investigate levels of mental wellbeing and the proportion of elite-level coaches that experience mental ill-health at the population level.

Finally, due to the time sensitive nature of scoping reviews, only one reviewer was able to perform the quality appraisal. Consequently, given the MMAT's broad criteria for assessment, it is suggested that a future systematic review should undertake a more rigorous quality appraisal to build upon the scoping review's initial assessment. Although the MMAT helps to broadly assess the coherence and methodological robustness of the included studies [49], a more rigorous tool could build upon the review's initial assessment and equip the field with a set of detailed and comprehensive insights (e.g. AMSTAR-2 or ROBIS) [127].

Conclusion

Much like other populations in the elite sports environment, elite-level coaches are subject to varying experiences of wellbeing, and are susceptible to a number of symptoms associated with mental ill-health. Whilst research has predominantly examined themes related to burnout and wellbeing, less is known about the prevalence and manifestation of mental disorders in elite-level coaches. As a result, it is critical that researchers build upon the current clinical evidence base to fully comprehend the extent to which elite-level coaches experience mental disorders. To date, studies reporting the prevalence of mental ill-health in elite-level coaches are generally varied, inconsistent and often methodologically substandard. In order to address these issues, future research should ensure psychometric scales are reliable, validated and used consistently (e.g., all subscales). Such efforts will assist in accurate comparisons between populations and samples. Given 79% of studies registered quality appraisal scores of 60% or below, researchers should prioritise the development of high-quality methodologies that aim to enhance the strength of research within the field.

This review identified myriad risk and protective factors that operate at the individual, microsystem (interpersonal), exosystem (organisational) and macrosystem-level (societal). Since it was beyond the scope of the review to evaluate the impact of risk and protective factors, research is needed to determine which factors contribute most significantly towards mental health outcomes. Much like Longshore and Sachs [91] and Hägglund et al. [84], intervention studies should continue to explore the influence of protective factors such as psychological skills (e.g. resilience and self-reflection) and coping strategies (e.g. emotion-focused strategies), to protect and enhance the mental health of elite-level coaches due to the dynamism and malleability of these individual qualities. Despite the benefit of targeting interventions at the individual-level, from a sector perspective, organisations and federations should be cognisant of the role they play in preserving and influencing coach mental health. To reduce mental health pressures, organisational systems and structures must be prioritised to alleviate the burden placed upon elite-level coaches. For example, cultivating psychologically safe environments in elite sport may not only enhance the mental health of elite-level coaches [128], but extend to performance and organisational benefits (the latter including less staff turnover and associated financial costs). Organisations and governing bodies should also consider early intervention strategies (e.g. pathways to support) that aim to assist elite coaches who may be presenting symptoms prior to the emergence of a mental disorder, in order safeguard coaches from experiencing intensified symptoms that could lead to dismissal or resignation from the role [53]. Although current evidence indicates that multiple individual, interpersonal (e.g. athlete wellbeing) and organisational benefits emerge when coaches experience optimal mental health, ultimately, further high-quality research is required to better understand the mental health of elite-level coaches.

Abbreviations

ASSQ	Athlete Sleep Screening Questionnaire
AUDIT-C	Alcohol Use Disorder Identification Tool-Concise
CBQ	Coach Burnout Questionnaire

CESD-R	Center for Epidemiologic Studies Depression Scale—Revised
DASS	Depression Anxiety Stress Scale
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition
EAT-26	Eating Attitudes Test—26 items.
GHQ	General Health Questionnaire
IOC	International Olympic Committee
JBI	Joanna Briggs Institute
K-10	Kessler Psychological Distress Scale—10 items
MBI	Maslach Burnout Inventory
MBI-C	Maslach Burnout Inventory—Coach
MBI-ES	Maslach Burnout Inventory—Educators Survey
MBI-GS	Maslach Burnout Inventory—General Scale
MMAT	Mixed Methods Appraisal Tool
NCAA	National Collegiate Athletic Association Division I
PANAS	Positive and Negative Affect Schedule
PCC	Population-Concept-Context
PGSI	Problem Gambling Severity Index
PRISMA-ScR	Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews
PROMS	Patient Reported Outcomes Measurement Systems
RESTQ	Recovery-Stress-Questionnaire
SEQ	Sport Emotion Questionnaire
STAI	State-Trait Anxiety Inventory
SVS	Subjective Vitality Scale
SWLS	Satisfaction with Life Scale
UWES	Utrecht Work Engagement Scale
WEMWBS	Warwick-Edinburgh Mental Well-being Scale

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s40798-023-00655-8.

Additional file 1. PRISMA-ScR Checklist.

Additional file 2. Example search strategy.

Additional file 3. Data extraction tool.

Additional file 4. MMAT results.

Additional file 5. List of references addressing the risk and protective factors that influence the mental health of elite-level coaches.

Additional file 6. List of references addressing the relationship between mental health and coaching effectiveness in elite-level coaches.

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JF was the review lead and contributed towards screening, data charting, quality appraisal and preparation of the manuscript. CW, RP and SR helped conceptualise the review and were involved in shaping the manuscript. CW and KF assisted with screening processes, and KG and MK independently charted the data. All authors read, edited and approved the final manuscript.

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Publisher's Note

Chapter Summary

Chapter 2 reviews the extant literature unpacking what is currently known about the mental health of elite-level coaches, as well as future research directions. Findings indicated that current research has primarily focused on examining burnout and mental wellbeing among elite-level coaches, with scant research investigating symptoms and disorders associated with mental ill-health. Preliminary evidence also suggests that the mental health of an elite-level coach may influence their coaching effectiveness. Notably, several risk and protective factors were identified at the individual, interpersonal, organisational and societal level. To address the paucity of qualitative research investigating the mental health of elite coaches, *Chapter 3* sheds light on perceived risk and protective factors among Australian elite coaches.

Chapter 3: “The players are the focus, it's never spoken about as coaches”: Perceived factors influencing the mental health of Australian elite-level coaches

Chapter Overview

Using a qualitative research design, *Chapter 3* explores perceived risk and protective factors of mental health among elite-level coaches. Fourteen semi-structured interviews were undertaken to gain insights from a diverse range of Australian elite coaches (e.g. gender, type of coach, sporting code). Reflexive thematic analysis was employed to generate 5 overarching themes that influence the mental health of Australian elite coaches, including (1) encountering multifaceted demands, (2) using psychological resources to moderate the demands of coaching, (3) the protective value of interpersonal networks, (4) the influence of organisational expectations and support, and (5) stigma impedes mental health and help-seeking. This study was submitted for publication in October 2025 and is currently under review at *Psychology of Sport and Exercise* (IF:3.3).

"*The players are the focus, it's never spoken about as coaches*": Perceived factors influencing the mental health of Australian elite-level coaches

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Abstract

Elite-level coaches operate within highly demanding, pressurised and unstable high-performance environments that can increase their risk of mental ill-health. This qualitative study investigated perceived factors influencing the mental health of Australian elite-level coaches using an ecological systems approach. Fourteen coaches (men=12, women=2) from a range of individual and team sports participated in a single semi-structured interview. Five overarching themes perceived to influence the mental health of Australian elite-level coaches were developed through reflexive thematic analysis, including: (1) encountering multifaceted demands, (2) using psychological resources to moderate the demands of coaching, (3) the protective value of interpersonal networks, (4) the influence of organisational expectations and support, and (5) stigma impedes mental health and help-seeking. Within an ecological systems framework, elite coaches primarily described encountering organisational stressors (e.g. job insecurity, poor work-life balance) that were managed by leveraging individual (e.g. psychological skills), interpersonal (e.g. robust social networks) and organisational (e.g. flourishing environments) supports. Coaches who were unable to employ effective coping strategies, engage with their support networks and lacked robust organisational supports (e.g. promoting a work-life balance) described feeling more vulnerable to mental ill-health. The findings suggest that elite sports organisations should offer coaches opportunities to develop psychological skills (e.g. self-compassion), spend adequate time with their support network, and work in psychologically safe environments that promote flourishing. Longitudinal research is needed to identify which factors exert the greatest influence upon the mental health of elite coaches, enabling sports organisations to direct their resources to support coaches in a timely and effective manner.

Keywords: coach wellbeing; high-performance sport; ecological systems; organisational stressors; mental health stigma

Introduction

A growing body of research indicates that elite-level coaches are susceptible to poor mental health, often experiencing mental ill-health at comparable or sometimes greater rates than elite athletes and the general community (Frost et al., 2024; Pilkington et al., 2022). While factors influencing the mental health of elite athletes have been widely studied (Kuettel & Larsen, 2020), risk and protective factors affecting elite coaches have received comparatively less attention. Research indicates that elite coaches are exposed to various performance (e.g. poor performance outcomes, athlete injuries), organisational (e.g. demanding workloads, job insecurity) and personal (e.g. relationship issues, social isolation) stressors that increase their risk of stress, reduced wellbeing, and symptoms of mental ill-health (Baldock et al., 2021; Kegelaers et al., 2021). Given elite coaches' roles are distinct from athletes, understanding factors that contribute to their mental health is pivotal to developing effective support.

In elite sport, researchers have adopted ecological systems frameworks to investigate multi-level factors influencing the mental health of athletes and coaches (Lundqvist & Andersson, 2021). Inspired by Brofenbrenner's (1992) ecological systems theory, these frameworks emphasise how individual, interpersonal (microsystem), organisational (exosystem) and societal (macrosystem) factors shape mental health outcomes in elite sport (Purcell et al., 2019). The framework highlights the importance of looking beyond the individual experiencing symptoms to the broader social and cultural contexts in which they work or operate. A recent scoping review applying an ecological systems framework identified a range of risk and protective factors impacting the mental health of elite coaches (Frost et al., 2024). Protective factors at the individual level include effective psychological skills (e.g. resilience) and coping strategies (e.g. support seeking) (Baldock et al., 2021), while increased stressors or high levels of emotional exhaustion pose key risks to mental

health. At the interpersonal level, robust social supports play a protective role (Pilkington et al., 2022), whereas a lack of social support or social isolation can increase risk of burnout (Olusoga & Kenttä, 2017). From an organisational perspective, manageable workloads and effective supports (e.g. resources, autonomy) positively influence mental health, while excessive workloads and persistent job security are associated with poor mental health (Bentzen et al., 2020; Bentzen et al., 2020). Lastly, stigma towards help-seeking and media scrutiny are risk factors at the societal level (Olusoga & Kenttä, 2017).

While several risk and protective factors influencing the mental health of elite coaches were identified in the review, less than a quarter of studies used qualitative research designs. Qualitative research is necessary for capturing elite coaches' individual experiences, nuanced perspectives and assigned meanings regarding mental health (Tamminen & Poucher, 2020). To date, qualitative studies have largely investigated experiences of mental wellbeing among coaches (Potts et al., 2023). For example, Baldock (2021) found that while professional soccer coaches largely appraised performance, organisational and personal stressors as threatening or harmful, coping effectiveness largely dictated wellbeing outcomes. Qualitative research has also shown that coaches who have left their role or been relieved of their duties reported reduced wellbeing, including negative affective states and low self-efficacy (Bentzen et al., 2020; Kenttä et al., 2016). Crucially, researchers have recently sought to better understand elite coaches' perceptions of mental wellbeing, including its meaning and defining attributes. Using a constructivist grounded theory approach, Simova et al. (2024) argue that mental wellbeing is shaped through the dynamic interplay between coaches' personal (e.g. authenticity, being present) and cultural values (e.g. promoting work-life balance, not viewing coaches as commodities). Additionally, while Didymus and Potts (2025) found that the meaning of psychological wellbeing differs for each individual coach, qualities

such as curiosity, a passion for coaching, psychological detachment and effective boundary management can support its development and maintenance in elite coaches.

While qualitative insights into the mental wellbeing of elite coaches are valuable, they currently remain limited by capturing a singular dimension of mental health. Keyes' (2002) dual-continua model of mental health asserts that mental health comprises the presence or absence of both mental wellbeing and mental ill-health (e.g. mental disorders). To date, qualitative research has largely overlooked the perceptions and experiences of mental ill-health among elite coaches. One exception involves Roberts et al. (2019), where a novel non-fiction narrative methodology presented a case study of an elite coach experiencing depression and alcohol dependency. Notably, findings highlighted stigma prevailing around mental health in elite coaching, as the head coach chose to conceal his mental health issues to protect his employment status.

Considering the extant discourse, the present study seeks to address current research gaps in two ways. Firstly, since no qualitative studies have explored coaches' perceptions of risk and protective factors using a socioecological framework, our study sought to better understand the mental health experiences of Australian elite coaches by examining their perceptions of multi-level influences. Second, rather than limiting this qualitative investigation to a single mental health continua (e.g. wellbeing) or disorder (e.g. depression), this study aimed to explore the concept of mental health more broadly, enabling coaches to articulate their mental health perceptions and experiences without confinement to one continua or condition. Accordingly, we aimed to answer the following research question: what factors are perceived to influence the mental health of Australian elite-level coaches within a socioecological system?

Methods

Epistemological framework and researcher positionality

This study adopted a constructivist philosophical position to understand factors influencing the mental health of Australian elite coaches through their unique and context-specific experiences (Guba & Lincoln, 1994). Grounded in a relativist ontology, this study assumes reality is shaped through the socially and individually constructed experiences of Australian coaches (Tamminen & Poucher, 2020). A subjectivist and transactional epistemology underpins our study, recognising that knowledge is co-constructed through the interdependent interactions between researchers and participants. This acknowledges the researcher's role in shaping findings based upon participants' interpretations and lived experiences. The researchers are a PhD student (JF), two professors with expertise in clinical psychology and elite sport (RP, SR), and a senior researcher with similar research expertise and applied experience as a sport psychologist (CW). The interviews and analysis were conducted by JF under supervision from the other authors. The lead author identifies as a white man with *learned* rather than *lived* experience regarding the mental health experiences of elite coaches.

Procedure and participants

Institutional ethical approval was given by the University of Melbourne's Human Ethics Research Committee (#25538). To address the challenges of accessing a small, hard-to-reach population, a convenience sampling strategy was adopted to recruit Australian elite coaches. Current and former coaches (≥ 18yrs) residing in Australia were invited to participate, to generate focused and nuanced insights from within Australia's distinctive sport's structures and governance. 'Elite-level' coaches were defined as individuals who currently or have previously managed or led athletes or teams at the Olympic, Paralympic, international (global competitions), national (national competitions) or professional level

(paid work) on a regular basis (working with elite athletes at least once per month) (Frost et al., 2024). This excluded coaches whose primary responsibility involves a specific form of physical, scientific, or medical support role (e.g., strength and conditioning coaches). Australian sporting organisations and coaching associations in the authors' professional networks were invited to promote the study, alongside posts on X and LinkedIn. Coaches registered their interest and written consent through an online survey which remained open from 16th October 2023 until 25th March 2024.

Fourteen semi-structured interviews were conducted online lasting between 30 and 62 minutes (M=40.4) (2 eligible participants failed to reply to the email invitation). Zoom was selected as the videoconferencing platform due its robust in-built security measures (e.g. end-to-end encryption, built-in recording capabilities) (Archibald et al., 2019). Information Power alongside feasibility informed the sample size (Malterud et al., 2016). Information power was lessened by the broad research question and lead author's emerging familiarity with qualitative methods. However, it was increased by i) limiting the sample to Australian-only coaches to ensure participants shared comparable experiences within Australia's unique sporting system, ii) employing the ecological systems model as a guiding theoretical framework, and iii) the interviewer's expertise in coach mental health which fostered rapport with participants, enriching the quality of dialogue. Following ongoing review and reflection, the 14 interviews were considered to provide sufficient power to answer our research question. The interview examined demands, risk, and protective factors framed through the ecological framework, and the relationship between mental health and coaching effectiveness (see Supplementary File 7). Participants were remunerated with AUD $100 for their involvement. The characteristics of the 14 coaches who participated are shown in Table 4. Pseudonyms are used to protect anonymity.

Table 4: Chapter 3 participant demographics and coaching information

Pseudonyms	Coach Gender	Age Range	Sport and Gender	Type of Coach	Nature of Work	Years in Elite Sport
Graham	Man	35-44	ARF[1]; Men	Development	Full-time	>10 years
Michael	Man	35-44	ARF; Men	Development	Full-time	4-9 years
Ethan	Man	35-44	Volleyball; Men	Head	Full-time	>10 years
Noah	Man	35-44	ARF; Men	Development	Full-time	4-9 years
Laura	Woman	45-54	Rowing; Both	Head	Part-time	4-9 years
Jacob	Man	45-54	ARF; Men	Assistant	Full-time	>10 years
Lucas	Man	25-34	Ice Hockey; Women	Head	Volunteer	4-9 years
Jake	Man	45-54	ARF; Men	Assistant	Full-time	>10 years
Harrison	Man	35-44	ARF; Men	Assistant	Full-time	>10 years
Xavier	Man	25-34	Rugby Union; Women	Assistant	Contract	1-3 years
Theo	Man	35-44	ARF; Men	Development	Full-time	>10 years
Antonio	Man	55+	ARF; Men	Development	Former	>10 years
Dianna	Woman	25-34	Rowing; Women	Development	Full-time	4-9 years
Simon	Man	25-34	ARF; Women	Assistant	Full-time	1-3 years

[1]ARF = Australian Rules Football

Data analysis

Interviews were initially transcribed verbatim using a paid external transcription service. For this study, reflexive thematic analysis (RTA) was employed as this method enables researchers to flexibly identify patterns of meaning with interpretive depth, while acknowledging and embracing the role of the researcher in the production of knowledge, drawing upon their subjective interpretation of themes shaped by their skills, resources and experiences (Braun & Clarke, 2021). RTA was guided and performed using Braun and Clarke's six-phase process (Braun & Clarke, 2022). JF initially immersed and familiarised himself with the data, where each transcript was printed and read several times, recording handwritten notes relevant to the research question. A structured iterative process was employed to document the evolution of all codes and themes on NVivo (version 14) throughout the analyses (e.g. iteration 1, iteration 2) (Byrne, 2022). Acknowledging that RTA is not a linear process, each iteration involved revisiting and refining codes and themes to best convey participants' socially constructed perceptions. All transcripts were imported into

NVivo, where codes were initially developed inductively through semantic and latent coding (iteration 1-3). To provide an initial structure in guiding the development of themes, codes were deductively organised into categories based upon the ecological framework (iteration 4-6). Codes were further classified into risk and protective factors groups within each socioecological level. Considering risk and protective factors rarely exist in isolated socioecological levels, themes were further refined by combining and evolving themes across levels to capture a more meaningful representation of the data (iteration 7-10). Acknowledging the ongoing nature of RTA which is never truly 'final', the themes and encapsulated codes presented in the results came from the 10th iteration of theme development (see Supplementary File 8 for a worked example of the iterative process).

Methodological rigour

To maintain rigour semi-structured interview questions remained open-ended and avoided leading language or jargon to maximise rapport with participants (Melissa & Lisa, 2019). Semi-structured interviews were chosen as they enabled participants to flexibly explore and discuss complex and emotionally sensitive topics around mental health that were personally meaningful (Kallio et al., 2016). Before interviews commenced, the script was reviewed and approved by RP, CW & SR to ensure theoretical consistency and appropriateness to the participant sample. Throughout the interview process JF documented reflections relating to interview delivery, participant experiences and preliminary interpretations of the data in a reflexive journal (Ely, 1991). The journal was reviewed during the data analysis phase, enabling the lead author to reflect upon individual biases and subjectivities documented during the data collection process. Prior to data analysis, participants were offered an opportunity to review their transcript to redact any sensitive information or clarify any points of discussion, where 3 participants opted to modify their transcript. Following this, the development and naming of themes was supported by a critical

friend (CW) through several thematic and analysis-focused meetings. Such discussions were conducted to probe and explore the interpretation and development of themes, rather than establish inter-rater reliability (Smith & McGannon, 2018).

Results and Discussion

Five overarching themes relating to socioecological factors influencing the mental health of Australian elite coaches were developed.

Encountering multifaceted demands

This theme represents the various demands that exert pressure on the mental health of Australian coaches. Through a socioecological lens, participants primarily described pressures stemming from organisational sources, but also societal. Notably, rather than one cause, Graham suggested the presence of multiple stressors can heighten a coach's risk of poor mental health:

> "In my experience, mental health, it's like a culmination of everything. It's not just one thing …It's your workload might be high. You're feeling like you're really busy, your family life's busy, and then you have the loss. If your cup's pretty close to the brim, and you get the loss… that's when it seems to overflow. It's not just you, it's the stress of everyone around you, and the pressure of being in the media and cameras in your face. That's when I feel like it [mental health] bends the most."

Accordingly, three demand specific sub-themes were generated: 'navigating a work-intensive lifestyle', 'managing job insecurity and unsustainability' and 'operating in the public eye'.

Navigating a work-intensive lifestyle

Most participants shared how the perceived demands of being an elite coach, particularly during the competitive season, often involves having to manage a work-intensive lifestyle, consisting of high workloads, extensive travel and intense schedules. Due to these organisational stressors, some participants described how their coaching responsibilities made

it difficult to live a balanced lifestyle, leading to an increased risk of experiencing mental health issues. For Noah:

> "There's no doubt that…I've experienced moments of poor mental health…purely based off I haven't been able to balance my life as well as I should, because of the demands of the job, and the role, and working high-performance."

Previous research emphasises how coaches face difficulties in maintaining a work-life balance, with qualitative findings highlighting this balance as a key protective factor against burnout (Olusoga & Kenttä, 2017). While the structural demands of the role present challenges in maintaining this balance, some coaches self-imposed workload expectations upon themselves *"to stay ahead of the [performance] curve*". These coaches reflected on how they were prepared to undertake a substantial workload to optimise performance outcomes, particularly in relation to ongoing athlete development and performance improvement. While mixed findings exist regarding the association between workload and mental health (Bentzen et al., 2016; Frost et al., 2025), Harrison emphasised that when workloads intensify and results decline the mental health of an elite coach may begin to suffer:

> "When you combine high workload with potentially results not going your way, that can be a bit of a slippery slope there, where the grind, fatigue, disappointment, frustration, blame, all those emotions can come into it... You can get into some dark places if you're not prepared."

Managing job insecurity and unsustainability

Numerous coaches felt the ongoing presence of job insecurity in elite coaching strained their mental health. The results-dependent nature of the role and "*knowing that you're basically one… poor season away*" from job loss was portrayed as an organisational stressor for participants, particularly for coaches employed full-time. For Michael, the

pressure of low job security loomed, contributing towards anxiety about the future and supporting dependents:

> "I've got bills, I've got a family to feed, a reputation to uphold. So how does that look if you get sacked in the industry? Are you kind of able to get back in because of that? If not, what am I going to do next to provide for the family? So yeah, I find anxiety around the future."

Current evidence indicates that job security operates as a notable risk factor for elite coaches, with research highlighting that job insecurity is associated with low mental wellbeing and symptoms of anxiety and depression (Bentzen et al., 2020; Frost et al., 2025). The perceived 'cut-throat' nature of elite coaching, combined with the provision of short-term contracts (e.g. <6 months) and a poor life balance, left some coaches expressing concern about the sustainability of the vocation. The demanding and intense nature of coaching raised concerns around the "*shelf-life of a coach*". Michael indicated having sought alternative skills and career paths to ease feelings of entrapment and avoid becoming "*completely burnt out with nothing to then go to*".

Operating in the public eye

Those coaches in more visible, high-profile sports highlighted that operating in the public eye was a persistent organisational and societal stressor. According to Jacob, what sets elite coaching apart from leadership roles outside of sport, is that "*the nature of our beast is it's so public and most people have an opinion*". Both traditional and social media make it easy for the public to voice performance criticisms, which participants described negatively influencing their self-esteem and confidence. Jacob emphasised the importance of deploying individual coping strategies to manage public scrutiny, including harnessing resilience and making efforts to distance himself from the media, to ultimately protect his mental health:

> "You have to shield yourself from that (the media) and have a thick skin too, because inevitably it still gets back. You still hear it. And if you've got high standards for yourself, then you can put it on yourself too, that you're not good enough."

Public visibility and attention are often an unavoidable reality for some coaches due to the high-profile nature of various sports. Research suggests, however, that while media attention may operate as a general stressor for coaches, it is the emergence of negative media coverage that may trigger and induce stress among elite coaches (Olusoga & Kenttä, 2017).

Using individual resources to moderate the demands of coaching

This theme reflects the individual-level strategies coaches employed to manage the demands and pressures of elite coaching. Two overarching themes were developed: 'leveraging gratitude and psychological strengths' and 'employing behavioural coping strategies'.

Leveraging gratitude and psychological strategies

All coaches outlined using psychological skills to protect their mental health, including staying organised, emotion regulation, and channelling passion and gratitude for their role. Laura noted that being organised helped her mental health by fostering a sense of structure and control:

> "It's just constantly keeping yourself organised. When you're not organised, that's when things start to fall down. I keep myself well organised to keep my well-being okay."

Participants explained that the work-intensive nature of elite coaching, however, can make it challenging to stay organised and in control across the competitive season. Focusing on controllable factors and processes can prevent performance outcomes from dominating the emotions and identity of an elite coach. Dianna noted that recognising and embracing imperfections and setbacks can prevent rumination, empowering elite coaches to learn and navigate future challenges more effectively:

> You don't always manage situations as well as you could have. So as long as I can feel like I've learned from it and feel like the next time I (can) confront that situation."

Previous research has identified several individual-level psychological skills that elite coaches utilise to protect their mental health, including self-talk, imagery, relaxation and goal setting (Thelwell et al., 2008). The development of such skills can nurture dynamic traits such as hardiness and resilience, which have been found to protect coaches against stress, burnout and mental ill-health (Georgios & Nikolaos, 2012; Kegelaers et al., 2021).

Relatedly, several coaches shared that leveraging gratitude for one's role helped to put the demands and pressures they encounter into perspective. Xavier acknowledged the privileged position elite coaches find themselves in helped to reposition and reframe the stressors they face:

> "Understanding that it's not always going to be sunshine and roses, and there's going to be heavy demands, and you are in a position that so many other people would love to have."

A handful of participants also elaborated that drawing upon one's passion and 'love' for coaching helped to cope with the demands and pressures of the role. Despite the difficulties of maintaining a healthy life balance, coaches who self-described being deeply passionate about coaching may be less affected by the sacrifices required. Simon explained:

> "If I was doing a job that I didn't love and wasn't my passion, I would say no [the job is not sustainable] ... Because the time I spend doing it is probably not balanced, but often I don't really feel like I'm working."

Prior research indicates that coaches with higher levels of autonomous motivation, including intrinsic and identified regulations, may have greater protection against burnout compared to those with controlled motivation, such as introjected and external regulations (Bentzen et al., 2016; Bentzen et al., 2016). Accordingly, motivation for coaching can play a role in harnessing passion and gratitude, and subsequently mental health outcomes (Abrahamsen &

Chroni, 2021).

Employing behavioural coping strategies

Most coaches viewed engaging in behavioural coping strategies as an effective measure to protect their mental health. This individual-level approach involved detaching from coaching (e.g. spending time with family, having time to oneself), prioritising one's physical health (e.g. exercise, sleep) and engaging in hobbies/activities. Disconnecting from the demanding nature of the profession gave coaches the opportunity to adopt a non-coaching identity and engage in passions outside of their vocation. Considering coaches at the elite-level *"assign so much of their self-worth and their identity on their sport and their performance*", and that dominant coaching identities have been found to increase coaches' risk of burnout (Lundkvist et al., 2012), spending time away from coaching can play an important role in protecting a coach's mental health. For Jake, there was a purposeful intention to set aside time away from coaching to ensure he was not constantly engulfed by the role's demands and responsibilities:

> "I don't formally meditate, but I am quite aware of what time in the surf, or time in the gym, or time running, I'm acutely aware about what I'm actually trying to achieve when I'm doing that. It is the time that mentally I'm putting some distance between work."

Many coaches described how engaging in exercise provided the dual benefit of disconnecting from one's role and improving both physical and mental health outcomes. Concerningly, Noah reported how time constraints of the role make it challenging for coaches to prioritise exercise:

> "One thing that I find that helps my mental health is my ability to exercise. And obviously I know there's research out there, that exercise helps that [mental health], but that's probably the first thing that goes because of time."

While previous qualitative research has reported elite coaches engaging in exercise to support their mental wellbeing (Kenttä et al., 2020), and that coaches remain cognisant of the protective mental health benefits of physical activity (Frost et al., In Press), the organisational demands of the role (e.g. workload, schedule) may ultimately govern a coach's ability to partake in exercise.

The protective value of interpersonal networks

This theme explores influences at the interpersonal level of the socioecological framework, detailing how coaches emphasised relying on their support network to protect their mental health. This is consistent with previous research, which has found that greater satisfaction with social support to be negatively associated with symptoms of mental ill-health among elite coaches (Pilkington et al., 2022). In some instances, however, coaches highlighted that the demands of their position restricted their ability to connect with their support network, increasing their risk of social isolation. Two overarching themes regarding support systems were generated: 'colleagues offer psychosocial support' and 'family and friends support the coaching lifestyle'.

Colleagues offer psychosocial support

Participants perceived various members of the sports community to support coach mental health, including athletes, mentors, support staff and fellow coaches. Several coaches spoke about turning to these individuals to discuss the demands of coaching, seek feedback, confide in them, and have mental health check-ins. Most participants expressed that mentors and fellow coaches played a crucial role in providing support, as their shared experiences fostered a greater sense of relatability and connection. Lucas explained:

> "I had a really good support network, mentors, people who I had really good relationships with, who had great experience in the roles that I've done. So I was fortunate in that regard."

While the presence of support networks in elite sports environments have previously been reported to have positive influences for managing wellbeing and stress among coaches (e.g. receiving advice) (Hill et al., 2021; Knights & Ruddock-Hudson, 2016), a few participants shared that their willingness to discuss issues, particularly around mental health, depended upon the strength of the relationship with an individual, rather than their position or role (e.g. senior coach). Where a strong level of trust was present with a coach or mentor, participants expressed feeling more comfortable being vulnerable and discussing mental health challenges openly. However, workload and time-related pressures experienced by other coaches, particularly the head or lead coach, was conveyed by participants to limit the capacity to engage in meaningful conversations. Michael mentioned that the head coach is "*under more stress than anyone in the organisation, so their capacity to be able to support (and) reiterate those messages [around mental health] is difficult*." Organisational stressors may, in turn, restrict the extent to which fellow coaches can offer mental health support to other coaches.

Family and friends support the coaching lifestyle

Most coaches highlighted friends and family playing key roles in supporting their mental health. Participants viewed partners, parents, friends and other family members to help their mental health by supporting the perceived demands of their lifestyles (e.g. supervising children), detaching from coaching (e.g. socialising with friends) and debriefing about work. Coaches recognised that having robust support networks helped to create safe spaces to disclose mental health issues. Xavier shared that he didn't feel the need to seek professional support for his mental health, as he was comfortable discussing work-related challenges with family members:

> "There's never felt the need to seek that out [mental health support], but I think that's because I've got quite a strong support network at home. So I'm happy to lean more on that network."

Research has widely reported how informal social networks play a critical role in supporting the mental health of elite coaches, providing opportunities to discuss role pressures and handle challenges associated with irregular work hours and flexible schedules (Didymus, 2017; Hill et al., 2021; Knights & Ruddock-Hudson, 2016). For Michael, family support (i.e. partner, parents, siblings) served as his primary form of mental health support, as these individuals helped to "*lighten the load*" and "*redirect…(his) attention towards more positive processes*" while coaching. Notably, while informal social supports play an important role in supporting coaches during their tenure, evidence indicates that family and friends can also help to support coaches mental health during periods of transition, including recovering from burnout and following contract termination (Kenttä et al., 2016; Olusoga & Kenttä, 2017).

Despite the importance of receiving support from family and friends, some participants reflected on how the organisational demands of the role isolated coaches' from connecting with their informal support network. Regular travel and a lack of schedule flexibility was perceived to strain coaches' relationships with family members and close friends during periods of competition. A few participants described the guilt and isolation of time away from family made it feel like a 'lonely job'. Jake, who relocated away from his family to coach shared:

> "The situation I find myself in, which is not unique to me, but I don't have… Anyone you talk to, anyone that you actually socialise with. I find that quite challenging, to be honest."

Despite these challenges, a few participants expressed the importance of making time to socially connect with people outside of elite sport. Laura emphasised the need to socialise to help gain different perspectives on tasks and challenges and maintain an identity beyond coaching:

> "It's super important for me to have my friends outside of rowing… If I didn't, I think I would be in trouble, because they give me different perspective…I'm not a rowing coach when I speak with them, I'm just a normal person."

Accordingly, maintaining connection with friends remains a key source of support for coaches, enabling coaches to disconnect and detach from their coaching role. This is supported by research, where Norris et al. (2020) found that coaches across various competitive tiers viewed friends as the most important avenue of support (e.g. by gaining distance from the profession).

The influence of organisational expectations and support

Sports organisations played a role in reducing or exacerbating the demands and pressures of coaching. Harrison explained that the cultural and emotional tones set by organisations can "*make a bad situation better or worse."* Two subthemes reflecting influences at the organisational level were developed: 'organisational leaders shape culture and expectations' and 'organisations play a role in supporting and caring for their coaches'.

Organisational leaders shape culture and expectations

Most coaches spoke about the standards and expectations set by those in organisational leadership roles playing a crucial role in shaping their mental health. Participants emphasised how individuals in management positions set expectations around job requirements (e.g. workload, being present in the office at certain times), role structure (e.g. autonomy and flexibility) and performance targets. Jake expressed that some organisations expect that 'the work will get done' despite the potential repercussions to a coach's mental health:

> "I think there's just an understanding that it'll magically get done [the work], and what the …flow on effect to that coach or even to that staff member is not often factored

> in…It's a very much just get on with it type of industry. If you don't get on with it, someone else will."

Resultantly, some coaches felt pressured to accept and manage organisationally driven workloads in fear that asking for support might jeopardise their coaching position. In some instances, these workload-based expectations contributed towards fostering high-performance cultures that normalise the subordination of health to their coaching responsibilities. A handful of participants suggested that some organisational leaders may not consider psychological recovery as a priority, instead focusing on continuously identifying ways to maximise performance. Sports organisations can hold considerable influence in dictating the balance between workload and recovery, with Graham stressing that "*if the manager wants to get every single drop out of you, they can if they want*." Michael similarly shared that at his organisation there is "*certainly [a] culture of not taking a day off and not missing anything*", later reflecting:

> "I remember taking one (a day) off at a previous club and I remember the head coach saying to me, "Well, did you have a sniffle, did you?" And it's just an undertone of sort of like, "We're pretty tough here"."

Consequently, where organisational leaders set expectations that engender high-performance cultures emphasising coaching duties and responsibilities above mental health outcomes and self-care practices, coaches may face increased risk of over-working and insufficient recovery (Lundkvist et al., 2016). While some research indicates that increased workloads and limited recovery may heighten the risk of burnout (Bentzen et al., 2016), the pressures and instability within high-performance environments (e.g. over-committing or over-working due to the volatile nature of the industry, the pressure from leaders to meet podium goals) have also been identified as the greatest barrier to elite coaches seeking mental health support (Frost et al., 2025).

Contrastingly, when sports organisations offer greater autonomy and flexibility for coaches in their role, participants perceived experiencing a healthier work-life balance and felt they had opportunities to make mistakes without fear of repercussions. Jacob indicated:

> "It's giving your time back to your family when you're not needed at the club. As I've said, I'm starting a bit later, finishing early when I need to. Making sure that you have autonomy in what you do … and the ability to do your role and make mistakes is really important."

While perceived autonomy has been found to be associated with higher levels of mental wellbeing and reduced burnout among elite coaches (Bentzen et al., 2016; Hassmén et al., 2019), a few participants viewed looking after and prioritising one's mental health may depend upon performance success. Theo noted that his flexibility as a development coach was largely contingent upon performance outcomes:

> "I would say my specific organisation, sometimes they're really flexible. And if you need to be somewhere for your family, sometimes it's great and other times they're not. And that's really dependent on performance. Are you winning or are you losing? If you're winning, you can ask for anything. If you're losing, you feel like you can't."

Studies have previously reported how the pressure and expectations set by organisations to meet performance targets (i.e. governing bodies) may operate as a persistent stressor for elite coaches, especially when funding is connected to these targets (Didymus, 2017; Olusoga et al., 2009). Organisations should therefore be cognisant of the standards and expectations they impose upon elite coaches, particularly in the context of their resource availability and workload capacity.

Organisations play a role in supporting and caring for their coaches

Most participants articulated that feeling supported by one's organisation contributed positively towards their mental health. This was reflected by promoting a work-life balance (e.g. time with family), feeling appreciated (e.g. remuneration), cultivating high-performance

environments that promote flourishing, and the prioritisation of mental health supports for athletes. Where sports organisations encouraged elite coaches to maintain a life outside of coaching, participants reported feeling a greater sense of organisational support. For Graham, his sports organisation played a key role in supporting a healthy work-life balance:

> "The workload was big, but it was never too much that it would totally consume you, and you'd have no other time for anything else. I think the work-life balance one is the biggest thing the industry can or a club can do."

A few coaches also considered being remunerated appropriately and receiving acknowledgement and encouragement for their efforts to positively influence their mental health, as well as their willingness to invest more time into their role. Xavier described:

> "When you gain that recognition, and when you gain that backing and that support from the club, it is huge to your mental health. It gives you a real willingness… to make sure you're putting together the best programs, and putting together solid training sessions."

Relatedly, a few participants expressed improved mental health when organisations cultivated environments that enabled coaches to flourish. Participants noted that environments fostering confidence, relaxation and reduced anxiety around performance pressures enabled coaches to thrive. Environments protecting coaches from psychological harm were also considered important. Participants suggested that environments where coaches were allowed to be vulnerable and make mistakes helped reduce psychological strain. A handful of participants identified the concept of psychological safety, noting how such environments enabled elite coaches to flourish. Graham explained:

> "When you are in the heat of it and you're presenting or you are running meetings, you're very clear, your brain's free. You feel like it doesn't matter what you say because you've prepared for it. You're in an environment that's supportive. You know there's no mistakes."

Such remarks demonstrate the critical role organisations play in acknowledging and appreciating the pressures and mental health challenges coaches experience. Where coaches feel dissatisfied with or unsupported from organisational leaders (e.g. in conflict or minimal guidance/resources), coaches may face increased risk of burnout (Bentzen et al., 2014; Gencay & Gencay, 2011).

However, while coaches described organisations offering support, a handful of participants emphasised that athlete mental health was usually prioritised over coaches. Coaches felt their duty was to serve athletes, often feeling as if their mental health was overlooked or considered as an afterthought. Simon highlighted:

> "We've spent so much time talking about the wellbeing of players, to the nth degree. Is there anything affecting them? How might this decision affect them? How do we improve the vibe and energy of this individual player verse the whole group? Players do wellness every single day. And every single thing is flagged and followed up on. But it's always like the players are the focus, it's never spoken about as coaches."

The focus on athletes led some coaches feeling undervalued, unsupported and downplayed by their organisations. While participants indicated that professional development opportunities might be available for coaches, Harrison explained that mental health resources are prioritised for athletes, potentially due to an underappreciation of coaches' contributions:

> "We [coaches] get pretty good PD [professional development] side of things, but…in terms of mental health resources, I feel like we're just slowly playing catch up [with athletes] in that. I think it comes back to the players. They're obviously the big ticket… I think in the past coaches haven't been respected or…our job as a profession isn't seen or hasn't been taken as seriously."

While athletes garner the lion share of mental health support from sports organisations given their central role in performance, organisations should remain cognisant of providing mental health support and services for their leaders. This is of relevance as coaches operate in the same elite sports environments as athletes, yet arguably bear a greater level of responsibility

for performance outcomes (Frost et al., 2024). Considering a lack of access to mental health support has been identified as a barrier for coaches seeking mental health support, and one with high feasibility to address (e.g. mental health services only for athletes) (Frost et al., 2025), organisations can play an active role in promoting and facilitating help-seeking for coaches.

Stigma impedes mental health and help-seeking

Most participants discussed how mental health perceptions shaped outcomes and help-seeking among coaches. Coaches described that such attitudes and outcomes were shaped by influences across organisational and societal levels. Participants shared that '*struggling mentally*' or '*putting one's hand up for help*' could be perceived as a sign of weakness. Lucas explained:

> "I think there's a lot of maybe coaches (that) don't want to admit that they're struggling because that's... I guess, in the traditional sense, it's a sign of weakness. Personally, for me, I think I would have issues [talking about mental health struggles]."

Accordingly, three subthemes were generated: 'mental health struggles are masked to avoid repercussions', 'masculine norms contribute to stigma' and 'attitudes towards mental health have improved over time'.

Mental health struggles are masked to avoid repercussions

Some participants expressed feeling reluctant to discuss mental health issues if they felt it would threaten their job security or future career prospects. Given the lack of job security and sustainability in elite coaching, protecting one's employment opportunities may take precedence over seeking mental health support in stigmatising environments. As articulated by Xavier:

> "There's a lot of awareness around mental health, but I think it [stigma] would absolutely… have an influence over what I'd be willing to share if it was to affect future employment, or future consideration for positions."

Previous research has reported how elite coaches may attempt to conceal poor mental health to preserve employment opportunities (Roberts et al., 2019), suggesting that notable organisational stressors like job insecurity may fuel mental health stigma in coaching. The interplay between job stability and mental health stigma may extend to help-seeking, where concerns around job insecurity can act as a barrier for elite coaches seeking mental health support (Frost et al., 2025).

Some participants feared discussing mental health challenges or help-seeking with athletes, given the perceived expectation that coaches should act as role models and visible vulnerability may undermine this. To preserve perceived coaching quality, some participants described attempting hiding or masking mental health issues from athletes. Showing mental health difficulties risked poor message delivery or could cause athletes to focus on their coach's wellbeing, distracting them from their own performance. In Laura's case:

> "I wouldn't discuss it [mental health] with athletes at all. I think as a coach, you need to be holding yourself at a certain level, and you're not meant to have emotion. You allow the athletes to have that, and you help them to manage it. I don't think you can show it. It is a sign of weakness I would think, in the way I deliver my coaching."

Elite coaches have previously described wanting to conceal mental health challenges and act as 'Superman' to ensure other members of a coach's interpersonal network, including those in both sports (e.g. athletes, coaches) and non-sports settings (e.g. family members), are unaffected by such issues (Olusoga & Kenttä, 2017). Stoic expectations of being a coach may further perpetuate stigma in relation to help-seeking, as coaches who associate help-seeking with 'being soft', weak or ineffective may be less likely to seek mental health support (Frost et al., 2025).

Masculine norms contribute to stigma

Related to the above but with specific meaning placed around gender, several coaches linked masculine norms and mental health stigma. These participants suggested that showing vulnerability might conflict with the organisational and societal values and identity of being an elite coach. A development coach indicated that in high-performance sport '*macho*' cultures that promote 'unhealthy' mental toughness may discourage transparent discussions around mental health. As such, those with mental health struggles may feel less comfortable in speaking openly with their colleagues or seeking professional support. In Theo's experience:

> "There's still an aspect of, in a male-dominated sport, of people not admitting they're finding things really hard… I'm sure that there's things under the surface that you're not seeing."

Hypermasculine cultures have previously been identified as a societal risk factor for low wellbeing among elite coaches (Frost et al., 2024). Environments shaped by masculine ideals of toughness, stoicism and self-reliance may foster perceptions of vulnerability as a weakness in elite sport, potentially encouraging the concealment of mental health issues and discouraging help-seeking (Ojio et al., 2025). This may be especially relevant for women coaches, who often face additional pressures to prove their competence in settings dominated by men, limiting their willingness to show vulnerability to preserve their perceived proficiency (Kenttä et al., 2020).

Attitudes towards mental health have improved over time

Lastly, coaches reported how stigma towards mental health has reduced over time. A few participants attributed this to shifts in societal attitudes, including a growing parity between physical and mental health. Graham expressed that in his sport "*I think it's getting better every year [conversations around mental health]. Yeah, I have no issue talking about*

mental health, discussing it with players, showing vulnerability". Participants also explained that the growing openness of elite coaches sharing their vulnerabilities and mental health challenges publicly has reduced stigma and shifted perceptions around help-seeking. Similarly, coaches emphasised that positive perceptions of mental health have advanced considerably, as it is increasingly viewed as a resource to improve performance. Graham later noted that "*the more open you are in environments, show your vulnerability, and show you want to be, the better you connect as a group, and the better connection you have. It seems like it translates to great performances*". Antonio highlighted that having mental health services and pathways readily available for elite coaches might help to improve both mental health and performance outcomes:

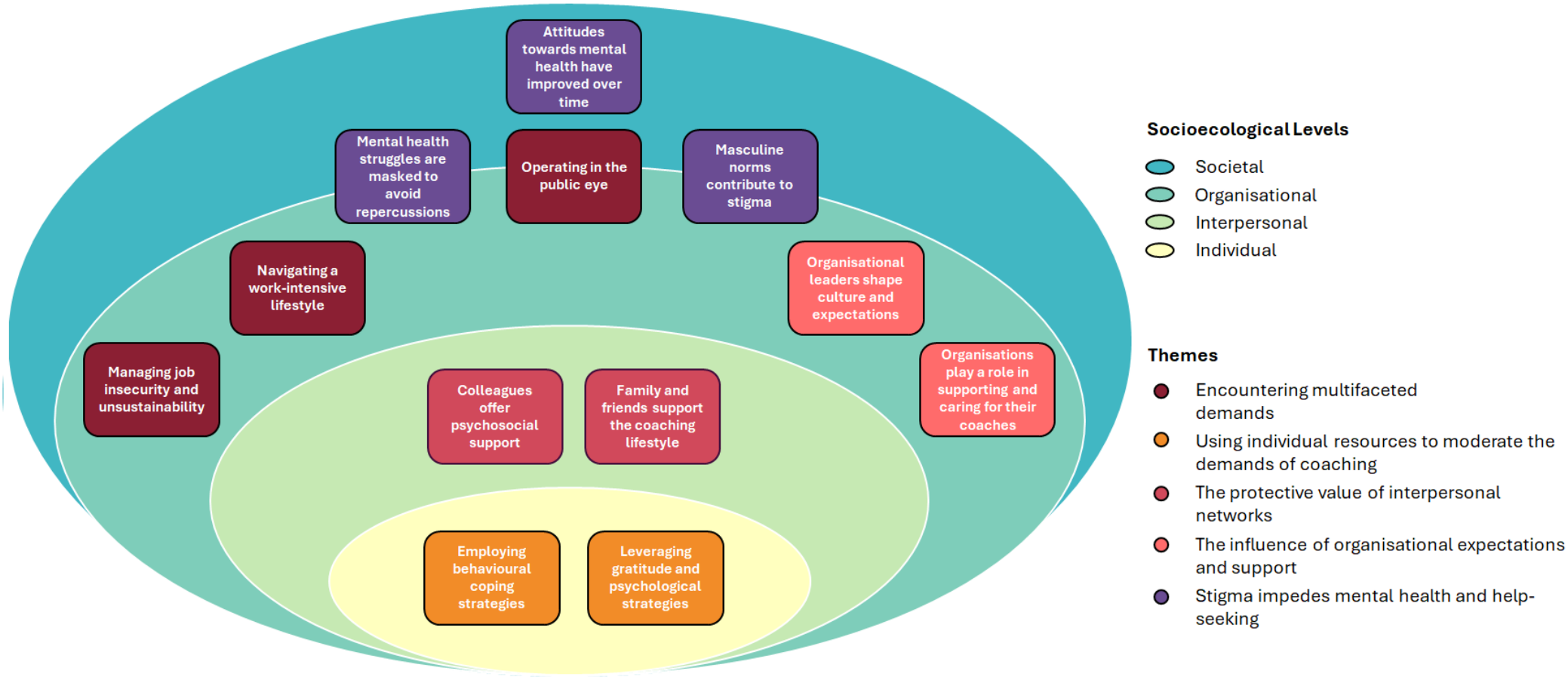
> "I remember when I first started playing football in elite sport, it was almost taboo to bring anything up like that because it was seen as a real, "Gee whiz, there's something wrong with you." Now it's almost been promoted … an aid for another 1%."

While mental health stigma remains a pressing issue among elite coaches, recent evidence suggests that lower levels of stigma may be present (Frost et al., In Press). Improving societal attitudes towards mental health and raising mental health literacy in elite coaches may play key roles in reducing stigma towards mental health issues and help-seeking (Breslin et al., 2022).

Summary and Applied Implications

This study outlines perceived factors affecting the mental health of elite coaches across individual, interpersonal, organisational and societal levels. The importance of considering and ascertaining multi-system level factors is novel and provides critical insights for improving coach mental health. Recognising that factors rarely operate in isolated socioecological levels, Figure 5 illustrates the perceived positioning of each subtheme within the ecological framework.

Figure 5: An ecological systems map incorporating the developed themes and sub-themes



While multifaceted organisational and societal stressors were reported (e.g. job insecurity, media scrutiny), organisational factors have been argued as posing greater risks to elite coaches' mental health due to their systemic and structural nature (Kegelaers et al., 2021). The current findings and extant research emphasise the need for sports organisations to identify methods to reduce the burden of organisational stressors, lest they potentially breach duty of care obligations to coach mental wellbeing. For instance, organisations may offer greater support to coaches managing media pressures, potentially reviewing the timing of press conferences and equipping coaches with skills to engage with the media (Faustin et al., 2022). Organisations should also be mindful of the standards and expectations they impose upon coaches, particularly in the context of their resource availability and workload capacity. Organisations that encourage a healthy work-life balance and offer elite coaches flexibility and autonomy in their role may experience improved mental health. Furthermore, organisations should also make efforts to offer coaches with opportunities to take structured time off, enabling coaches to physically and psychologically recover from the organisational demands of the vocation. Coaches should receive these supports irrespective of performance outcomes, as tethering support to success may drive coaches to overwork, increasing their risk of burnout while reducing job sustainability.

At the individual level, participants adopted various psychological and behavioural strategies to preserve their mental health. Consistent with previous research, several problem-focused (e.g. staying organised, detaching from coaching) and emotion-focused (e.g. emotion regulation, expressing gratitude) coping strategies were deployed by coaches in the present study (Didymus, 2017; Olusoga et al., 2010). Given coaches may encounter in-competition periods where extensive workloads and travel commitments may limit the use of problem-focused approaches (e.g. regular exercise), it is critical that coaches possess effective emotion-focused strategies. To navigate structurally embedded organisational stressors

beyond coaches direct control, organisations might explore promising evidence-based interventions to nurture effective emotion-focused coping strategies in coaches (e.g. mindfulness, self-compassion) (Hägglund et al., 2025; Longshore & Sachs, 2015). In addition, since coaches reported heavily relying on their interpersonal network for mental health support, organisations should make efforts to preserve and leverage such networks when coaches face increased pressure or travel commitments.

Organisations play a critical role in cultivating environments that promote flourishing and reduce psychological harm. In elite sport, psychologically safe environments enable individuals to take interpersonal risks without fear of repercussions (Jowett et al., 2023), working to destigmatise mental ill-health, encourage help-seeking and promote flourishing (Walton et al., 2024). Without the freedom to make mistakes, coaches may also be restricted from developing coaching skills and reaching their full performance potential. To support coaches, organisations should foster psychologically safe environments that destigmatise mental ill-health and promote help-seeking without concerns over job security. Mental health literacy interventions developed specifically for the demands faced by elite coaches could be delivered through coach education programs to reduce mental health stigma and build 'mental fitness'. Mental health pathways available to athletes should also be extended to coaches for prevention, early intervention and performance purposes, promoting such services through targeted messaging to raise awareness.

Limitations and Future Directions

This sample comprised of elite coaches, most of whom who were men (86%) and involved with Australian Rules Football (64%). Further research might examine risk and protective factors specific to coach type (e.g. head, development coach), sporting code, gender and employment (e.g. full-time, volunteer), shedding light on the distinct demands, challenges and experiences encountered by various groups. The cross-sectional nature of the

interviews may have compromised the recollection of information and dynamic experiences of participants over time. Interviews across multiple time points could enhance understanding of risk and protective factors across various stages over the competitive cycle (e.g. competitive season, off-season), and help organisations focus their attention and resources towards key factors at the most strategic and effective times. Last, self-selection bias may have been present. While efforts were made to recognise potential blind spots in the analyses (e.g. documentation in the reflexive journal), participants may have had greater interest in sharing their mental health experiences.

Conclusion

Australian elite-level coaches described various stressors, primarily from organisational sources, that they perceive as exerting pressure upon their mental health. To manage these stressors, coaches described leveraging individual, interpersonal, and organisational supports. Coaches who employ ineffective coping strategies, experience social isolation or operate in stigmatising environments with limited organisational supports, may face increased risk of poor mental health. As such, organisations should be aware of the pressures they impose on coaches, by working to re-shape organisational culture, helping coaches to develop relevant skills, and creating clear and accessible mental health pathways to manage the demands of the role.

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Chapter Summary

With scant qualitative research investigating the mental health of elite-level coaches, *Chapter 3* highlights a range of factors perceived to influence Australian elite coaches' mental health. As the first study to explore risk and protective among elite-level coaches using a socio-ecological framework, this study contributes novel insights to the existing elite coach mental health discourse by exploring multi-level systems influences. Findings indicated that elite coaches encounter a range of stressors, particular those of an organisational nature (e.g. job security, operating in the public eye). Elite coaches described leveraging individual, interpersonal and organisational resources to protect their mental health. Where these resources were limited or ineffective, elite coaches were at greater risk of experiencing poor mental health. Building upon these findings, *Chapter 4* unpacks whether specific organisational risk factors are associated with symptoms of mental ill-health among elite coaches. Such insights can help to identify which factors bear the greatest level of influence upon the mental health of elite coaches.

Chapter 4: Organisational risk factors for depression, anxiety, and alcohol use among elite-level coaches

Chapter Overview

Chapter 4 assessed the extent to which elite-level coaches experience mental health symptoms, and which factors are potentially associated with such symptoms. Through a cross-sectional online survey, rates of mental health symptoms were examined using measures from the Sport Mental Health Assessment Tool 1 (SMHAT-1). Specifically, this study explored rates of depressive symptoms, anxiety symptoms, adverse alcohol use and suicidal ideation (a first of its kind) among elite coaches, investigating their potential association with job security, job sustainability, remuneration and workload. Gathering insights from the largest sample of elite coaches (n=158) examining mental health symptoms to date, findings indicated that elite coaches are susceptible to experiences of mental ill-health and may be particularly prone to risky alcohol consumption. By performing multiple linear regression analyses, job security was identified as the only organisational risk factor associated with symptoms of depression and anxiety among elite-level coaches. This study was published with the *International Journal of Sport and Exercise Psychology* (IF:2.3) in September 2025.

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RESEARCH ARTICLE

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Organisational risk factors for depression, anxiety, and alcohol use among elite-level coaches: a cross-sectional study

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ABSTRACT

Elite-level coaches encounter organisational stressors that may compromise their mental health and wellbeing. This study explored rates of mental health symptoms among elite-level coaches and examined their association with organisational risk factors, including job security, remuneration, workload and job sustainability. An anonymous online survey was disseminated to elite-level coaches worldwide. Symptoms of anxiety, depression, risky alcohol consumption and suicidal ideation were evaluated with validated scales used in the Sport Mental Health Assessment Tool 1 (SMHAT-1). Of the 158 elite coaches who responded to the survey invitation (mean age = 44.4 years, 74.1% men), 12.7% reported symptoms of anxiety and 13.4% reported symptoms of depression that met validated cut-offs. Risky alcohol consumption was reported by 31.6% of the sample, while 4.4% of participants reported suicidal ideation. Symptoms of anxiety and depression were associated with low job security, operating as a head/lead coach, parenting children and reporting a mental health diagnosis. No significant associations were identified for risky alcohol consumption. To protect the mental health of elite-level coaches, sporting organisations should consider the influence of job security and its management in the context of coach wellbeing. Considering the insecure nature of elite coaching, organisations should seek ways to reduce the psychological impact of job security on coaches, such as open dialogue about the transactional nature of coaching, and resources to manage mental health and resilience. To understand how symptoms of mental ill-health change over time, longitudinal research is needed to identify stressors and stages that increase elite coaches' susceptibility to mental ill-health.

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An emerging literature has highlighted the mental health needs of elite-level coaches (Frost et al., 2024; Kenttä et al., 2023; Leprince et al., 2024). Elite coaches face a variety of performance (e.g., poor performances, team selection), organisational (e.g., lack of resources, job insecurity) and personal stressors (e.g., social isolation, relationship issues) that may influence their mental health (Baldock et al., 2021; Kegelaers et al., 2021; Olusoga et al., 2009). Considering these demands, it is critical to understand the nature and extent to which elite coaches experience symptoms of mental ill-health. By identifying potential risk factors, targeted prevention and early intervention strategies can be implemented by sporting organisations to support the mental health of elite-level coaches (Frost et al., 2023).

Over the past two decades, mental health research in elite sport has primarily centred around athletes (Gouttebarge et al., 2019; Poucher et al., 2021; Rice et al., 2016). By comparison, considerably less is known about the mental health of elite coaches, with current research largely focusing on understanding themes associated with burnout and well-being (Frost et al., 2024). The small body of research examining mental health symptoms among elite coaches has identified cross-sectional rates of depression and anxiety ranging from 4.7% to 43.6% (Bilgoe et al., 2024; Kegelaers et al., 2021; Kim et al., 2020; Pilkington et al., 2022) and risky alcohol consumption ranging from 19% to 53.1% (Bilgoe et al., 2024; Kegelaers et al., 2021; Pilkington et al., 2022). When compared with elite athletes, Pilkington et al. (2022) found that elite coaches may experience similar rates of anxiety and depressive symptoms, psychological distress and sleep disturbance, but elevated levels of alcohol consumption and misuse. Limiting meaningful interpretation, current evidence predominantly comes from studies with small sample sizes, and the lack of consistent measures of mental health symptoms further hampers the generalisability and reliability of the extant evidence base (Frost et al., 2024).

Beyond prevalence rates, there is a need for research to identify factors that influence the mental health of elite-level coaches. A recent review identified a number of risk and protective factors using an ecological systems approach (Frost et al., 2024). These include influences at the individual (e.g., age, gender), interpersonal (e.g., social support), organisational (e.g., workload, job security) and societal (e.g., stigma towards help-seeking, media scrutiny) levels. To date, evidence suggests that organisational stressors may have a stronger association with symptoms of mental ill-health among elite coaches than performance or personal stressors, potentially due to their structural and systemic qualities (Kegelaers et al., 2021). For instance, considering the inherent ties of elite coaching with delivering performance outcomes, job security can operate as a persistent stressor during periods when athletes or teams are underperforming (Olusoga et al., 2009; Rhind et al., 2013). In striving to achieve a competitive edge, elite coaches may also endure high workloads that are either self-imposed or organisationally driven, increasing one's risk of burnout and posing threats to the sustainability of the role (Bentzen et al., 2016; Kenttä et al., 2020). Therefore, better understanding the influence of specific organisational stressors associated with elite coaching (e.g., job insecurity, remuneration, workload, job sustainability) is necessary for assisting sporting organisations to develop tailored strategies to best respond to the mental health needs of elite coaches.

This exploratory study aimed to (a) identify rates of mental health symptoms (i.e., anxiety, depression, risky alcohol consumption and suicidal ideation) among elite coaches, and (b) investigate the influence of potential personal (e.g., age, relationship

and family status) and organisational risk factors (job security, remuneration, workload and sustainability) towards these symptoms. Guided by the extant literature, it was hypothesised that coaches who reported feeling insecure in their coaching roles, were dissatisfied with their remuneration, uncomfortable with their current workload or unable to sustain their workload over time, would be more likely to report symptoms of mental ill-health.

Methods

Participants

Elite-level coaches from around the world were invited to participate in an anonymous online survey regarding mental health. An elite coach was defined as an individual who manages or leads athletes or teams at the Olympic, Paralympic, international (global competitions), national (national competitions – excluding national school competitions), professional (full-time or paid work), or National Collegiate Athletics Association (NCAA) Division I level on a regular basis (working with elite athletes at least once per month). This excluded coaches whose primary responsibility involves a specific form of physical, scientific, or medical support role (e.g., strength and conditioning coach). Participants were required to be over the age of eighteen and be proficient in English.

Procedure

The online survey was distributed to potential participants through links and digital flyers via email and social media. A range of sporting organisations and coaching associations through the author's professional networks were also contacted and invited to disseminate the survey among their networks. The survey was hosted on Qualtrics and was open from July 28, 2023 to April 10, 2024 to enable participation from an array of nations and maximise the representation of coaches who identified as women. Prior to survey participation, participants were informed about the objectives and data collection process. Participants were notified that the survey was voluntary, and that no personal identifiable information would be included. Informed consent was then obtained from participants prior to their involvement.

The survey took approximately 10-to-15 minutes to complete. Upon completion, participants were offered access to mental health support resources for assistance in managing any potential distress, and could enter a prize draw to win a voucher worth AUD $100. The survey was approved and conducted in accordance with the University of Melbourne's Human Ethics Research Committee (#25538).

Survey content

Demographics/background information

Demographic information included age, gender, race/ethnicity, relationship status, and parental status. Coaches were also asked to provide details regarding their role, including their position (e.g., head, assistant), employment status (e.g., full-time, part-time) and

number of years working in elite sport. Additionally, sport-related questions were presented to identify participants' primary sport as a coach, whether they had ever performed as an elite athlete, and their current phase of competition (e.g., pre-season, in-competition). Participants were also asked whether they had ever been diagnosed with a mental health disorder or had sought treatment for a psychological issue or mental health concern, including details regarding the primary provider of such treatment.

Symptom outcome measures

The International Olympic Committee's (IOC) Sport Mental Health Assessment Tool 1 (SMHAT-1) was utilised to assess symptoms of mental ill-health among elite coaches, in order to align with research on mental health in elite athletes and sport (Gouttebarge et al., 2021). As the SMHAT-1 was developed specifically for measuring symptoms of mental ill-health in elite athletes, athlete-specific measures implemented during the initial and secondary triage phases were excluded (i.e., The Athlete Psychological Strain Questionnaire (APSQ), Athlete Sleep Screening Questionnaire (ASSQ)).

Anxiety. The Generalized Anxiety Disorder-7 (GAD-7) was employed to screen for symptoms of anxiety in elite-level coaches (previously reported: internal consistency = 0.92; test-retest reliability = 0.83) (Spitzer et al., 2006). Scores between 5 and 9 were classified as mild, 10–14 as moderate, and 15 or above as severe (range = 0–21) (sensitivity = 89%; specificity = 82%) (Spitzer et al., 2006). Due to low representation in the data, moderate and severe categories were combined into a single moderate-severe group. Cases of anxiety were identified with scores of 10 or above.

Depression. The Patient Health Questionnaire-9 (PHQ-9) was utilised to measure symptoms of depression (previously reported: internal consistency = 0.89; test-retest reliability = 0.84) (Kroenke et al., 2001). Scores between 5 and 9 were classified as mild, 10–14 as moderate, 15–19 as moderately severe, and scores of 20 or above as severe (range = 0–27) (sensitivity = 88%; specificity = 88%) (Kroenke et al., 2001). Similar to the GAD-7, moderately severe and severe categories were merged into a moderate-severe group due to limited numbers. Scores of 10 or higher were used to identify "cases" of depression.

Risky alcohol consumption. Alcohol Consumption was measured using the 3-item Alcohol Use Disorder Identification Tool-Concise (AUDIT-C) (previously reported: internal consistency = 0.89; test-retest reliability = 0.84) (Dawson et al., 2005). Men who registered scores between 0–4 were classified below the threshold for risky alcohol consumption (sensitivity = 91.2%; specificity = 95.2% at cut-off), while men who scored 5 or more met the criteria for adverse alcohol use (range = 0–12). Women with scores of 0–3 were below the threshold for risky alcohol consumption, whilst women who registered scores of 4 or above met the criteria (sensitivity = 81.4%; specificity = 93.1% at cut-off) (Dawson et al., 2005).

Suicidal ideation. Suicidal ideation was measured using item-9 from the PHQ-9, given that studies have shown that this item can identify persons at increased risk of suicide or suicidal attempts (Simon et al., 2013). The item asks participants to indicate whether over the past two weeks they had "thoughts that you would be better off dead or of

harming yourself in some way" (Kroenke et al., 2001). Participants were asked to respond with "not at all", "several days", "more than half the days" or "nearly every day". Results were combined into binary categories based upon the "presence" or "absence" of suicidal ideation. Those who responded with "not at all" were placed into the "absence" category, whilst all other responses were assigned to the "presence" group.

Organisational risk factors

Organisational factors that may influence the mental health of elite coaches were examined using a range of single-item measures. Participants were asked to rate questions about job security ("*I am secure in my role as a high-performance coach … "*), remuneration (*"High-performance coaches are rewarded appropriately for time and stress levels … "*), workload ("*I am comfortable with my current coaching workload … "*), and job sustainability ("*I can continue working with my current workload for many years … "*) on a 5-point Likert scale (*strongly disagree, disagree, neutral, agree, strongly agree*). These questions were developed from identified risk factors from previous research (Frost et al., 2024).

Data analyses

Statistical analyses were conducted in IBM SPSS (version 27) and R (version 4.4.1). The data was initially cleaned on SPSS to remove duplicates, incomplete entries and inauthentic responses. Incomplete responses were excluded if they were missing data from any mental health symptom scale. To assess authenticity, closed-ended responses with straight-lining patterns were reviewed. Inauthentic responses were also identified by examining ambiguous, repeated and highly similar open-ended answers across questions and participants. In addition, IP addresses and matching timestamps were investigated to verify authenticity.

Multiple imputation was performed to manage random missing entries for predictor and outcome variables (Sterne et al., 2009). Fully Conditional Specification (FCS) was utilised in SPSS to generate 5 imputed datasets. Missing data points were present for relationship ($n = 3$), children ($n = 3$), job security ($n = 13$), remuneration ($n = 16$), workload ($n = 12$), job sustainability ($n = 16$) and the AUDIT-C ($n = 1$). Once the data set was finalised, descriptive statistics were calculated using frequencies and percentages for categorical variables and means and standard deviations (SD) for continuous variables on R. For mental health outcomes, validated cut-offs were applied to assess the percentage of participants that met each symptom-based category (e.g., mild, moderate).

Symptoms of depression and anxiety were analysed using the original continuous data for statistical analyses, rather than evaluating the presence of mental health symptoms using categorical cut-offs (Poucher et al., 2021). Risky alcohol consumption was assessed using cut-offs to account for potential differences among genders.

To assess differences between demographic, coaching background and risk factor groups with two categories, Welch's t-tests were employed to account for unequal variances. For comparisons involving more than two groups, Kruskal–Wallis tests were employed to account for violations of normality. Cohen's *d* and Epsilon squared values ($\varepsilon 2$) were used to measure effect sizes. For binary variables, proportions tests were performed to see if there were differences between risky alcohol consumption categories, with Cohen's *h* utilised to measure effect sizes. To accommodate small cell counts (<5),

Fisher's exact test was employed to examine differences in suicidal ideation, with Odds Ratios (OR) serving as measures of effect size. Results were interpreted using a significance threshold of $p < .01$ to reduce the risk of Type 1 errors.

Regression analyses were performed to evaluate whether risk factors were associated with symptoms of depression and anxiety. To account for heteroscedasticity, logarithmic transformations were conducted for the PHQ-9 and GAD-7 scales. A three-stage analysis was implemented for each organisational risk factor and mental health outcome. For stage 1, four unadjusted models were initially fitted to explore associations between a single risk factor (e.g., job sustainability, remuneration, job security, workload) and mental health outcome (e.g., depression, anxiety). To maximise sample size, strongly disagree and disagree groups were collapsed into one overarching disagree group, and strongly agree and agree groups were collapsed into a single agree group. In stage 2, four partially adjusted main effect models were fitted, controlling for confounders of age, gender (reference category = men), parental status (reference category = yes/child(ren)), mental health diagnosis (reference category = no diagnosis), coach type (reference category = head coach), former elite athlete status (reference category = not a former elite athlete), nature of employment (reference category = full-time), mental health treatment (reference category = no treatment) and years in high-performance sport. With the large number of confounders present, the Akaike Information Criterion (AIC) was inspected to identify the most parsimonious model in each of the four sets of partially adjusted models. Once the most salient explanatory variables had been identified in each of the partially adjusted models, a fully adjusted model was fitted by combining all organisational risk factors and salient variables in stage 3. AIC was again used to identity the most parsimonious model.

Logistic regression was performed using a similar three-stage analysis for risky alcohol consumption. Suicidal ideation was not evaluated in an outcome model due to the small number of "presence" cases reported. All inferential statistics and regression analyses were performed using R.

Results

Descriptive statistics

A total of 158 elite coaches from 6 countries provided data for mental health symptom measures. Originally, 513 responses were recorded, however, 147 responses failed to meet the entire eligibility criteria, 143 responses were deemed to be inauthentic (e.g., identical, inappropriate open-ended or straight-lined responses), and 65 responses failed to provide data measuring mental health outcomes. The mean age of participants was 44.4 years, with the majority identifying as men (74.1%) (Table 5). Participants largely resided in Australia (68.3%), Canada (20.3%) and the United States (8.9%).

Respondents coached athletes or teams across 42 different sports, including Australian Rules Football (41.8%), Soccer (9.5%) and Swimming (7.6%) (see Supplementary File 9). Over half of the respondents were either head or lead coaches (54.4%), 29.1% were assistant coaches and 12.7% were development coaches. Participants were largely employed on a full-time basis (70.9%), with fewer coaches operating in part-time (17.1%) or

Table 5. Demographics, sport-related information and employment characteristics of participants.

	% (*n*)		% (*n*)
Age		Years in Elite Sport	
Mean (SD)	44.4 (11.0)	Mean (SD)	12.77 (10.0)
25–34	17.1 (27)	Coach Type	
35–44	36.7 (58)	Head/Lead Coach	54.4 (86)
45–54	28.5 (45)	Assistant Coach	29.1 (46)
55≥	17.7 (28)	Development/Youth Coach	12.7 (20)
Gender		Specialist Coach	3.8 (6)
Men	74.1 (117)	Former Elite Athlete	
Women	25.9 (41)	Yes	64.6 (102)
Nation		No	35.4 (56)
Australia	68.3 (108)	Employment	
Canada	20.3 (32)	Full time employed	70.9 (112)
United States	8.9 (14)	Part time	17.1 (27)
United Kingdom	1.3 (2)	Contract or a casual/as needs basis	10.8 (17)
Brazil	0.6 (1)	Volunteer	1.2 (2)
Philippines	0.6 (1)	Stage of the Season	
Race/Ethnicity		In competition	49.4 (78)
White	88.6 (140)	Off-season	38.6 (61)
Hispanic, Latino or Spanish Origin	3.2 (5)	Pre-season	12.0 (19)
Black or African American	2.5 (4)	Mental Health Diagnosis	
Asian	1.9 (3)	No	84.8 (134)
Indigenous, Aboriginal or Torres Strait Islander	1.4 (2)	Yes	13.9 (22)
Middle Eastern or North African	0.6 (1)	Prefer not to say	1.3 (2)
Italian	0.6 (1)	Help-Seeking – Mental Health Treatment	
Indian	0.6 (1)	No	62.0 (98)
Prefer not to say	0.6 (1)	Yes, more than 12-months ago	22.2 (35)
Relationship		Yes, within last 12-months	10.8 (17)
Married	57.0 (90)	Yes, currently	4.4 (7)
Partnered	12.0 (19)	Prefer not to say	0.6 (1)
De-facto/living together	12.0 (19)	Help-Seeking – Mental Health Service/Professional	
Single/never married	11.4 (18)	An external mental health professional (e.g., psychologist or psychiatrist)	72.9 (43)
Previously married (divorced, separated or widowed)	7.6 (12)	A GP	10.2 (6)
Children		An Employee Assistance Programme	8.4 (5)
Yes	64.6 (102)	Your Sport's Psychologist	6.8 (4)
No	35.4 (56)	Counsellor	1.7 (1)

contractual or casual positions (10.8%). Respondents were also active during varied competitive cycles, including the competitive season (49.4%), off-season (38.6%) and pre-season (12.0%).

Twenty-two (13.9%) participants reported being diagnosed with a mental health disorder by a medical professional (e.g., GP, mental health professional), while 37.4% indicated they had treatment for a mental health concern at some stage in their life. Of those who had previously sought treatment, coaches had primarily accessed a private mental health professional (e.g., psychologist or psychiatrist not involved with their sport) to receive mental health support (72.9%).

For job security, 58.8% of participants agreed that they were secure in their role, whilst 24.1% disagreed (remainder were neutral). Conversely, 76.0% of coaches felt undercompensated for their time and stress levels, whereas only 12.6% believed they were remunerated appropriately. Responses were more evenly split for workload, with 47.5% of participants reporting feeling comfortable with their current workload,

compared to 33.5% who did not. For job sustainability, 38.0% believed they could continue in their role with the current workload for many years, whilst 44.3% did not (see Supplementary File 10).

Prevalence of mental health symptoms

Rates for symptoms of mental ill-health varied (Table 6), with 13.3% of the sample meeting the threshold for moderate or moderate-severe symptoms of depression (internal consistency, α = 0.89), and 4.4% reporting past two-week suicidal ideation. Data from the GAD-7 indicated that 12.7% of participants reported moderate or moderate-severe symptoms of anxiety (internal consistency, α = 0.90), whilst the AUDIT-C indicated that 31.6% of partipcants met the threshold for risky alcohol consumption (internal consistency, α = 0.67).

Correlates of mental health symptoms

Demographic and coach-based characteristics were utilised to assess differences in symptoms of mental ill-health among participants. Welch's t-tests and Fisher's Exact Tests indicated that elite coaches who reported a mental health diagnosis reported significantly greater anxiety (mean = 8.14 vs 4.13, $p = .005$; medium effect: $d = 0.71$) and suicidal ideation ($p = <.001$, OR = 19.706) compared to those without a diagnosis. Similarly, elite coaches without children reported significantly higher levels of anxiety than elite-level coaches with children (mean = 6.27 vs 3.87, $p = .002$; medium effect: $d = 0.60$). Refer to Supplementary Files 11-14 for further results.

Correlates of depression

After fitting the unadjusted and partially adjusted models, AIC inspection identified coach type, parental status and a reported mental health diagnosis as the most salient

Table 6. Rates of self-reported symptoms of mental ill-health among elite coaches.

	M (SD)	*n*	%	95% CIs
Depression	4.75 (4.88)			
No symptoms (0–4)		97	61.4	
Mild symptoms (5–9)		40	25.3	
Moderate symptoms (10–14)		14	8.9	
Moderate-severe symptoms (≥15)		7	4.4	
Prevalence		21	13.3	8.0, 18.6
Anxiety	4.72 (4.16)			
No symptoms (0–4)		93	58.8	
Mild symptoms (5–9)		45	28.5	
Moderate symptoms (10–14)		14	8.9	
Moderate-severe symptoms ≥15)		6	3.8	
Prevalence		20	12.7	7.5, 17.9
Risky Alcohol Consumption	3.32 (2.25)			
Not Risky		108	68.4	
Risky		50	31.6	24.4, 38.8
Suicidal Ideation	0.04 (0.21)			
Absence		151	95.6	
Presence		7	4.4	1.2, 7.6

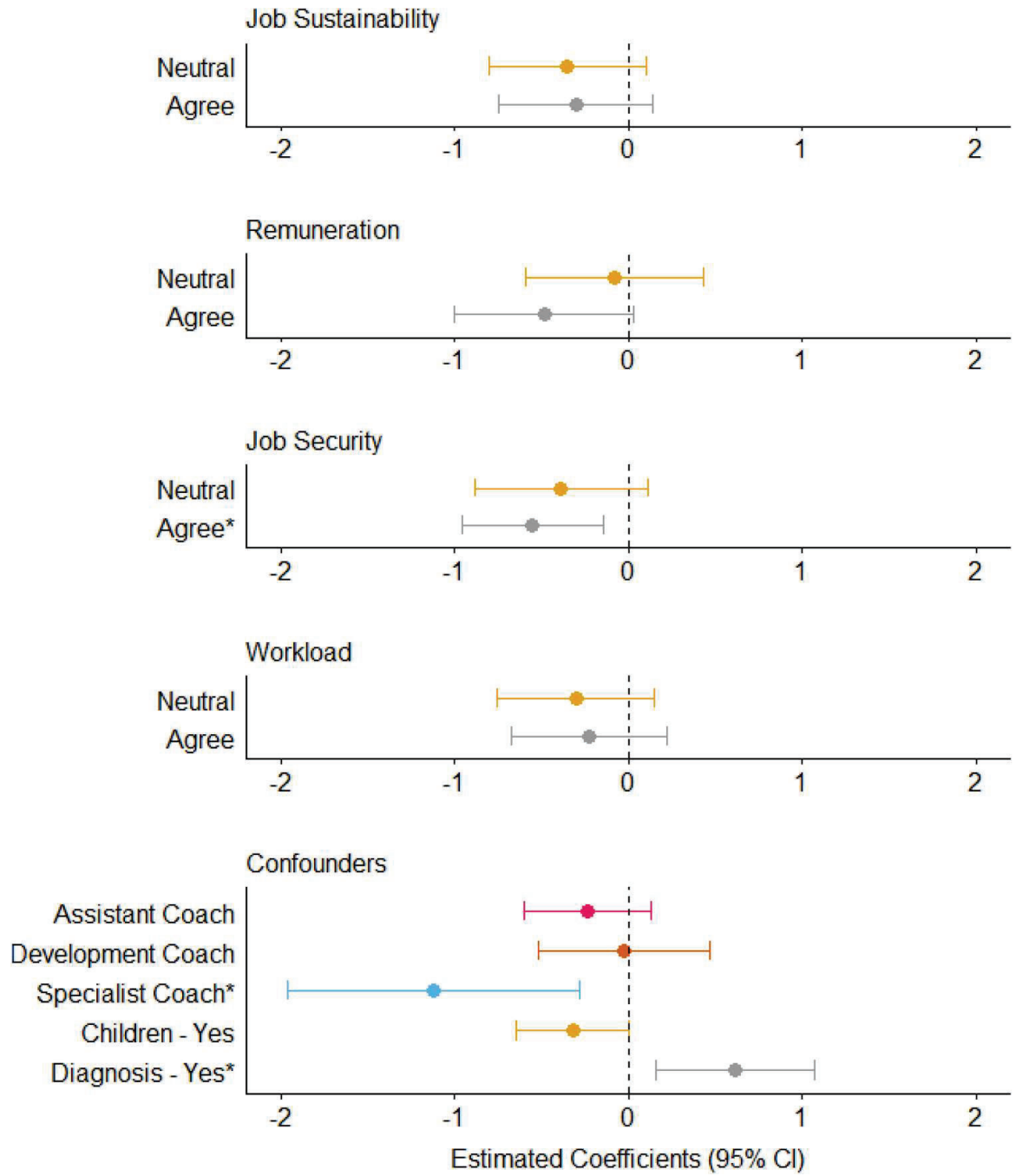

Figure 6. Fully adjusted linear regression model examining associations between potential risk factors and symptoms of depression in elite-level coaches (*$p < .01$, **$p < .001$).

confounding predictors of depressive symptoms. Participants who felt secure in their coaching role reported significantly lower symptoms of depression than those who reported not feeling secure (β = −0.55, 95%CIs = −0.96, – 0.14, p =.009) (Figure 6 and Supplementary File 15). Specialist coaches experienced lower depressive symptoms than head/lead coaches (β = −1.12, 95%CIs = −1.96, −0.28, p = .009), and those with a reported mental health diagnosis reported greater symptoms of depression than those without (β = 0.62, 95%CIs = 0.16, 1.07, p = .008).

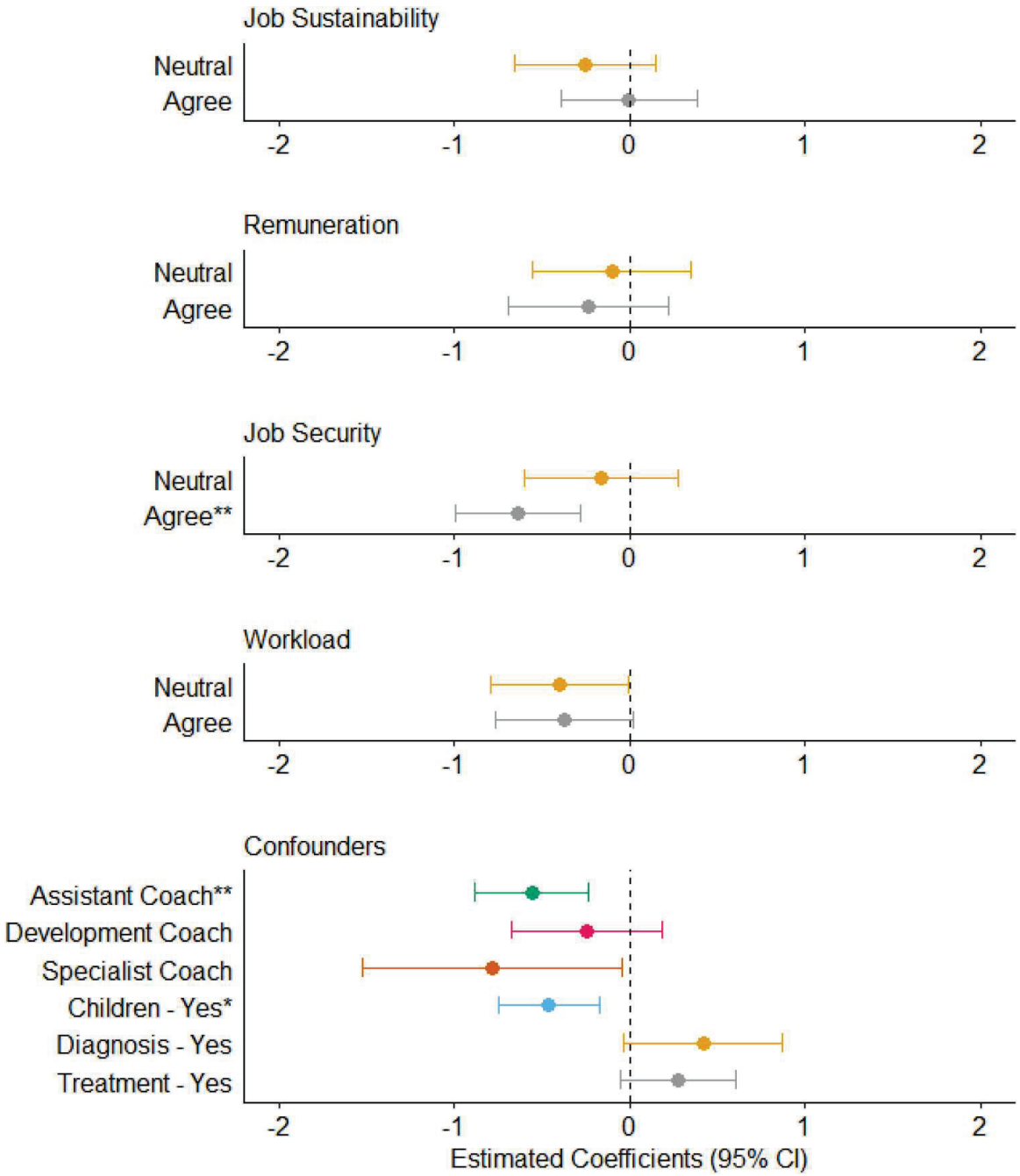

Figure 7. Fully adjusted linear regression model examining associations between potential risk factors and symptoms of anxiety in elite-level coaches (*$p < .01$, **$p < .001$).

Correlates of anxiety

Coach type, parental status, mental health diagnosis and mental health treatment were identified as salient confounding predictors of anxiety in the fully adjusted model. Those who felt secure in their coaching role also reported significantly lower symptoms of anxiety than those who did not (β = −0.63, 95%CIs = −0.99, −0.28, p = <.001) (Figure 7 and Supplementary File 16). Assistant coaches reported significantly lower levels of anxiety than head/lead coaches (β = −0.56, 95%CIs = −0.88, −0.24, p = <.001), while those with children reported significantly fewer symptoms of anxiety than those without children (β = −0.46, 95%CIs = −0.74, −0.17, p = .002).

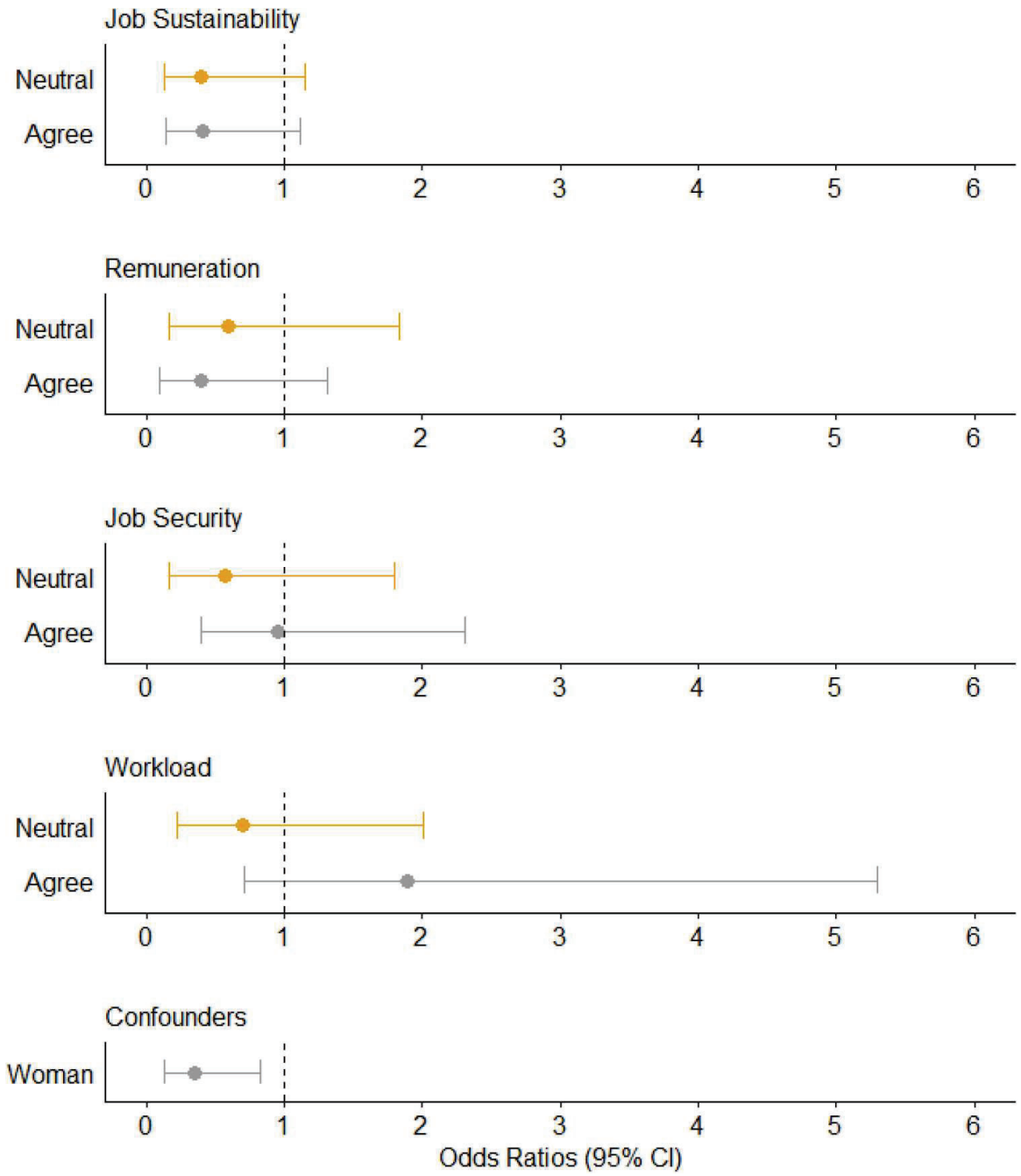

Figure 8. Fully adjusted logistic regression model examining associations between potential risk factors and risky alcohol consumption in elite-level coaches (*$p < .01$, **$p < .001$).

Correlates of alcohol consumption

Only gender was identified as a salient confounding predictor of risky alcohol consumption in the fully adjusted model (reference category = men). Overall the model showed no statistically significant effects at the $p = <.01$ level (Figure 8 and Supplementary File 17).

Discussion

This study examined rates and correlates of self-reported symptoms of mental ill-health among the largest sample of elite coaches to date (Bilgoe et al., 2024; Kegelaers et al., 2021; Kim et al., 2020; Pilkington et al., 2022). Rates of depressive and anxiety symptoms

were largely consistent (13.3% and 12.7% respectively), though higher rates of risky alcohol consumption were reported (31.6%). Seven participants (4.4%) indicated suicidal ideation in the 2 weeks prior to the survey. Perceived job security, coach type and a reported mental health diagnosis were associated with symptoms of depression, while perceived job security, coach type and no children were associated with symptoms of anxiety. No significant associations were found for risky alcohol consumption.

Prevalence of mental ill-health

To date, only one study has previously employed the PHQ-9 and GAD-7 to assess anxiety and depressive symptoms in elite-level coaches (Bilgoe et al., 2024), with 4.7% of Dutch elite coaches ($n = 95$) reporting symptoms of both anxiety and depression that met clinical cut-offs. These figures are notably lower than those reported here, potentially due to differences in population characteristics or social desirability bias. Other studies using alternative measures of anxiety and depressive symptoms have reported rates ranging from 14% to 44% (Kegelaers et al., 2021; Kim et al., 2020; Pilkington et al., 2022). Given the large variability between these rates, future research should utilise SMHAT-1 measures to facilitate comparisons across samples, including elite athletes. Given that both elite coaches and athletes operate within similar high-performance environments, it is perhaps unsurprising that the current results overlap with the rates of mental health symptoms based on the SMHAT-1 reported in elite athlete cohorts, with anxiety ranging between 5 to 30% and depressive symptoms between 4.8% to 26% (Anderson et al., 2023; Bilgoe et al., 2024; Mountjoy et al., 2023).

Using standardised AUDIT-C cut-offs (men ≥5, women ≥4), rates of risky alcohol consumption currently range from 19.3% to 48.1% in elite-level coaches (Kegelaers et al., 2021; Pilkington et al., 2022). More stringent IOC-recommended cut-offs have shown rates of risky alcohol consumption to range from 53.1% to 59.7% in elite coaches (men ≥4, women ≥3) (Bilgoe et al., 2024; Pilkington et al., 2022). Based on AUDIT-C scores, meta-analytic findings indicate that risky alcohol consumption is prevalent in approximately 18.8% of elite athletes (Gouttebarge et al., 2019). The present study contributes to the growing body of evidence indicating that adverse alcohol use may be more prevalent among elite coaches than athletes. It is has been suggested that elite athletes may be less likely to engage in risky alcohol consumption due to the physical fitness and performance requirements that are not imposed on coaches (Pilkington et al., 2022). As such, health professionals in sport should be mindful of elite coaches potentially using alcohol as a coping mechanism, particularly during periods of vulnerability such as failure to qualify for a competition or contract termination (Roberts et al., 2019). Further longitudinal research is needed to explore whether risky alcohol consumption increases over certain periods (e.g., post-competition) or in response to specific stressors (e.g., contract termination), and to examine patterns of alcohol consumption, particularly given the risks associated with binge drinking.

This is the first study to report the prevalence of recent suicidal ideation among elite coaches, with reported rates lower among elite coaches (4.4%) compared to published rates with the general population (9.2%) and professional athletes (6.7% to 18%) (Anderson et al., 2023; Gill et al., 2024; Nock et al., 2008). Given a number of deaths by suicide reported among current and former elite coaches (Roberts et al., 2019), research

examining the risk and protective factors associated with suicidal ideation is warranted (Gorczynski & McCabe, 2024).

Correlates of mental ill-health

Elite coaches who did not feel secure in their roles were more likely to report symptoms of depression and anxiety compared to those who felt secure. This is notable, particularly as role insecurity was reported less frequently (24.4%) than other organisational risk factors, such as a perceived lack of remuneration (75.9%). Previous research has consistently highlighted job insecurity as a potential stressor for elite coaches (Baldock et al., 2021; Olusoga et al., 2009), and has been linked with reduced wellbeing (Bentzen, Kenttä, Richter, et al., 2020). Although job insecurity is prominent among other professions and sectors, elite coaching might be considered a "non-traditional" or transactional occupation due to the provision of shorter-term contracts, continual performance evaluation, and intense external pressures on their role (e.g., media and fan scrutiny), all compounded by an elevated risk and threat of dismissal (Bentzen, Kenttä, and Lemyre, 2020). Considering the inherently insecure nature of elite coaching, sports organisations and employers should provide elite coaches with access to programmes that may help to manage the psychological burden of job insecurity (Bentzen, Kenttä, Richter, et al., 2020). While the threat of job insecurity is unlikely to be fully alleviated due to the role's inherent links with performance outcomes, coaches can be supported through educational resources and programmes to help them navigate these uncertainties (e.g., self-compassion, self-reflection and mindfulness-based interventions) (Hägglund et al., 2021, 2025; Longshore & Sachs, 2015). Employers should also prioritise engaging in open and transparent communication with coaches regarding their contractual status, particularly during periods of mounting pressure and when contracts near expiration (Bentzen, Kenttä, Richter, et al., 2020). Optimising coach mental health may help to improve coach effectiveness and minimise coach turnover – and thereby cost – which is likely in the best interest of sports organisations (Frost et al., 2024).

Head and lead coaches reported significantly higher levels of anxiety and depressive symptoms compared with other coaching sub-groups (e.g., assistant coaches). Although most elite coaches function as leaders, learners and performers that are responsible for nurturing the development, performance and wellbeing of athletes (Côté & Gilbert, 2009; Kenttä et al., 2023; Rynne et al., 2017), head coaches are regarded as primary decision-makers that predominantly bear the lion share of responsibility (Frey, 2007). As such, organisations could be advised to pay particular attention to, and actively monitor, the mental health of head coaches who may be at greater risk of mental ill-health. Sports should make mental health literacy or awareness programmes available to coaching staff, enabling them to recognise the early signs of mental ill-health and to understand where and from who they can seek professional support. For sports that administer confidential, routine mental health screening (e.g., SMHAT-1 measures) to elite athletes, managed by trained mental health professionals (e.g., psychologists, doctors), extension of such screening to elite coaches could also be considered to aid early detection and intervention (Frost et al., 2023), particularly given the current finding that a previous mental health diagnosis is associated with current symptoms of mental ill-health. Considering Keyes' (2002, 2005) dual-continuum model of mental health stipulates that an individual can experience high levels of mental wellbeing (e.g., individual and societal functioning) despite the presence of mental health symptoms or a mental

disorder, sports organisation should make efforts to support elite coaches experiencing mental ill-health, including those currently employed, taking leave or have departed their role due to mental health concerns. Such efforts may involve providing coaches with timely, affordable and accessible pathways to mental health care and services to treat or manage their symptoms (Frost et al., 2025; Pilkington et al., 2025).

Finally, consideration should also be given to parental status when considering coach mental health. While having children does not directly equate to the presence of family support, elite coaches with children might benefit from supportive family structures, and interests outside of the sport/coaching identity, that serve to protect their mental health and support recovery from burnout states (Olusoga & Kenttä, 2017).

Limitations

We used a cross-sectional design that captured symptoms at one point in time, limiting causal inferences and observed changes in mental health symptoms over time. While every effort was made to increase the gender diversity of the sample, most participants were men, many of whom were involved with Australian Rules Football (41.8%). Given the challenges of recruiting a small and hard-to-reach population, we extended the duration of the online survey, which potentially influenced response bias (responses across different times of the year). Future studies would benefit from investigating more diverse samples of elite coaches, with greater representation across gender, nationality and sport. This may include examining cross-cultural differences, particularly among coaches operating in lower-income, middle-income, non-English-speaking and not Western, Educated, Industrialised, Rich and Democratic (non-WEIRD) countries. In addition, while this study reported rates and correlates of mental health symptoms from the largest sample of elite coaches to date, such research should also target larger sample sizes comparable to studies with elite athletes (Gouttebarge et al., 2019). Finally, potential organisational risk factors were assessed using non-validated single-item measures. Further research might look to develop validated coach-stressor scales to confirm these findings.

Conclusion

This study contributes to the growing body of literature reporting on rates and correlates of anxiety, depression, risky alcohol consumption and suicidal ideation among elite coaches. Organisational factors associated with anxiety and depression were identified, in job security and coaching role. Wherever possible, sporting organisations should look to implement strategies and guidelines to alleviate the psychological strain of job insecurity for elite coaches. Ultimately, further longitudinal research is needed to monitor symptoms of mental ill-health over time, to identify periods and stressors that may increase elite coaches' risk of mental ill-health.

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JF was the research lead, overseeing conceptualisation, data collection, data analyses and manuscript drafting. CCW, SR and RP were involved in conceptualising the study. CD was involved in

guiding data analyses. All authors contributed towards reading, editing and approving the final manuscript. We would like to thank all participants for their involvement in the study.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Ethics approval

The research was approved by, and conducted in accordance with, the ethical standards of the University of Melbourne Human Ethics Research Committee (#25538).

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Chapter Summary

In *Chapter 4* findings indicated the minority of elite coaches reported depressive symptoms, anxiety symptoms, risky alcohol consumption and suicidal ideation. Findings indicated that low job security was associated with symptoms of anxiety and depression among elite-level coaches. To best support the mental health of elite-level coaches, sports organisations should make efforts to reduce the psychological burden of job insecurity upon elite coaches during periods when they face mounting performance pressures or undergo contract renewal. Given elite coaches are susceptible to mental ill-health, particularly around alcohol consumption, there is a need to ensure elite coaches can accurately identify mental health symptoms and are cognisant of best management approaches if various symptoms emerge. As such, *Chapter 5* seeks to investigate mental health literacy among elite coaches, examining their attitudes and perceptions regarding elite athletes and coaches experiencing burnout and depression

Chapter 5: Mental health literacy in elite-level coaches: Recognition and management of depression and burnout

Chapter Overview

The opening four chapters indicate that elite-level coaches experience a range of symptoms and disorders associated with mental ill-health, identifying several risk and protective factors that operate across various socio-ecological levels. To support the mental health of elite coaches, mental health literacy plays a key role in symptom identification, management and treatment approaches, and stigma regarding mental health and help-seeking. As such, *Chapter 5* unpacks the perceptions and attitudes that elite-level coaches hold regarding elite athletes and coaches experiencing burnout and depression. An international sample of elite-level coaches (n=143) were presented four vignettes through a cross-sectional online survey, investigating the identification of mental health issues, preferred treatment approaches, the appropriateness of various interventions (people/medicines/activities/treatments) and stigma-related questions in response to both a coach and athlete experiencing burnout and depression This study was accepted for publication with the *Journal of Applied Sport Psychology* (IF:3.2) in October 2025.

Mental health literacy in elite-level coaches: Recognition and management of depression and burnout

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Abstract

Mental health literacy (MHL) plays a key role in shaping attitudes and help-seeking approaches regarding mental health. Elite-level coaches who are well-informed about symptoms of mental ill-health and effective help-seeking can not only better support their own mental health needs, but help reduce stigma and promote early intervention for athletes they coach. This study investigated attitudes towards mental health among elite-level coaches, including their ability to recognize symptoms of depression and burnout, views on appropriate sources and methods of support, and perceptions of mental health stigma among coaches and athletes. An online survey with four vignettes depicting coaches and athletes experiencing depression and burnout were presented. An international sample of elite coaches (n=104 men & 39 women; mean age=44) were asked to identify whether anything was going wrong for the individual, how the individual could be best helped, to rate the appropriateness of various interventions (people/medicines/activities/treatments) and stigma-related questions. Analyses revealed that participants were better at identifying depression than burnout among both coaches and athletes. Participants largely perceived medical/psychological interventions (e.g. talking to a mental health professional) to be more helpful for coaches and athletes experiencing depression, while activity-based interventions (e.g. taking leave) were considered more helpful for burnout. Mental health stigma was also low within the sample. Considering burnout is a risk factor for mental ill-health, future MHL interventions should improve coaches' knowledge of stressors and symptoms associated with burnout among athletes and coaches. Furthermore, appropriate clinical supports should be promoted for burnout, rather than advocating for time-off exclusively.

Keywords: elite sport; coaches; mental ill-health; stigma; help-seeking

Lay Summary: This study found that elite-level coaches were better at identifying depression in athletes and coaches than burnout. Medical/psychological approaches were considered more effective for managing depression, while activity-based interventions were perceived to be more suitable for burnout. Low levels of stigma were present among the sample.

Implications for Practice

- Considering burnout is a risk factor for mental ill-health among elite athletes and coaches, elite coaches should receive education on identifying symptoms and management strategies (e.g. seeking professional help) to prevent the onset of mental health crises or disorders.
- While enhancing mental health literacy among coaches remains necessary for increasing knowledge and reducing stigma around mental health and help-seeking at the individual level, sports organizations should foster psychologically safe environments to support practices (e.g. accessing mental health support, normalizing structured time off) that reduce the risk of burnout and depression.

Introduction

Elite athletes and coaches are exposed to multiple stressors in their sporting roles that may impact their mental health. Athletes may encounter pressures related to injuries, team selection and expectations to perform (Arnold & Fletcher, 2012), while coaches may face job insecurity, poor work-life balance, and relationship issues (Leprince et al., 2024). Drawing upon Keyes (2002, 2005) dual-continuum model of mental health, these demands can shape an athlete's or coach's mental health by influencing the presence or absence of both mental wellbeing (e.g. emotional, psychological, social) and mental ill-health (e.g. depression, anxiety, alcohol misuse). At present, meta-analyses estimate that approximately 34% of elite athletes experience symptoms of anxiety/depression, with 19% exhibiting symptoms of psychological distress and 16% engaging in risky alcohol consumption (Gouttebarge et al., 2019). Although the occurrence of mental health symptoms in elite coaches has received less empirical attention (Frost et al., 2024), emerging research suggests that the prevalence of mixed anxiety/depression may range from 5% to 44% , whilst rates of general psychological distress and adverse alcohol use may range from 10% to 41% and 19% to 53%, respectively

(Bilgoe et al., 2024; Kegelaers et al., 2021; Pilkington et al., 2022). While less is known about the prevalence of burnout, current rates range from 1% to 15% among elite athletes and 24% among elite coaches (Gerber et al., 2024; Kaski & Kinnunen, 2021). Considering both elite athletes and coaches are susceptible to various symptoms of mental ill-health, prevention and early intervention efforts, including the promotion of mental health literacy, should be prioritized to avert the onset of mental health crises or disorders.

To improve knowledge and understanding of mental health, researchers have highlighted the need to direct efforts towards enhancing the mental health literacy (MHL) of elite-level coaches (Frost et al., 2023; Kenttä et al., 2023). MHL is defined as the "knowledge and beliefs about mental disorders which aid their recognition, management or prevention" (Jorm et al., 1997) (p.182), and can empower individuals to implement practical measures that enhance their own mental health or that of others (Jorm, 2019). According to Jorm et al. (1997), MHL comprises of: "(a) the ability to recognize specific disorders; (b) knowing how to seek mental health information; (c) knowledge of risk factors and causes, (d) of self-treatments, and of professional help available; and (e) attitudes that promote recognition and appropriate help-seeking" (p.182). Recent definitions have expanded upon these criteria, emphasizing one's ability to achieve positive mental health and reduce stigma around mental ill-health (Kutcher et al., 2016). MHL benefits both individuals and communities, as it provides individuals with the knowledge of how to take preventative action, when to seek professional help, and how to offer social support when necessary (Jorm, 2012). A comprehensive understanding of MHL can help elite coaches better support both athletes and their own mental health, as well as nurture psychologically safe high-performance environments (Moore et al., 2022; Walton et al., 2024).

To gain a comprehensive understanding of factors affecting the mental health of those in elite sport, ecological systems models have been endorsed and embraced in elite sports

settings (Lundqvist & Andersson, 2021). Originally established by Bronfenbrenner (1992), the ecological systems theory was developed to contextualise the complex interactions between individual and environment in child development. The framework suggests that mental health outcomes are influenced by various factors across the individual (e.g. gender/sex, age), microsystem (e.g. interpersonal network), exosystem (e.g. organisational structures) and macrosystem (e.g. governance, social norms) levels. In the broader ecology of elite sport, coaches are considered part of an athlete's microsystem, and are critical to shaping the perceptions and attitudes that elite athletes hold towards mental health (Purcell et al., 2019). Considering their role and influence, coaches are strategically positioned to act as either gate-keepers or gate-openers in promoting and supporting the mental health of athletes (Bissett et al., 2020; Brown et al., 2017; Mazzer & Rickwood, 2009). This role may encompass the detection of mental health issues in athletes and promoting help-seeking or referral to appropriate mental health professionals or services for support. In order to facilitate such help-seeking, it is critical that elite coaches can accurately and reliably identify mental health problems among their athletes. Furthermore, since coaches may neglect their own mental health needs to prioritize the performance and wellbeing of athletes, they need to be able to identify mental health issues among themselves, or other coaches within their networks or organizations.

MHL among coaches has been explored across levels of performance (including community, collegiate, and elite coaches) and predominantly focused on their ability to support the mental health of athletes. Studies have primarily assessed MHL among sports coaches using the Mental Health Literacy Scale (MHLS) (O'Connor & Casey, 2015), with wide variability in scores reported (Beebe & and Petrie, 2025; Beebe & Petrie, 2024; Gorczynski et al., 2020; MacPherson et al., 2022; Sullivan et al., 2019; Warden et al., 2023). Across performance levels, MHL scores have been found to be negatively associated with

coaching level in British coaches (e.g. beginners, county, national, international), with international coaches showing the lowest levels of MHL (Warden et al., 2023). Research also indicates that women coaches report greater MHL than men coaches (Beebe & Petrie, 2024; Gorczynski et al., 2020; Warden et al., 2023), coaches of female athletes have higher levels of MHL than coaches of male athletes (Sullivan et al., 2019), and older and more experienced coaches have lower MHL than younger and less experienced coaches (Beebe & Petrie, 2024; Gorczynski et al., 2020; Sullivan et al., 2019).

Studies have also investigated the knowledge, beliefs and perceived role that elite coaches hold regarding mental health and help-seeking. Emerging research suggests that elite coaches have adequate foundational mental health knowledge (Beasley et al., 2024), and can accurately identify symptoms of depression and eating disorders among groups of athletes (Hegarty et al., 2018; MacPherson et al., 2022). Elite coaches have described monitoring the mental wellbeing of athletes as part of their duty of care (Lebrun et al., 2020; Sankey et al., 2023), including an awareness around certain symptoms and risk factors of specific mental disorders (e.g. maladaptive perfectionism and observable weight loss for eating disorders) (Mitchell et al., 2024). Mixed views have been reported regarding help-seeking, however, with some coaches feeling comfortable discussing mental health and referring athletes to medical professionals when mental health concerns arise (Mitchell et al., 2024). Others have reported hesitancy in discussing mental health and facilitating help-seeking, citing a lack of knowledge, fear of consequences, and a potential conflict of interest with performance as barriers (Lebrun et al., 2020). More recent evidence suggests that elite coaches with higher levels of MHL and positive attitudes towards help-seeking may be more inclined to refer athletes to a mental health professional (Beebe & and Petrie, 2025). While such knowledge and beliefs about mental health are important, to facilitate referrals, it is necessary for elite

coaches to be familiar with the mental health resources available to athletes (Beasley et al., 2024).

Despite the progress in mental health knowledge and beliefs in elite sport, stigma towards mental health symptoms and help-seeking continues to persist and is considered a prominent barrier to treatment among elite athletes and coaches (Castaldelli-Maia et al., 2019; Frost et al., 2024). Mental health symptoms may be perceived by athletes as a sign of weakness, potentially jeopardizing future contracts, sponsorship opportunities and their reputation with teammates and coaches (Castaldelli-Maia et al., 2019). Elite coaches may also be reluctant to disclose symptoms of mental ill-health to protect their current employment status or future employment opportunities (Roberts et al., 2019). Lower levels of self-stigma in NCAA coaches has been associated with more positive attitudes towards help-seeking, increasing the likelihood of referring their athletes to mental health services (Beebe & and Petrie, 2025). Improving MHL might help to reduce stigmatizing attitudes towards mental health symptoms and treatment in high-performance sports environments (Frost et al., 2023; Kenttä et al., 2023).

To develop targeted interventions that improve MHL among elite coaches, it is important they are cognizant of specific conditions that elite athletes and coaches may be vulnerable to, such as depression and burnout. Depression is typically associated with persistent low mood and a reduction in interest or pleasure from usual activities, for at least two weeks (American Psychiatric Association, 2013). Elite athletes may present symptoms of depression through a loss of motivation in training or competition, trouble concentrating, or feelings of failure as an athlete or person (Baron et al., 2013). Among elite coaches, symptoms of depression have been reported to include agitation, restlessness and increased alcohol consumption to improve mood (Roberts et al., 2019).

While not recognized as a mental health condition, burnout is characterized by emotional exhaustion, depersonalization and reduced personal accomplishment (World Health Organization, 2024). Unlike depression, which may stem from stressors in various areas of life, burnout is considered to be specific to occupational contexts. For elite athletes and coaches, burnout is specifically caused by the mental and physical stresses and demands that come from working in high-performance sport (Nixdorf et al., 2023). In elite athletes, early signs of burnout might include performance devaluation or reduced motivation (Gustafsson et al., 2011; Nixdorf et al., 2023), while in coaches, burnout may manifest through fatigue/lack of energy, negative cognitive patterns (e.g. not feeling good enough) and impacts upon their family relationships (e.g. irritability with family members) (Olusoga & Kenttä, 2017). Research also suggests that burnout may operate as a risk factor for depressive disorders (Glandorf et al., 2023), or precede or overlap with depression (Bianchi et al., 2015). The ability to identify and differentiate between symptoms of burnout and depression has been argued as being critical for early intervention and treatment (e.g. load management versus medication) purposes (Nixdorf et al., 2023).

Acknowledging the prevalence of burnout and depression in elite sport, the overlapping presentations between conditions, and the importance of accurately distinguishing their symptoms for recognition and subsequent intervention purposes, this exploratory study aimed to investigate elite coaches' knowledge, perceptions and attitudes regarding depression and burnout, among both athletes and coaches. Specifically, this study examined elite coaches' (a) ability to recognize symptoms of depression as compared to burnout, (b) perspectives on the appropriate sources for support, (c) beliefs about the appropriateness of specific interventions, and (d) perceptions of mental health stigma, among elite athletes and coaches.

Methods

Design and Participants

The study employed a cross-sectional design where data were gathered via an online survey and formed part of a broader research project exploring mental health outcomes among elite-level coaches (Frost et al., 2025). Ethical approval was granted by the University of Melbourne's Human Ethics Research Committee (#25538). An international sample of elite-level coaches were recruited for the study. An elite coach was defined as an individual who manages or leads athletes or teams at the Olympic, Paralympic, international (global competitions), national (national competitions – excluding national school competitions), professional (full-time or paid work), or NCAA Division I level on a regular basis (working with elite athletes at least once per month) (Frost et al., 2023). The study excluded coaches who were not proficient in English, were below the age of eighteen, or whose primary responsibility involves a specific form of physical, scientific, or medical support role (e.g., mental skills or strength and conditioning coaches). Before the study commenced, a formal power analysis was conducted using G*Power (version 3.1.9.7) to calculate the required sample size to perform Chi-squared tests for primary analyses between vignette groups (Faul et al., 2009). The analyses indicated that a sample of 130 would be required to identify an effect size of 0.3, with .01 α error probability and .80 power.

Procedure

The link to the survey was initially disseminated to potential respondents via social media channels, followed by the distribution of promotional material (e.g. emails and flyers) to national sporting organizations and coaching associations through the authors' professional networks. The survey was administered through the Qualtrics platform remaining open from July 28, 2023, till April 10, 2024. This timeframe was necessary to capture a sufficient

sample from a small population and maximize the representation of elite coaches across nations and genders.

Prior to participation, eligible respondents were provided with information regarding the study's objectives, informed about the voluntary nature of the survey, and assured that no personally identifiable information would be disclosed. Informed consent was initially secured, prior to participants engaging in the survey which took approximately 10-to-15 minutes to complete. Participants were offered a range of country-specific mental health support resources in the event the survey caused any distress. Participants who completed the survey were also provided with an opportunity to enter a prize draw for one of 30 vouchers valued at AUD $100.

Survey Content

Demographics/Background Information

Participants were presented with a range of demographic questions regarding their age, gender, race/ethnicity, relationship status, and parental status. Coaches also provided information about their role (e.g. head, assistant), employment status (full-time, part-time), years of experience in elite sport, prior experiences as an elite athlete and their current competition phase (e.g. pre-season, in-competition). Finally, participants were asked whether they had ever been diagnosed with a mental health disorder, as well as their treatment history, including information regarding their primary treatment provider.

MHL Survey

Four vignettes depicting elite coaches and athletes experiencing depression or burnout were crafted and adapted from designs previously published by Jorm and colleagues (Jorm et al., 1997; Jorm et al., 2005). Two vignettes were designed to portray an elite coach with symptoms of burnout or depression, and two others featured an elite athlete displaying

symptoms of burnout or depression (see Supplementary File 18). The vignettes were designed to capture athlete and coach-specific stressors and scenarios. Initially developed by JF, the vignettes were reviewed, refined and approved by RP, CCW (both registered psychologists) and SR (a clinical psychologist) prior to data collection. To limit participant burden, coaches were presented with only two vignettes: either coach depression paired with athlete burnout or coach burnout paired with athlete depression. This ensured participants engaged with at least one coach and athlete vignette, as well as one depression and burnout vignette. The vignette pairings were counterbalanced across participants to ensure the vignettes were equally distributed among the sample. The vignettes were developed with gender-neutral names and pronouns to mitigate potential biases that may emerge from gender-based distinctions.

The following questions were originally developed by Jorm et al. (1997) and have been used extensively throughout MHL research (Wei et al., 2015).

Recognition of Mental Health Issues

Participants were initially asked to identify if a mental health issue existed in the vignettes presented ('What would you say, if anything, is wrong with [name]') and were asked to share open-ended responses to identify the problem.

Help-Seeking Approaches

Participants were then prompted to consider the most appropriate approach to support the individual in the vignette if an issue was present ('How do you think [name] could best be helped'), including providing open-ended responses detailing the best help-seeking approach.

Helpfulness of Interventions

Participants were asked about their beliefs regarding the helpfulness or harmfulness of specific interventions ('*Rate the various people/medicines/activities/treatments that are likely*

to be helpful, harmful or neither for [name]') and to rate the various interventions as either helpful, harmful, or neither for each vignette. These interventions were selected from those used in previous studies (Jorm et al., 1997; Jorm et al., 2005; Reavley & Jorm, 2011).

Stigma

Five stigma related questions selected and adapted from the Depression Stigma Scale (internal consistency = 0.78) were presented for each vignette ('*People with a problem like [name's] could snap out of it if they wanted', 'A problem like [name's] is a sign of personal weakness', '[name's] problem is not a real medical illness', 'If I had a problem like [name's] I would not tell anyone', 'I would not employ someone if I knew they had a problem like [name's]')* (Griffiths et al., 2004). While numerous measures have been developed to assess mental health stigma (Wei et al., 2015), the Depression Stigma Scale was selected as it was originally designed for vignette-based methodologies and could be easily adopted for burnout-related questions. Participants were then asked whether they agreed or disagreed with each statement on a 5-point Likert scale (*strongly disagree, disagree, neutral, agree, strongly agree*).

Data cleaning

Statistical analyses were performed using IBM SPSS (version 27) and R (version 4.4.1). Data cleaning was initially conducted on SPSS to remove duplicates, incomplete entries, and inauthentic responses. Participants who failed to provide a response for one recognition and help-seeking approach question in at least one vignette were excluded from analyses. Authenticity was assessed by reviewing close-ended responses for straight-lining patterns. Ambiguous, repeated or highly similar open-ended responses were also reviewed across questions and participants to detect inauthentic responses. Finally, authenticity was investigated by examining IP addresses and matching timestamps between responses.

Participant numbers at each stage are presented further below.

Coding

Open-ended responses, including problem identification (e.g. “depression”, “burnout”, “mental health issue”) and help-seeking approaches (e.g. “see a psychologist”, “connect with family”) were categorized and coded into groups using content analysis (Krippendorff, 2019). These responses were organized into groups according to the specific response provided (e.g. responses identifying depression were categorized under depression)[1]. Responses were also placed into multiple categories if several issues or help-seeking approaches were mentioned (e.g. anxiety and depression categories).

For reliability purposes, the naming of groups was guided by categories utilized in previous vignette-based MHL studies (e.g., talk to or see someone) (Jorm et al., 1997; Jorm et al., 2005; Reavley & Jorm, 2011). Responses that failed to align with existing categories were placed into new categories based on their content (e.g., time away from coaching or competing). Content analysis was first undertaken by JF. A second researcher (CW) then reviewed a spreadsheet documenting the categories developed and coded to evaluate the appropriateness of category names and response categorization. Following three iterations of code sheet revisions, combined with ongoing discussions between JF and CW, 17 original problem identification and 17 help-seeking categories underwent refinement and renaming that resulted in a final total of 22 and 16 distinct categories, respectively. As an example, “talk over with coaching support group” evolved into “talk over with high-performance support network”, while “engage with hobbies/interests” was integrated into the “individual

[1] The correct identification of burnout required participants to provide the response ‘burnout’ or refer to the three dimensions of burnout (emotional exhaustion, depersonalization and reduced personal accomplishment). Single dimension responses (e.g. “exhausted”) were insufficient.

coping and self-care strategies" category following consultation between researchers. Response categorization underwent a similar process, where participant responses were initially categorized by JF and then reviewed 3 times (CW twice and JF once) before an agreement on the best representation of data was reached.

Statistical Analyses

Once open-ended responses were categorized, problem identification and help-seeking responses were tallied and analyzed using percentage frequencies and 95% confidence intervals. Intervention responses were also tallied this way based upon their perceived helpfulness. Chi-square and Fisher's Exact tests (for cell counts below 5) were then performed to assess differences in problem identification, help seeking approaches and the helpfulness of interventions between: 1) coach depression and burnout; 2) coach and athlete depression; 3) coach and athlete burnout; and 4) athlete depression and burnout vignettes. Only differences with a significance threshold of $p < .01$ are reported to minimize the risk of Type 1 errors. Cramér's V and Odds Ratios (OR) were utilized to measure effect size for Chi-squared and Fisher's Exact tests, respectively

For stigma-related statements, strongly disagree and disagree groups were collapsed into a single 'disagree' group, while strongly agree and agree groups were merged into one 'agree' group to simplify interpretation. Percentages were then calculated to determine the proportion of participants who agreed, disagreed or neither with each item.

Results

Descriptive Statistics

Five hundred and thirteen responses were initially recorded, of which 147 did not meet the eligibility criteria, 143 were considered inauthentic (e.g. identical or inappropriate open-ended responses, straight-lined responses), and 80 lacked a help-seeking response for at

least one vignette. Overall, 143 coaches provided usable data for the survey. The mean age of participants was 44 years (range = 25–73), and most identified as men (n = 104, 72.7%) with a majority residing in Australia (n = 98, 68.5%) (see Supplementary File 19 for all characteristics of participants). The majority of participants were a head or lead coach (n = 75, 52.4%), coached Australian Rules Football (n = 61, 42.7%) (see Supplementary File 20), and were employed full-time in their role (n = 103, 72.0%). Data were provided by participants across different stages of the competitive year, including in-competition (n = 70, 49.0%), off-season (n = 56, 39.2%) and pre-season (n = 17, 11.9%). Twenty-two (15.4%) participants reported having been diagnosed at some stage with a mental health disorder by a medical professional (e.g., general practitioner (GP) or mental health professional), while 38.5% (n = 55) stated they had received treatment for a mental health concern at some point in their life. External mental health professionals (e.g., psychologist or psychiatrist) were the primary source of such treatment (n = 41, 28.7%).

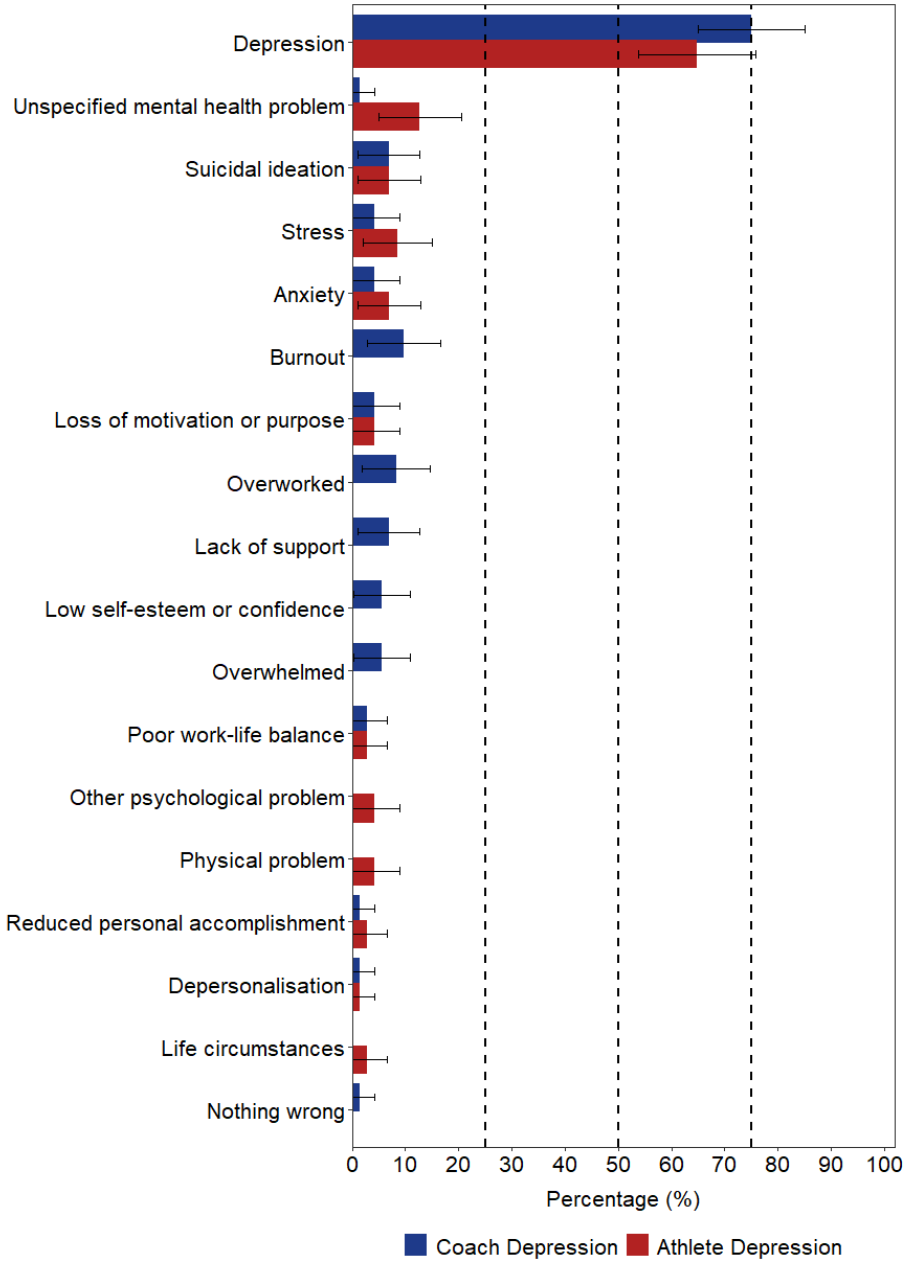
Mental health recognition and help-seeking intentions responses were reported by 72 participants for the coach depression vignette, 71 for athlete depression, 68 for athlete burnout and 65 for coach burnout. The following sections report on the recognition of depression or burnout, help-seeking approaches, beliefs about specific interventions and stigma.

Recognition of depression and burnout

Coaches' ability to accurately recognize depression compared with burnout among elite athletes and coaches was initially examined. For coach and athlete depression vignettes, qualitative responses suggest that depression was identified by 75.0% and 64.8% of participants, respectively (Figure 9). For coach and athlete burnout vignettes, burnout was identified by 47.7% and 36.8% of participants, respectively (Figure 10). Coaches were significantly more likely to identify coach depression than coach burnout. In addition,

participants were significantly more likely to identify athlete depression when compared with athlete burnout (see Supplementary File 21 for all tests).

Figure 9: The percentage (with 95% CI) of mental health problems identified by respondents in the depression vignettes



Help-seeking approaches

When examining coaches' perspectives of appropriate sources for support, 'talking to or seeing a mental health professional (therapist, counsellor, psychologist, sports

psychologist)' was the most frequently cited help-seeking approach for coach (34.7%) and athlete (57.7%) depression vignettes. Conversely, 'time away from coaching or competing' was the most common help-seeking response for both coach (46.2%) and athlete (52.9%) burnout vignettes. Figure 11 exhibits the percentage of participants qualitatively identifying the best support approach for depression or burnout in each vignette.

Figure 10: The percentage (with 95% CI) of mental health problems identified by respondents in the burnout vignettes

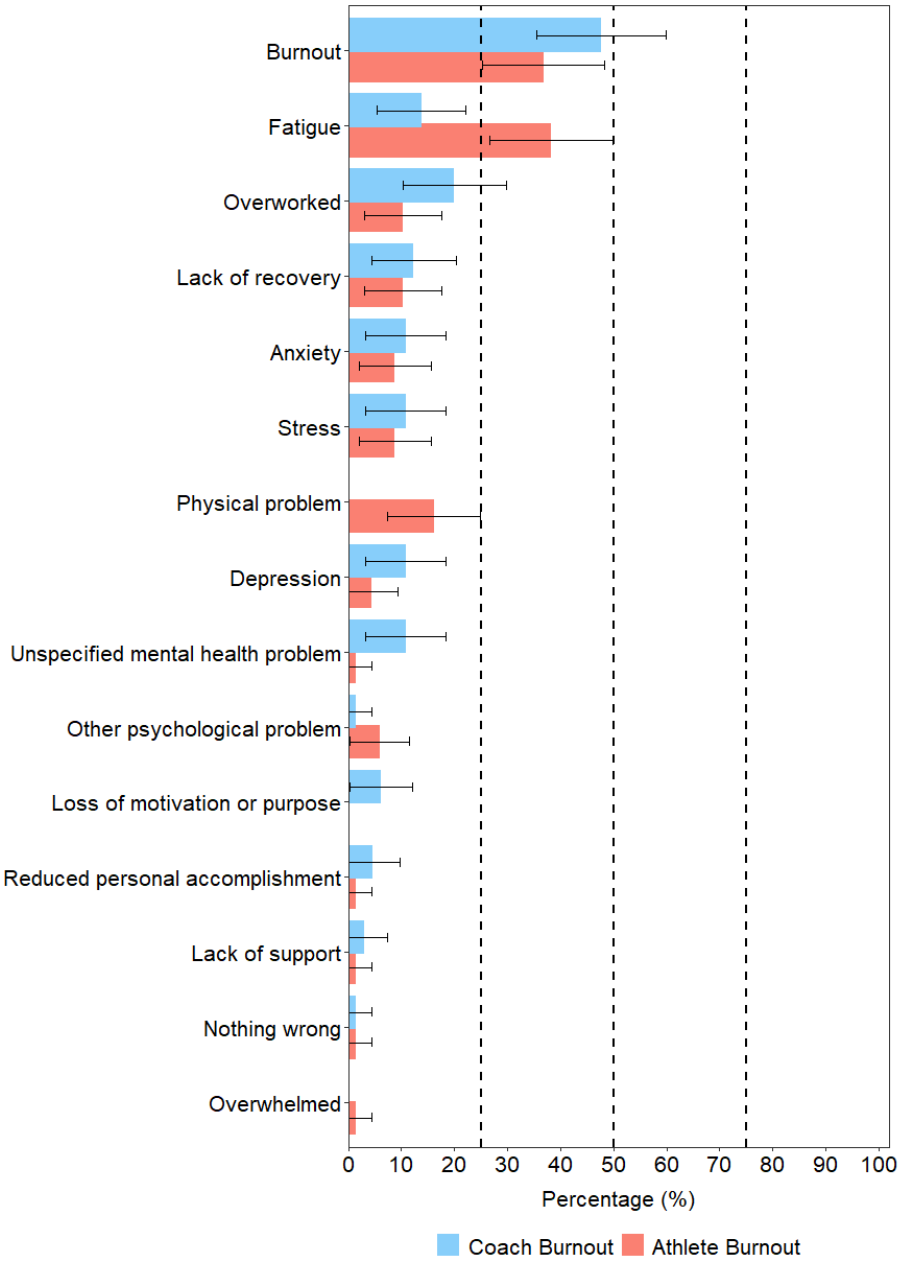
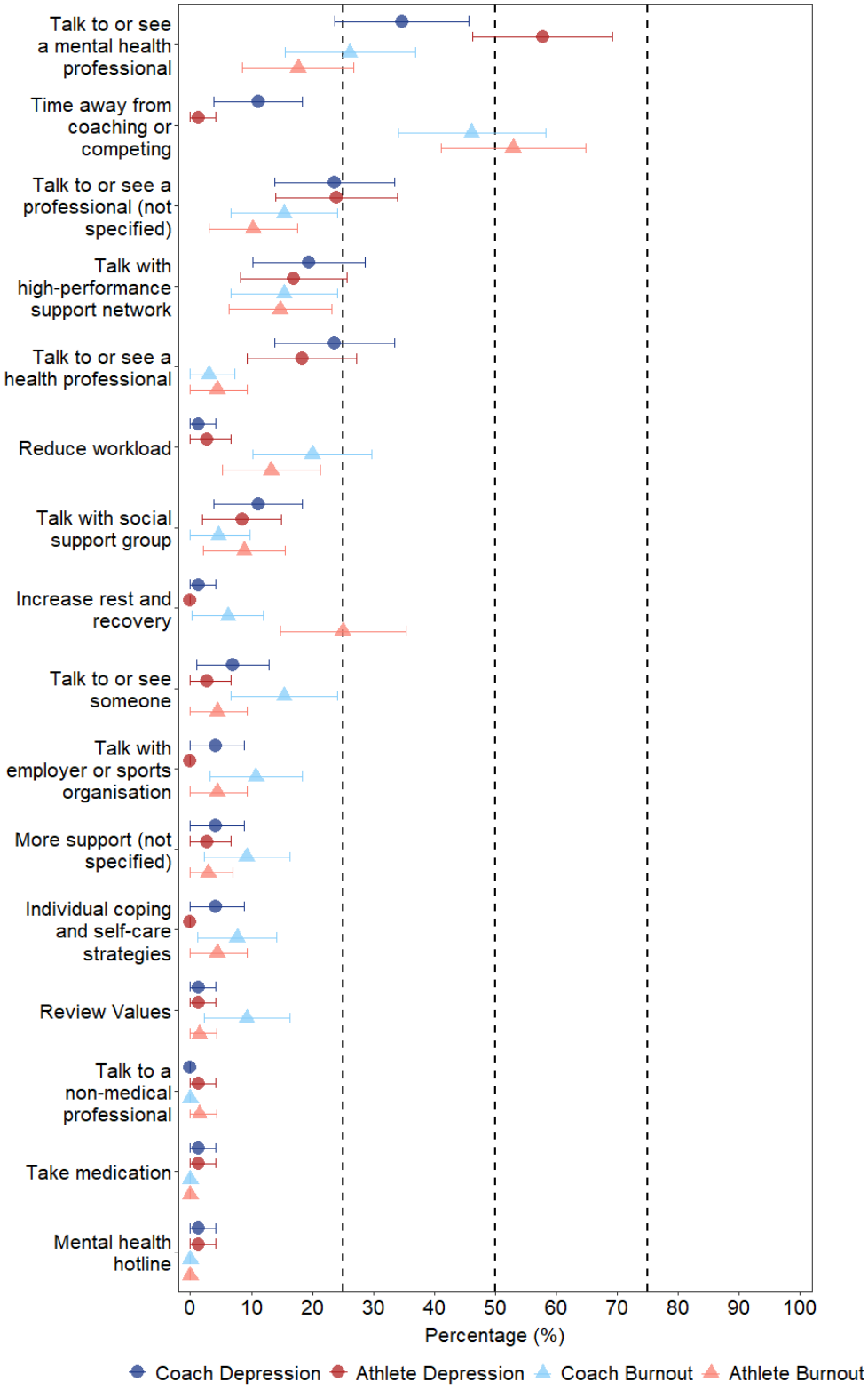


Figure 11: The percentage (with 95% CI) of respondents identifying how the individual in each vignette could be best helped



For comparisons between vignettes, talking to or seeing a mental health professional' was reported significantly more frequently for athlete depression compared to athlete burnout. 'Talking to or seeing a health professional' was also reported significantly more frequently for coach depression in comparison to coach burnout.

Taking 'time away from coaching or competing' was reported significantly more frequently for coach and athlete burnout when compared with coach and athlete depression, respectively. 'Reduce workload' was reported significantly more commonly for coach burnout than depression. Finally, increasing rest and recovery' was reported significantly more for athlete burnout when compared with coach burnout and athlete depression, respectively. All comparisons between vignettes for help-seeking approaches can be found in Supplementary File 22.

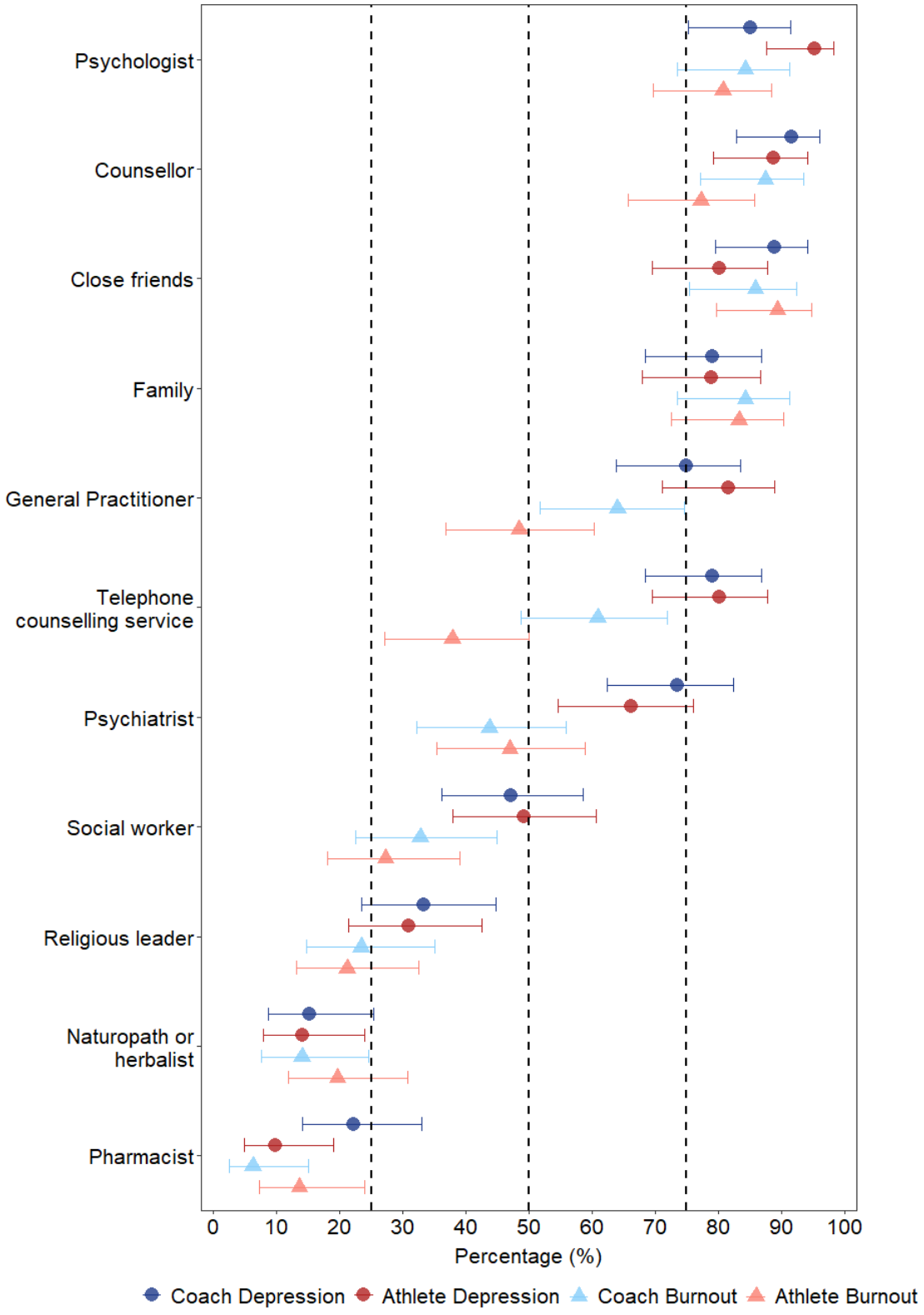
Beliefs about specific interventions

Regarding coaches' beliefs about the appropriateness of person-based interventions, a counsellor or psychologist (91.7%) were considered the most helpful for the coach depression vignette, while a psychologist (94.4%) was regarded the most helpful for athlete depression. For the coach burnout vignette, a counsellor (87.5%) was considered most helpful, whereas close friends (89.4%) were perceived to be the most helpful for athlete burnout. Figure 12 shows the percentage of participants that thought specific people were helpful for each vignette.

A GP and a telephone counselling service were considered significantly more helpful for athlete depression than burnout. Additionally, a psychiatrist was considered significantly more helpful for coach depression than coach burnout (see Supplementary File 23 for all tests).

Figure 13 exhibits the perceived helpfulness of medication-based interventions. Antidepressants were considered the most helpful treatment for coach depression (44.4%),

Figure 12: The percentage (with 95% CI) of respondents rating the helpfulness of person-based interventions for each vignette



whereas vitamins and minerals were regarded the most helpful for athlete depression (40.8%), coach burnout (53.1%) and athlete burnout (51.5%). Only antidepressants were considered significantly more helpful for coach and athlete depression when compared with coach and athlete burnout, respectively (see Supplementary File 24 for all tests).

Figure 13: The percentage (with 95% CI) of respondents rating the helpfulness of medication-based interventions for each vignette

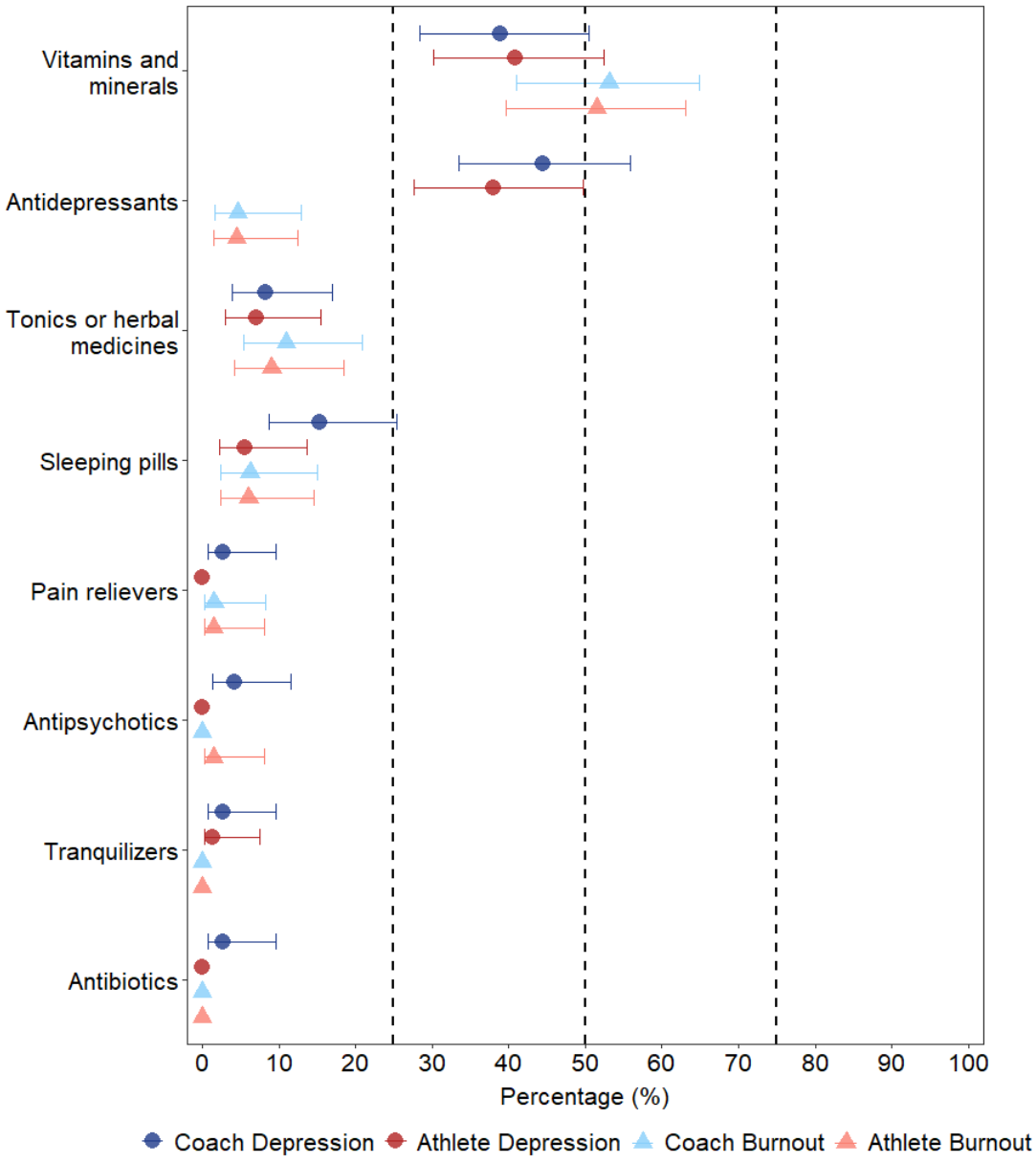


Figure 14: The percentage (with 95% CI) of respondents rating the helpfulness of activity and treatment-based interventions for each vignette

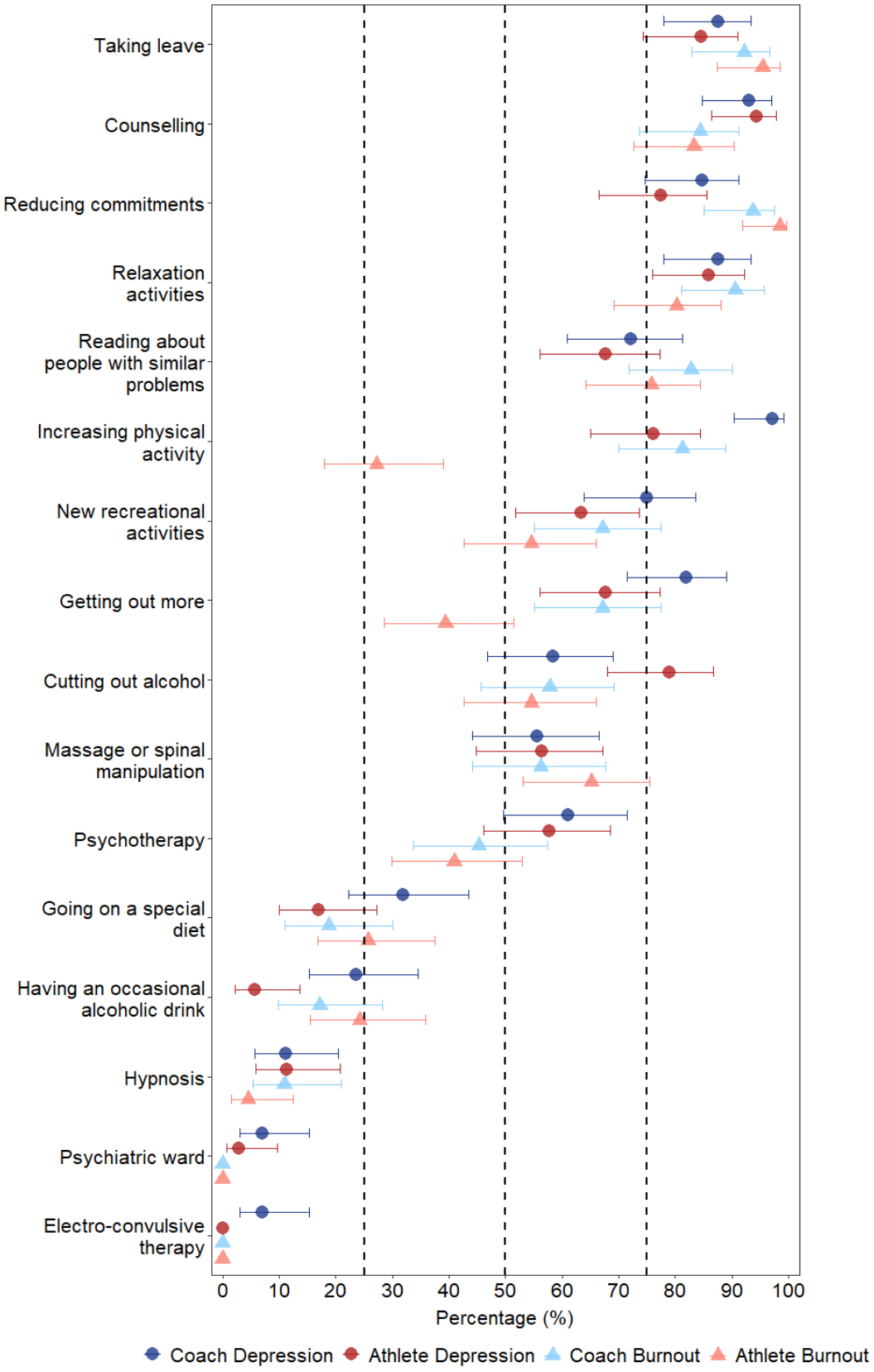


Figure 14 illustrates the perceived helpfulness of activity and treatment-based interventions between vignettes. For coach depression, 'increasing physical activity' was considered most helpful (97.2%) and 'counselling' was considered most helpful for athlete depression (94.3%). For coach (93.8%) and athlete burnout (98.5%) 'reducing commitments' was regarded as most helpful.

'Increasing physical activity' was regarded to be significantly more helpful for coach depression than coach burnout and athlete depression. It was also perceived to be significantly more helpful for athlete depression and coach burnout when compared with athlete burnout. 'Reducing commitments' was perceived as significantly more helpful for athlete burnout than depression, where 'getting out more' was significantly more helpful for coach burnout and athlete depression when compared with athlete burnout.

Finally, 'having an occasional alcoholic drink' was considered significantly more helpful for coach depression and athlete burnout when compared with athlete depression. 'Cutting out alcohol' was also considered significantly more helpful for athlete depression than burnout (see Supplementary File 25 for all tests).

Stigma

In examining elite coaches' perceptions of mental health stigma, participants largely 'disagreed' or 'strongly disagreed' with stigma-related statements regarding depression and burnout vignettes. Across all vignettes 'a problem like this is a sign of weakness' received the highest rates of disagreement. Table 7 illustrates the perceived attitudes associated with stigma towards depression and burnout among participants.

Table 7: The percentage of participants that agreed, disagreed or neither regarding statements associated with stigma

Stigma Group	Coach Depression	Athlete Depression	Coach Burnout	Athlete Burnout
People with this problem could snap out of it				
Agree	4.17%	7.04%	7.81%	9.09%
Neither Agree nor Disagree	19.44%	9.86%	15.63%	25.76%
Disagree	76.39%	83.10%	76.56%	65.15%
A problem like this is a sign of weakness				
Agree	2.78%	0.00%	0.00%	4.55%
Neither Agree nor Disagree	4.17%	4.23%	4.69%	4.55%
Disagree	93.06%	95.78%	95.31%	90.91%
This problem is not a real medical illness				
Agree	6.94%	1.41%	6.25%	13.64%
Neither Agree nor Disagree	13.89%	5.63%	15.63%	28.79%
Disagree	79.16%	92.96%	78.13%	57.58%
I would not tell anyone if I had this problem				
Agree	16.67%	7.04%	9.38%	21.21%
Neither Agree nor Disagree	26.39%	15.49%	17.19%	13.64%
Disagree	56.95%	77.47%	73.44%	65.15%
I wouldn't employ someone if they had this issue				
Agree	11.11%	5.63%	4.69%	3.03%
Neither Agree nor Disagree	27.78%	22.54%	14.06%	16.67%
Disagree	61.11%	71.83%	81.25%	80.30%

Discussion

This study examined the knowledge, perceptions and attitudes that elite-level coaches hold towards depression and burnout. Elite coaches were significantly more accurate in identifying depression than burnout in both coach and athlete vignettes. When considering help-seeking intentions, seeing or talking to a mental health professional was the most frequently reported option for coaches and athletes with depression, while time away from coaching or competing was cited most often for coaches and athletes experiencing burnout. This is largely consistent with the perceived helpfulness of various interventions, as

medical/psychological-based interventions were considered more helpful for those experiencing depression (e.g. talking to a medical professional, antidepressants), while activity-based interventions appeared more important for burnout (e.g. time away from coaching or competing, reducing workload). Finally, levels of stigma were generally low in this self-selected sample, with most participants disagreeing with all stigma-related statements.

Findings revealed that elite coaches were significantly better at identifying depression compared to burnout. This aligns with previous research, suggesting that elite-level coaches can accurately identify depressive symptoms, particularly among athletes (Hegarty et al., 2018). Elite coaches' difficulty in identifying burnout however, may potentially be due to the syndrome's lack of conceptual and diagnostic clarity and consistency (Bianchi et al., 2015). This conceptual ambiguity may lead to greater difficulty in identifying symptoms of burnout, especially because symptoms may be less distinct and severe than those of depression. While physical and emotional exhaustion, among other physiological presentations (e.g. sleep disturbance, weight change), remains a key feature of both constructs, motivational and emotional responses may offer distinctions. For instance, burnout involves a decrease in motivation specific to the athlete's or coach's sport, while depression may manifest as a general lack of motivation and joy in one's life (e.g. relationships, hobbies), potentially leading to suicidal ideation (Nixdorf et al., 2023). Similarly, although persistent low moods are considered a key symptom of depression, these affective states can also occur in burnout, although these mood fluctuations are primarily associated with one's occupation.

It could be argued that the inherent demands of working in elite sport may also present difficulties for coaches to detect burnout among themselves and athletes. In striving to achieve performance outcomes within an insecure results-dependent role, athletes and coaches may feel pressured by sports organizations, media, and the public to 'tolerate' the

heavy demands that blur work-life boundaries (e.g. intense workloads, long and irregular working hours, frequent travel). Since these role-oriented pressures are often perceived to be 'part and parcel' of working in elite sport, coaches may have difficulty in distinguishing burnout from common physical and psychological presentations that have been normalized amongst athletes and coaches (e.g. fatigue, exhaustion). Ultimately, given burnout is common in elite sport and considered a risk factor for depression and other forms of mental ill-health among coaches (Hassmén et al., 2019; Olusoga & Kenttä, 2017) and athletes (Glandorf et al., 2023; Kegelaers et al., 2022), there is a need to improve the identification of burnout symptoms and its occupational association among elite coaches. Accurate detection of symptoms from both coaches and organizations (e.g. mental health screening) may ensure symptoms of burnout do not lead to the onset of more persistent and serious mental health issues (Frost et al., 2023). To facilitate accurate detection and early intervention (e.g. help-seeking), future MHL programs should emphasize the need to address the specific stressors and presentations of burnout experienced by coaches and athletes. Programs should also address mental health symptoms specific to other common and particular forms of mental ill-health experienced by elite athletes (e.g. eating disorders) and coaches (e.g. adverse alcohol use) (Frost et al., 2024; Reardon et al., 2019).

Help-seeking approaches and the perceived helpfulness of interventions varied across coach, athlete, depression and burnout vignettes. Participants largely perceived seeing a mental health professional (e.g. psychologist or counsellor) as the best measure of support for both coaches and athletes, particularly those experiencing symptoms of depression. Despite previous research suggesting that stigma towards help-seeking may be present among elite athletes and coaches (Castaldelli-Maia et al., 2019; Frost et al., 2024), our findings indicate that there were low levels of stigma among the current sample of coaches. Notably, participants largely indicated they would feel comfortable telling someone about burnout or

depression if they were the coach or athlete in the vignette. Given that Frost et al. (2025) recently found that mental health professionals considered stigma a larger barrier for coaches seeking help than coaches themselves, it may be argued that stigma towards mental health help-seeking has been overstated to date, and that elite coaches are actually relatively receptive to engaging with professional support services. Thus, while minimizing mental health stigma remains important and necessary to facilitate help-seeking at the individual level (e.g. delivering mental health literacy programs), sports organizations should prioritize addressing the broader structural pressures and instabilities of elite sport (e.g. lack of job security, pressure to overwork and meet performance goals) that have been identified as the most important, yet least feasible barrier to coaches seeking professional support (Frost et al., 2025).

Sports organizations therefore play a crucial role in supporting practices that prevent burnout and mental ill-health in the first place. Sports organizations should be cognizant of cultivating a 'win-at-all cost' culture that can cause psychological harm and additionally discourage individuals in elite sport from adopting proactive mental health approaches. Rather, in addition to facilitating effective education and training, sports organizations should look to establish psychologically safe high-performance environments that may normalize structured time off and facilitate formal help-seeking (Walton et al., 2024).

Results also revealed differences in the perceptions and attitudes that elite coaches hold towards depression and burnout. With a stronger inclination towards medical and psychological approaches for those experiencing depression, it is critical that coaches seek the appropriate support for themselves and their athletes if experiencing burnout. Taking time away from one's sport may highlight a preference for coping with burnout through externalizing behaviors or responses, although these may not be sufficient in reducing the demands that contribute to burnout. While sufficient physical and psychological recovery can

help protect coaches and athletes from burnout (Bentzen et al., 2016; Bicalho & Costa, 2018), seeking appropriate clinical support is critical to address and mitigate the underlying factors contributing towards burnout (e.g. workload). Therefore, MHL programs should highlight best management approaches for burnout, encouraging proactive support seeking (e.g. talking to a mental health professional) rather than solely relying on taking time off or going on vacation.

The results showed some distinctions in how elite coaches viewed help-seeking intentions and the perceived helpfulness of interventions between coaches and athletes. The greatest differences in helpfulness were related to becoming more physically active, with exercise considered to be more helpful for coaches experiencing depression or burnout than athletes. Conversely, athletes experiencing burnout were encouraged to increase their rest and recovery compared to coaches. These differences may be related to the physical demands and requirements faced by elite athletes, and the need to potentially decrease their physical load to manage depression and burnout. Alternatively, engaging in regular physical activity is well-recognized as protective factor against mental ill-health (Firth et al., 2020), and has been shown to positively influence the mental health of elite coaches (Hassmén et al., 2019). Our findings suggest that coaches are cognizant of the mental health benefits of physical activity. Given elite coaches regularly face time-related challenges (e.g. long working hours, travel) that may hamper their ability to engage in physical activity, both coaches and organizations should identify ways to allow coaches to incorporate exercise into their schedule to protect their mental health.

While fewer participants considered it helpful, having an occasional alcoholic drink was also perceived to be significantly more helpful for coaches experiencing depression than athletes. Given current evidence indicates that risky alcohol consumption may be more prevalent among elite coaches than athletes (Pilkington et al., 2022), sports organizations

should pay particular attention towards alcohol consumption as a coping mechanism for coaches. Future MHL programs might incorporate educational resources around alcohol consumption to improve alcohol literacy and its health-related impacts (Chow et al., 2022).

Lastly, this study found that elite coaches disagreed with stigma-related statements. Social desirability bias may be present (Latkin et al., 2017), and the self-selected nature of participation (in a study on mental health in elite coaches) may also influence the low levels of stigma among this sample. These stigma-related perceptions could also be reflected in the help-seeking rates reported in this study, with 39% of participants reporting having sought treatment at some stage throughout their life, primarily through a mental health professional (24%). This rate is comparable to previously reported help-seeking rates among elite coaches (35%) (Pilkington et al., 2022), but higher than meta-analytic help-seeking rates reported by elite athletes (22%) (Cosh et al., 2024). Although further research is needed to confirm these help-seeking rates (particularly among studies with larger samples of elite coaches), these current rates are higher than those reported among the general population in Australia (18%) and the UK (12%) (Australian Bureau of Statistics, 2024; Lubian et al., 2016). While stigma is still considered a prominent barrier to disclosing mental health challenges or seeking-help in elite sports settings (Castaldelli-Maia et al., 2019; Frost et al., 2025), stigma-based interventions (Gulliver et al., 2012; Kern et al., 2017), a growing attention towards psychologically safe high-performance environments (Vella et al., 2022; Walton et al., 2024) and the development of formal help-seeking pathways (Kenttä & Hyland, 2021; Rice et al., 2020; Van Slingerland et al., 2020), may be improving attitudes towards mental health in elite sports.

Limitations

This data was collected using a cross-sectional methodology and was not pre-registered. Pilot testing of the vignettes with coaches would have enhanced the validity of this

approach but unfortunately was not feasible at the time of survey creation and launch. Burnout and depression are just two common presentations in elite sport, and the development of vignettes depicting other common mental health disorders (e.g. anxiety) in elite sport merit further investigation. In addition, generalizability is affected by eligible participants largely comprising of men who coach Australian Rules Football (41.8%) and otherwise work in high-resource settings/countries. Social desirability bias, coupled with the self-selected sample, may have contributed to the findings, particularly the low rates of mental health stigma.

Implications for Future Mental Health Literacy Interventions

The findings offer novel insights that may inform the development of evidence-based MHL interventions targeted for elite coaches. Firstly, MHL interventions should educate elite coaches about the specific stressors and symptoms experienced by both athletes and coaches. Attention should be paid towards notable coach-specific risk factors such as job insecurity, poor work-life balance and media scrutiny (Frost et al., 2024), equipping coaches with effective strategies to manage these stressors rather than relying on harmful coping mechanisms that are common among the coaching community (e.g. risky alcohol consumption) .

MHL interventions should also actively address burnout as a risk factor for mental ill-health among athletes and coaches. In particular, elite coaches should be informed about the various and differing presentations of burnout among athletes and coaches, and encouraged to refer or engage with a mental health professional in a proactive approach to thwart the onset of a mental health crisis or disorder. Considering elite coaches may be unaware of the mental health supports made available to themselves and their athletes (Beasley et al., 2024), MHL interventions should also inform coaches about the local services and resources, where they exist, for managing burnout and other mental health issues.

Lastly, to maximize user engagement, consideration should be given to the delivery of MHL programs. Collegiate coaches have indicated a preference to receive mental health education in-person or through video modules (Hegarty et al., 2018), however further research is needed to investigate the preferences of other elite coaching populations. While coach education and development programs may serve as an ideal entry point for introducing MHL (Kenttä et al., 2023), organizations should make efforts to provide ongoing education targeting gender and sport-specific stressors and presentations experienced by athletes and coaches, delivered in a timely fashion to accommodate the schedules and pressures of elite coaches (e.g. pre-season). These programs may be facilitated by mental health professionals (e.g. psychologists, sports medicine physicians) or trained peers (e.g. former athletes/coaches who have undergone mental health or first aid training) who may have a greater level of relatability and understanding of the demands of those in elite sports settings. When delivering programs, coaching educators should also consider their communication style, focusing on utilising a clear and direct 'active voice' (e.g. "the athlete accessed the service") to increase the likelihood of behavioural or attitude changes by fostering a greater sense of control among athletes and coaches (Gorczynski, 2025).

Conclusion

This study examined the perceptions and attitudes that elite coaches hold towards mental health. Elite coaches were better at identifying depression than burnout, which suggests the latter should be better incorporated into MHL program content. Similarly, interventions for burnout in MHL should emphasize the importance of clinical support rather than relying solely on externalizing activities (e.g. taking leave, physical exercise, alcohol consumption). Finally, despite low levels of stigma and high help-seeking intentions in this sample, MHL interventions should continue to identify ways to reduce stigma in elite sports

settings. This can empower elite athletes and coaches to share mental health challenges and seek help if necessary.

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Data availability statement

The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research supporting data is not available.

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Chapter Summary

Findings from *Chapter 5* indicated that while elite coaches could reliably detect depression among elite athletes and coaches, participants were less effective in accurately identifying burnout. Stigma towards mental health and help-seeking was generally low throughout the sample, potentially indicating that perceptions regarding mental health and help-seeking are progressing favourably. Notably, elite coaches were more likely to advocate for medical and psychological interventions for athletes and coaches experiencing depression. Conversely, for those experiencing burnout, elite coaches considered activity-based interventions (e.g. taking leave) more helpful. Accordingly, future mental health literacy programs should inform coaches to seek appropriate clinical supports, rather than exclusively taking time off, to address the root causes associated with burnout (e.g. workload). These evidence-based programs may also explore ways to promote mental health help-seeking among elite-level coaches. To identify barriers to help-seeking, *Chapter 6* explores challenges associated with seeking treatment among elite coaches.

Chapter 6: Olympic and Paralympic coaches' perceived barriers to mental health help-seeking: A concept mapping study

Chapter Overview

While reported help-seeking rates presented throughout this thesis (37%) and the extant literature (35%) indicate that elite coaches may be more likely to seek to mental health support compared with athletes (22%) (Cosh et al., 2024; Pilkington et al., 2022), little is known about factors influencing help-seeking among elite coaches. As such, this study employed a mixed-methods group concept mapping methodology to identify barriers to mental health help-seeking among Olympic and Paralympic coaches. Ten overarching challenges associated help-seeking were identified from an international sample of Olympic and Paralympic coaches (n=10) and mental health professionals involved with this community (n=9). The importance and feasibility of addressing these 10 challenges were also rated by participants. This study was financially supported by an International Olympic Committee's (IOC) 2024 PhD Students and Early Career Academics Research Grant, and was published with the *British Journal of Sports Medicine* (IF:16.3) in June 2025.

Olympic and Paralympic coaches' perceived barriers to mental health help-seeking: a concept mapping study

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ABSTRACT

Objectives To investigate challenges associated with mental health help-seeking among Olympic and Paralympic coaches. The study also sought to identify which challenges were most important and feasible to address.

Methods The study employed a mixed-methods group concept mapping methodology. Participants brainstormed, sorted (into groups) and rated (for importance and feasibility) statements on 5-point Likert scales in response to the prompt, 'What makes it challenging for an Olympic or Paralympic coach to seek help for their mental health?'. Nineteen Olympic coaches, Paralympic coaches and mental health professionals participated.

Results Participants brainstormed 68 unique statements. Ranked by importance, 10 core clusters of challenges were identified: (1) pressures and instability within high-performance sports environments, (2) stigma associated with mental health help-seeking, (3) lack of prioritisation for own mental health care, (4) lack of environmental safety to seek mental health support, (5) lack of adequate mental health literacy, (6) time constraints, (7) expectations to manage role-related pressures, (8) misconceptions about mental resilience, (9) lack of access to mental health support, and (10) hesitance to engage with mental health practitioners. A 'lack of adequate mental health literacy' and 'pressures and instability within high-performance sports environments' were rated the most and least feasible challenges to address, respectively.

Conclusion While dynamic individual factors with high feasibility may offer short-term solutions (eg, mental health literacy), sports organisations should prioritise eliminating culturally embedded barriers deterring coaches from seeking help. Considering their unique insights, coaches and mental health professionals should play an active role in developing psychological supports for coaches.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Olympic and Paralympic coaches are exposed to various stressors (eg, performance, funding challenges and social isolation) that may increase their risk of mental ill-health.
⇒ Mental health help-seeking is widely considered to be an effective early intervention to support the mental health of elite coaches.
⇒ Current research has primarily focused on understanding factors that influence mental health help-seeking among elite athletes, while less attention has been directed towards understanding the help-seeking attitudes and behaviours of coaches.

WHAT THIS STUDY ADDS

⇒ Broader cultural and environmental influences within high-performance settings, including role pressures and instability, were regarded as the most important but least feasible barriers to address to improve help-seeking among coaches.
⇒ In contrast, mental health professionals working in elite sport identified stigma as the greatest barrier to coaches seeking help for their mental health.
⇒ Both groups perceived a lack of mental health literacy as the most feasible challenge to address.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Sporting organisations should develop and implement strategies that encompass both short-term (eg, mental health literacy interventions) and long-term approaches (eg, address stigma towards help-seeking) to encourage and empower Olympic and Paralympic coaches to access mental health support.

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INTRODUCTION

Coaches who work in elite sports environments encounter numerous demands that can compromise their mental health and well-being, including performance pressures, job insecurity and media scrutiny.[1 2] Emerging research suggests that elite coaches report symptoms of depression and anxiety at similar rates to those observed in elite athletes, but may be more prone to problematic alcohol consumption.[3 4] Although definitions of elite coaches vary,[5 6] those who guide athletes or teams to participate in the Olympic or Paralympic Games are typically considered members of the elite coaching community. These coaches navigate an array of performance, organisational and personal-related stressors, including challenges associated with qualifying for a Games and managing resources and performance objectives set by national governing bodies.[7 8] To combat the demands of the role, a focus on prevention and early intervention strategies to protect the mental health of Olympic and

Paralympic coaches has been emphasised.[9 10] Sporting bodies and organisations have been encouraged to actively promote, support and advocate for mental health help-seeking, to reduce barriers to treatment, improve coach mental health and enhance coach effectiveness.[1]

From a mental health perspective, help-seeking is considered an adaptive coping process that involves obtaining assistance to manage one's mental health.[11] Help can be sought from four main sources of support, including self-help (eg, online resources), informal (eg, friends or family), semiformal (eg, work supervisors or colleagues) and formal (eg, mental health professional or general physician) sources.[11] In elite sport, position papers and other efforts to promote formal help-seeking to alleviate mental health challenges have focused predominantly on athletes,[12 13] with meta-analysis indicating that approximately 22% of elite athletes report having sought help for a mental health concern.[14] Less attention has been directed towards advocating for mental health support and help-seeking among coaches.[10] To our knowledge, only one study has explored help-seeking rates among elite coaches, where 35% of participants reported having sought mental health treatment at some stage in their life.[3]

To improve sports organisations' ability to support the mental health of elite coaches, research is needed to identify factors that contribute to or limit Olympic and Paralympic coaches from seeking mental health support.[5 15] This study addressed this research gap by gathering insights from Olympic and Paralympic coaches as well as medical professionals involved in the help-seeking process (the latter group were included to capture a holistic view of the help-seeking process from a service provider perspective). Specifically, this study aimed to answer the following questions: (1) what are the perceived challenges that limit mental health help-seeking in Olympic and Paralympic coaches, and (2) to what extent are these challenges considered important and feasible to address?

METHODS

A mixed-methods group concept mapping study was conducted based on Kane and Trochim's six-step model of preparation, generation, structuring, representation, interpretation and utilisation,[16] adhering to Strengthening the Reporting of Observational Studies in Epidemiology guidelines for reporting purposes (see online supplemental file 26 for further details).[17] Group concept mapping was employed as a methodology to capture the diverse perspectives of multiple stakeholders (eg, service users and providers) involved in the mental health help-seeking processes of Olympic and Paralympic coaches. As an established methodology for investigating complex health issues in community health research,[18] group concept mapping is an effective and efficient way of contextualising the subjective perspectives of participants on the relationships between concepts within a structured quantitative model.[19] Data were gathered from participants in three stages using Qualtrics and the Concept Systems groupwisdom web platform.[20] The stages involved (1) providing consent and completing a short demographic survey on Qualtrics; (2) brainstorming statements in response to a focus prompt on the groupwisdom platform, and (3) sorting and rating a set of synthesised statements generated in stage 2. A detailed summary of the concept mapping procedure is available in online supplemental file 27.[16 21]

Purposive sampling was employed to recruit current and former Olympic and Paralympic coaches and medical professionals who work in elite sport. A target sample size of 15–30 was set, as samples below 15 yield highly variable stress values, while those above 30 may face data saturation.[22] A range of major sporting organisations across Africa, Europe, North America and Oceania were contacted to disseminate information about the study among their networks, and social media channels were also used to promote the study (X and LinkedIn). Participants were required to be a performance-oriented coach of athletes or teams at the Summer Olympic or Paralympic Games (as opposed to a coaching role associated with a medical or health practice, such as strength and conditioning). Medical professionals were required to have provided direct mental health care or facilitated referrals to mental health services for Olympic or Paralympic coaches (eg, registered psychologist, psychiatrist or sports medicine doctor). Participants were required to comprehend written English proficiently and be over 18 years of age.

Participants provided written consent and completed the online survey by 12 May 2024. Demographic and background questions included age, gender, country of residence and nature of work, among others. Twenty-five eligible participants who had provided consent were emailed instructions and a link to the groupwisdom platform on 13 May. Once registered, participants were asked to submit as many single-idea responses as possible to the focus prompt *What makes it challenging for an Olympic or Paralympic coach to seek help for their mental health*?. Participants could revisit the platform and review others' statements during this data collection phase. Once this data collection window shut on 19 May, two researchers (JF and AD) met to synthesise the participant-generated statements. This included (1) removing irrelevant statements (where participants' responses did not directly answer the prompt); (2) splitting compound statements; (3) identifying statements that represented the same idea, selecting a single statement that best represented the idea and removing duplicates; and (4) editing statements for grammar and clarity of expression.[23] Where possible, the original words used by participants were retained. The research team (JF, AD, RP) reviewed, refined and approved the synthesised statements before proceeding with stage 3.

Following statement consensus among the research team, participants were emailed instructions about stage 3 (open from 27 May to 9 June). Participants were required to sort the randomised, synthesised list of statements generated in stage 2 into groups that made sense to them. They were instructed to: group statements of similar meaning; name each group they created based on its theme or contents; create single-statement groups if they thought a statement was unrelated to all other statements; and put every statement in a group. They were instructed to avoid creating groups based on a value or priority (eg, 'important' or 'hard to do' groups) and grouping unrelated statements together (eg, 'miscellaneous' or 'other' groups).

Participants were then asked to rate the importance and feasibility of each synthesised statement on a 5-point Likert scale. Questions included *on a scale of 1 (least important) to 5 (most important), how important do you think this challenge is to Olympic and Paralympic coaches seeking mental health support?*, and *on a scale of 1 (least feasible) to 5 (most feasible), how feasible do you think it is to do something about this challenge?*. Participants were instructed to use the entire scale, assigning a rating of 1 to the least important/feasible challenge and 5 to the most. Upon completion, all participants were remunerated with an $A100 voucher.

Analysis

Participants' sorting data were excluded if they had sorted <75% of statements,[16] and if they used fewer than 4 out of

the 5 Likert scale choices. A two-dimensional point map was generated by applying multidimensional scaling to participants' sorting data, creating a set of X–Y values for each statement.[16] A stress index (a statistic in multidimensional scaling assessing the degree to which the distances between points on the point map are discrepant from the values in the input similarity matrix) was calculated by the groupwisdom platform as a measure of the fit between the map and the original sorting data. Stress values below 0.35 are considered acceptable for concept mapping.[24] Hierarchical cluster analysis was then used to partition the map into clusters.

The research team (JF, AD, RP, CCW) reviewed the generated cluster-map solutions to identify the map that best represented the participants' sorting data. The groupwisdom software was used to produce an initial 15-cluster map. The research team reviewed the clusters that were being merged by gradually reducing one cluster at a time until the optimal representation of the participants' sorting data was achieved. The final cluster-map solution was reached when the research team identified the cluster level that retained the most useful detail between clusters while merging clusters that were considered to be conceptually related.[25] Cluster boundaries of the selected map were also revised to facilitate the best conceptual fit of each statement within a cluster. This involved assessing the bridging values, similarity matrix and visual spanning data provided on the groupwisdom platform to support conceptual interpretations.[26] Bridging values (a built-in proprietary index calculated in groupwisdom with a range: 0–1) reflect and quantify a statement's spatial relationship in proximity to other statements. For an individual statement, a bridging value closer to 0 indicates that the statement is closely related to the statements immediately around it on the map. A value closer to 1 indicates that the statement is a link or bridge between more distant statements or areas of the map.[16] Mean cluster bridging values closer to 0 indicate close grouping between statements within the cluster, while values nearer to 1 signify conceptual dispersion. The similarity matrix summarises participants sorting data using binary values (0 or 1), reflecting how many participants sorted each pair of statements together.[16] Visual spanning data are a feature of the groupwisdom platform that can be used to show how often each statement was sorted with every other statement.[26]

A bivariate Go-Zone plot was generated to help visually examine the relationships between statements based on mean rating values for both scales.[25] A Pearson product–moment correlation was calculated by the groupwisdom software to assess the strength of the linear relationship between the importance and feasibility ratings. Pattern match graphs were also created to visually compare the mean importance and feasibility ratings among clusters and to compare the difference in importance and feasibility ratings between coaches and mental health professionals. Independent t-tests identified statistically significant differences between ratings of clusters.

RESULTS

Participants

Overall, 19 participants were involved in the study, comprising of 10 Olympic and Paralympic coaches and 9 mental health

Table 8 Demographics, sport-related information and employment characteristics of participants

	% (n)		% (n)
Age		Type of mental health professional	
Mean (SD)	45.5 (11.8)	Clinical psychologist	66.7 (6)
25–34	15.8 (3)	Registered psychologist	33.3 (3)
35–44	57.9 (11)	Type of coaches' mental health professionals working with	
45–54	5.3 (1)	Both Olympic and Paralympic	55.6 (5)
55≥	21.0 (4)	Olympic only	33.3 (3)
Gender		Paralympic only	11.1 (1)
Men	52.6 (10)	Employment	
Women	47.4 (9)	Full-time employed	37.0 (7)
Nation		Part-time	10.4 (2)
Australia	47.4 (9)	Contract or a casual/as needs basis	52.6 (10)
Canada	21.0 (4)	Primary sport (coaches)	
Kenya	10.4 (2)	Athletics	20.0 (2)
Ireland	5.3 (1)	Taekwondo	20.0 (2)
Samoa	5.3 (1)	Boccia	10.0 (1)
United Kingdom	5.3 (1)	Goalball	10.0 (1)
United States	5.3 (1)	Hockey	10.0 (1)
Years in elite sport		Rowing	10.0 (1)
Mean (SD)	18.6 (10.3)	Volleyball	10.0 (1)
Type of participant		Wheelchair Rugby	10.0 (1)
Olympic or Paralympic coach	52.6 (10)	Diagnosed with a mental health disorder (coaches)	
Mental health professional	47.4 (9)	No	80.0 (8)
Coach type		Yes	10.0 (1)
Head/lead coach	50.0 (5)	Not sure	10.0 (1)
Senior coach	30.0 (3)	Sought mental health treatment (coaches)	
Assistant coach	10.0 (1)	No	60.0 (6)
Director	10.0 (1)	Yes, more than 12 months ago	30.0 (3)
		Yes, within last 12 months	10.0 (1)

Table 9 Statements generated by participants during the brainstorming phase

	Cluster statement	Bridging value*	Mean rating (0–5) for		Go-Zone quadrant
			Importance	Feasibility	
Pressures and instability within high-performance sports environments		Avg 0.64	Avg 4.04	Avg 2.62	
12	Coaches may over-commit and/or over-work due to the volatile nature of the industry	0.686	4.26	2.84	2
54	Pressure to perform when employment contracts conclude at the end of a cycle	0.645	4.21	2.47	2
1	Pressure from a lack of job security	0.524	4.05	2.47	2
66	Pressure from above to meet podium goals	0.532	4.00	2.32	2
35	Expectations and pressure from CEO and board members	0.653	3.95	2.68	2
52	Reluctance to invest time and money into mental health support due to a lack of job security	0.826	3.79	2.95	2
Stigma associated with mental health help-seeking		Avg 0.09	Avg 3.76	Avg 3.24	
7	Stigma of mental health in sports culture	0.000	4.16	3.47	2
13	Stigma perpetuated by the culture of coaching (eg, high performance coaches should not need help)	0.144	3.89	3.00	2
39	Fear of being vulnerable and perceived as weak going into games	0.015	3.84	3.11	2
58	The fear of being seen as vulnerable, weak or not up to the job	0.069	3.84	3.05	2
53	Coaches might not want anyone within sport to know they're struggling	0.143	3.84	2.95	2
22	Stigma around being perceived as soft	0.000	3.79	3.21	2
36	Self-stigma related to help-seeking—for example, I am weak if I need help	0.142	3.63	3.37	2
9	Fear of showing vulnerability or weakness to athletes	0.159	3.58	3.53	4
63	Fearful of being labelled a poor coach if they seek help	0.010	3.53	3.53	3
15	Coaches may have been an athlete at a time when stigma was higher. They are a product of a stigmatised environment and society	0.213	3.53	3.21	1
Lack of prioritisation for own mental health care		Avg 0.6	Avg 3.74	Avg 3.47	
21	Prioritising their athletes and not looking at their own needs and mental health	0.564	3.89	3.21	2
28	Coaches feel that they need to support others and not support themselves	0.595	3.74	3.47	2
67	Fearing that it is never a good time to disclose the need for help	0.636	3.58	3.74	4
Lack of environmental safety to seek mental health support		Avg 0.2	Avg 3.68	Avg 2.99	
59	Concerns about being judged by employers or federations	0.128	4.11	3.37	2
31	Concerns about how seeking mental health support could influence future employability	0.261	4.00	2.74	2
56	Coaches asking for time off (eg, time in lieu or holidays) to take care of themselves is not in the culture of high-performance	0.388	3.95	3.37	2
19	Concerns around how seeking help could impact their contract or job in the future	0.168	3.84	3.00	2
25	Concern of how the sport they work for may react when they find out a coach is seeking help	0.102	3.84	3.05	2
5	Cut throat nature of high performance sport doesn't provide for any perceived weakness	0.083	3.58	3.05	2
60	Potential political exploitation by rival coaches	0.282	2.47	2.37	1
Lack of adequate mental health literacy		Avg 0.42	Avg 3.64	Avg 4.24	
51	Coaches may fail to recognise the warning signs of declining mental health	0.230	3.95	4.37	4
29	Don't see mental health help-seeking as a priority until it is critical	0.739	3.95	3.79	4
33	Coaches may have poor mental health literacy (ie, they do not know that they are depressed/anxious, etc and dismiss it as tired or overworked)	0.253	3.89	4.32	4
61	Not knowing how a mental health professional can help	0.466	3.74	4.61	4
6	Not being fully aware of what support coaches are able to access	0.733	3.68	4.68	4
14	A lack of understanding of mental health and its impact on coaching performance	0.267	3.68	4.63	4
23	Coaches may not recognise that their poor mental health is perhaps a mental illness and requires professional support	0.230	3.58	4.21	4
68	Coaches may lack the confidence to talk about mental health	0.573	3.53	3.68	3
64	Coaches not knowing what is 'normal' and 'not normal' to feel.	0.230	3.37	4.37	3
43	Coaches may not know when the 'right time' is to seek help	0.480	3.32	4.21	3
40	Not believing that mental health support can make things better	0.416	3.32	3.79	3
Time constraints		Avg 0.76	Avg 3.42	Avg 3.31	
49	Competing tasks makes it hard for coaches to prioritise their own needs	0.693	3.95	3.16	2
47	Finding the time for coaches to access mental health support	0.780	3.58	3.37	2
38	Coaches may feel guilty for taking the time to care for themselves	0.783	3.53	3.63	3
44	The schedule doesn't allow for coaches to take the time to work on their mental health	0.630	3.47	3.16	1
2	With tight operational budgets, coaches will rank spending on 'unnecessary' support as a low priority compared with athlete support	1.000	3.42	3.53	3
37	Busy work schedules make it difficult to find time for coaches to seek help for mental health	0.722	3.32	3.05	1
10	A lack of self-reflection time	0.802	3.05	3.58	3
41	International travel makes it difficult to find time to see a mental health professional	0.700	3.05	3.00	1

Continued

Table 9 Continued

	Cluster statement	Bridging value*	Mean rating (0–5) for Importance	Mean rating (0–5) for Feasibility	Go-Zone quadrant
Expectations to manage role-related pressures		Avg 0.46	Avg 3.37	Avg 3.25	
27	A lack of understanding about the needs, complexity and pressure of the coach's role from those holding leadership positions in organisations	0.710	3.79	3.47	2
57	The perception that coaches are lucky to work in a field they are passionate about and feel like they can't complain or ask for anything	0.211	3.37	3.11	1
50	Coaches pride themselves on working in high-pressure situations	0.384	3.37	3.16	1
62	Coaches sign up to the demands of the job	0.543	2.95	3.26	1
Misconceptions about mental resilience		Avg 0.68	Avg 3.33	Avg 3.56	
18	Coaches may not see the point of accessing mental health supports, if they feel hopeless that external factors might not change, so they just need to 'deal with it'	0.815	3.63	3.21	2
11	Faulty thinking that coaches have to be impervious to such 'trivial' problems	0.431	3.58	3.74	4
46	Coaches may have to admit that they need to access mental health support	0.710	3.47	3.58	3
17	Given coaching involves helping people be better, improve and work harder, coaches may think they need to work harder or do better to manage their own stress and mental health concerns rather than seeking help.	0.624	3.16	3.47	1
65	Coaches are conditioned to prioritise their physical health	0.800	2.79	3.79	3
Lack of access to mental health support		Avg 0.47	Avg 3.29	Avg 3.86	
4	Financial costs associated with seeking mental health support	0.474	3.58	3.84	4
45	Lack of funding for appropriate professional mental health work	0.793	3.58	3.68	4
24	Coaches may not have a trusted contact they can reach out to	0.377	3.53	4.00	3
16	Coaches aren't able to access psychologists provided by their sport as they service athletes only	0.464	3.47	4.32	3
3	Access to mental health services in a timely manner	0.311	3.42	3.95	3
48	Not knowing where coaches can seek help independently of their sport	0.364	3.26	4.53	3
26	No obvious person for coaches to go for help	0.542	3.26	4.42	3
42	Mental health support is slow and hard when the schedules of the coach and mental health professional do not align	0.376	3.26	3.26	1
8	Many coaches are self-employed and do not have access to support services	0.682	3.05	3.42	1
34	Psychologists may be unable to offer services for coaches who are travelling internationally for long periods of time due to limitations in insurance across countries	0.317	2.53	3.21	1
Hesitance to engage with mental health practitioners		Avg 0.81	Avg 3.29	Avg 3.74	
32	Concerns around confidentiality	0.885	3.95	4.11	4
55	The perception that someone outside of sport won't understand a coach and their circumstances	0.873	3.26	4.00	3
30	Concerns around finding a mental health professional who is the right 'fit'	0.631	3.21	3.95	3
20	Poor previous experiences	0.865	2.74	2.89	1

Each statement is situated in its cluster along with its bridging values, mean importance rating, mean feasibility rating and location on the Go-Zone map.
*Bridging values range from 0 to 1, with lower values more accurately representing the core theme of the cluster compared with higher values.
Avg, average.

professionals (no sports medicine physicians consented to participate). Participant characteristics are summarised in table 8.

Ideas generated

Eighteen participants generated 103 statements in response to the focus prompt. After the research team synthesised and edited participant responses, 68 relevant, unique and single-idea statements were available for participants to sort and rate (table 9).

Statement sorting

Nineteen participants sorted the synthesised statements into groups that made sense to them (range of groups created=3–12; median=8). Eighteen participants' sorting data were analysed, with 17 sorting all 68 statements and 1 sorting 51 statements into groups. Sorting data from one participant were excluded as their groups lacked conceptual clarity.

Statement rating

After confirming that participants had complied with rating instructions, data from all participants were approved for analysis. Nineteen participants rated the importance of all 68 statements, while 18 rated their feasibility (one participant rated the feasibility of 67 statements). Participants rated Statement 12 *Coaches may over-commit and/or over-work due to the volatile nature of the industry* (mean=4.26) as the most important challenge to address, and Statement 6 *Not being fully aware of what support coaches are able to access* (mean=4.68) as the most feasible to overcome (table 9). Participants considered Statement 60 *Potential political exploitation by rival coaches* as the least important (mean=2.47) and feasible (mean=2.37) challenge to address.

Concept maps

Cluster and Go-Zone map

A 10-cluster map solution was selected as the best representation of the sorting data (figure 15 & table 9). Cluster boundaries were redrawn to optimise thematic representation, resulting in the relocation of nine statements to different clusters (statements 4, 6, 8, 10, 38, 45, 50, 57, 58). The final 10 clusters encompass the following challenges: (1) pressures and instability within high-performance sports environments (six statements) (importance=4.04, feasibility=2.62); (2) stigma associated with mental

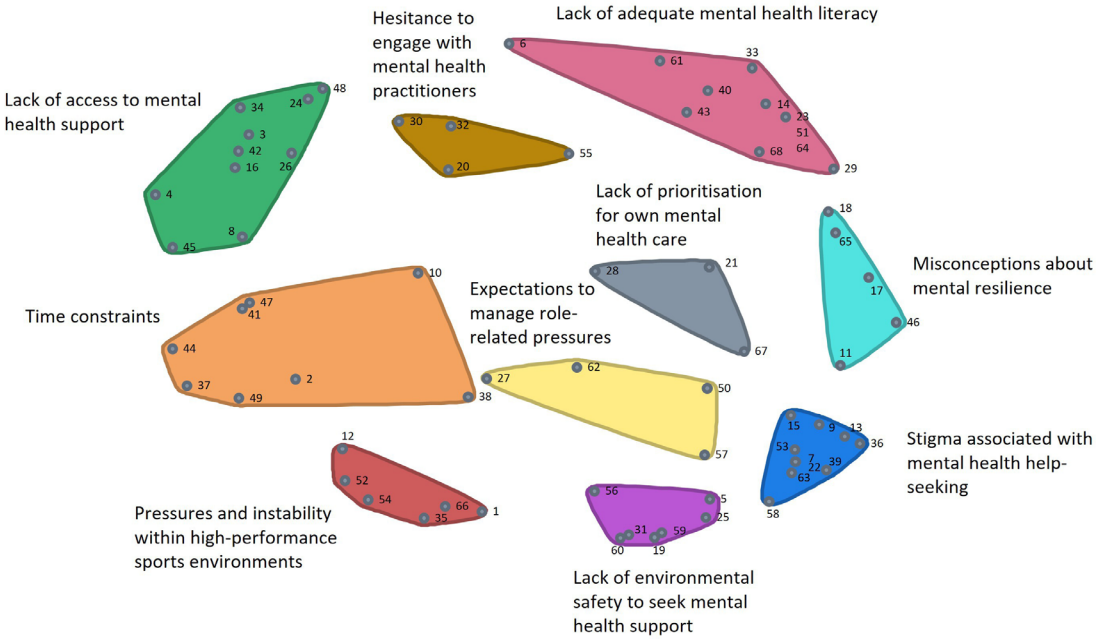

Figure 15 Ten-cluster map of challenges associated with mental health help-seeking among Olympic and Paralympic coaches. All cluster names are framed from the perspectives of coaches.

health help-seeking (10 statements) (importance=3.76, feasibility=3.24); (3) lack of prioritisation for own mental healthcare (three statements) (importance=3.74, feasibility=3.47); (4) lack of environmental safety to seek mental health support (seven statements) (importance=3.68, feasibility=2.99); (5) lack of adequate mental health literacy (11 statements) (importance=3.64, feasibility=4.24); (6) time constraints (eight statements) (importance=3.42, feasibility=3.31); (7) expectations to manage role-related pressures (four statements) (importance=3.37, feasibility=3.25); (8) misconceptions about mental

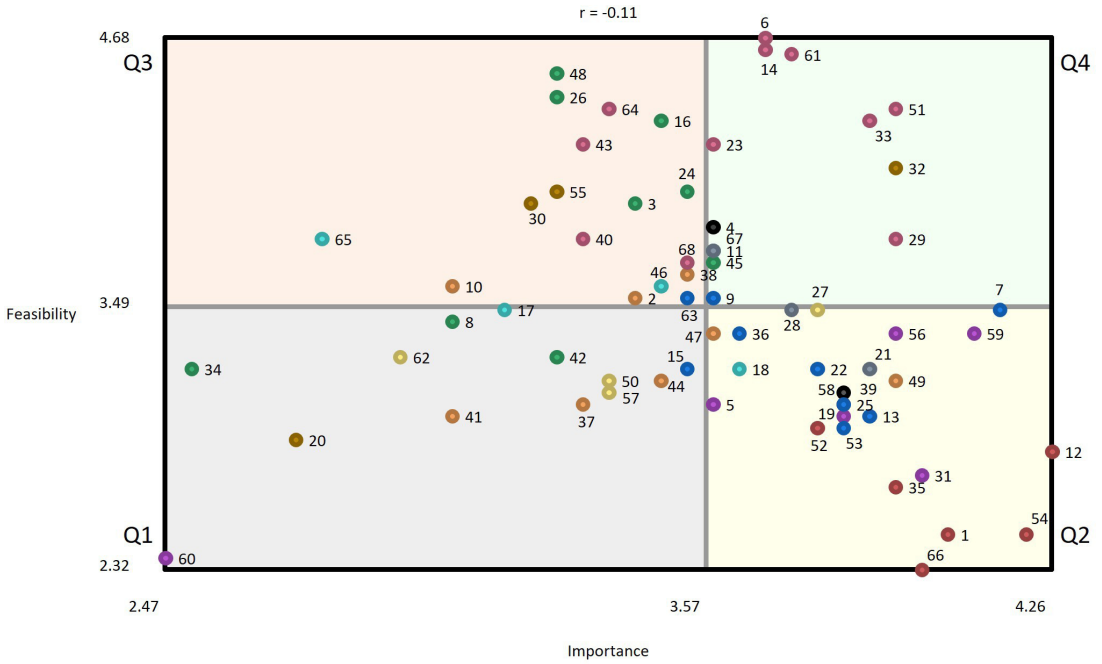

Figure 16 Go-Zone map exhibiting the combined mean importance (X-axis) and feasibility (Y-axis) of each participant-generated statement. Cluster name: pressures and instability within high-performance sports environments; stigma associated with mental health help-seeking; lack of prioritisation for own mental healthcare; lack of environmental safety to seek mental health support; lack of adequate mental health literacy; time constraints; expectations to manage role-related pressures; misconceptions about mental resilience; lack of access to mental health support; hesitance to engage with mental health practitioners; two statements with identical mean importance and feasibility ratings. Go-Zone quadrants: Q1, statements rated below the grand mean for importance and feasibility; Q2, statements rated above the grand mean for importance but below the mean for feasibility; Q3, statements rated above the grand mean for feasibility but below the mean for importance; Q4, statements rated above the grand mean for importance and feasibility.

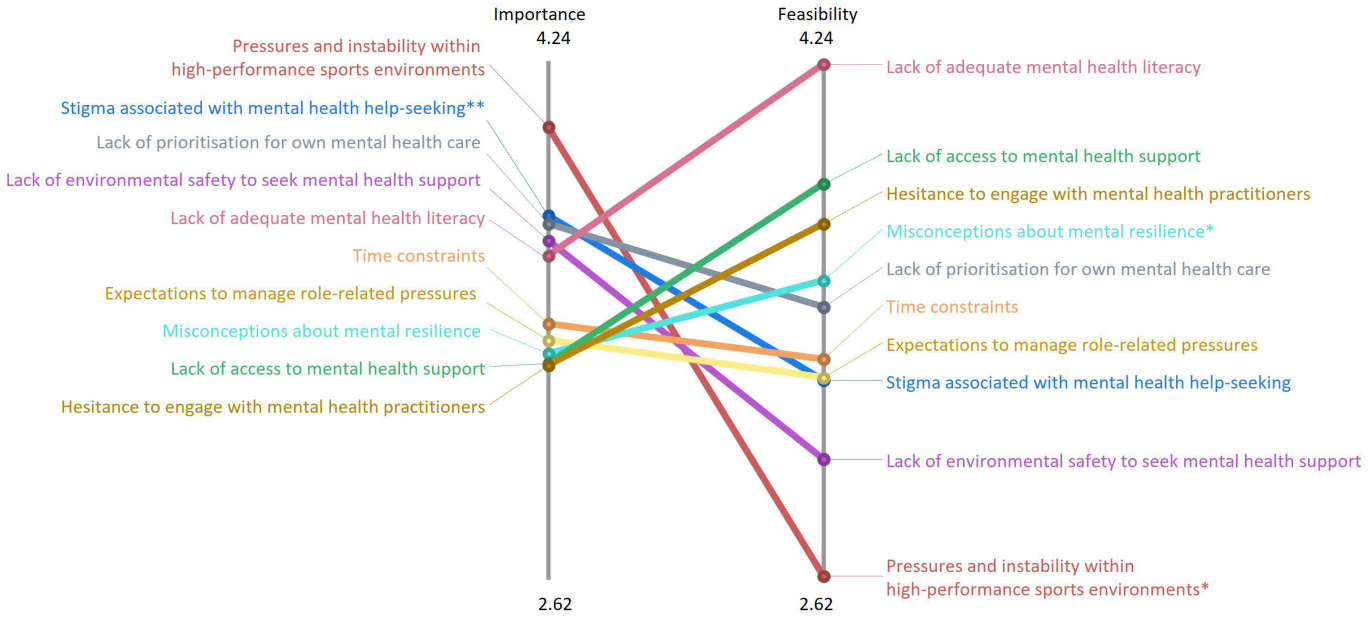

Figure 17 A pattern match display comparing the relative mean importance and feasibility of each cluster. The values represent the combined input of coaches and mental health professionals (significant mean rating differences between coaches and mental health professionals = *p<0.01, **p<0.001). The full scales for each rating question were 1–5. For the purposes of visual display and highlighting differences between cluster ratings, the scales on these graphs have been truncated at the mean values for the highest and lowest rated clusters on each scale.

resilience (five statements) (importance=3.33, feasibility=3.56); (9) lack of access to mental health support (10 statements) (importance=3.29, feasibility=3.86) and (10) hesitance to engage with mental health practitioners (four statements) (importance=3.29, feasibility=3.74). A stress value of 0.232 indicated a good fit between the two-dimensional point map and the participants' original sorting data.[16]

Each statement (n=68) was plotted on a Go-Zone map based on its mean importance and feasibility scores (figure 16). The four- quadrant map is divided by the grand mean of the importance (3.57) and feasibility (3.49) ratings. Thirteen statements scored above the grand mean for importance and feasibility (quadrant 4), while 25 scored above the grand mean for importance but below for feasibility (quadrant 2). The Pearson's correlation coefficient value indicated a weak negative linear relationship between the importance and feasibility rating scales ($r=-0.11$). The weak-negative linear relationship between the importance and feasibility rating scales suggests that as the rating on one scale tends to increase, the rating on the other scale tends to decrease, but the relationship is not very strong.

Pattern matching and independent t-tests

Collectively, pattern matching displays showed that coaches and mental health professionals rated *pressures and instability within high-performance sports environments* (mean=4.04) and *lack of adequate mental health literacy* (mean=4.24) as the most important and feasible clusters of challenges to address, respectively (figure 17). Pattern matching also highlighted that coaches rated the *pressures and instability within high-performance sports environments* as the most important cluster of challenges to address (mean=4.23), while mental health professionals prioritised *stigma associated with mental health help-seeking* (mean=4.03) (online supplemental file 28). Coaches and mental health professionals both rated *lack of adequate mental health literacy* (coaches mean=4.03; mental health professionals mean=4.47) as the most feasible cluster of challenges to address. Comparisons of mean cluster rating scores indicated significant differences between how coaches and mental health professionals rated the importance of the *stigma associated with mental health help-seeking* cluster (p<0.001) (more important for mental health professionals), and feasibility of the *pressures and instability within high-performance sports environments* (p=0.001) (more feasible for coaches) and *misconceptions about mental resilience* (p=0.002) clusters (more feasible for mental health professionals) (online supplemental file 29 and 30).

DISCUSSION

This study investigated the perceived challenges associated with mental health help-seeking among Olympic and Paralympic coaches. Findings highlighted a range of factors that Olympic and Paralympic coaches and mental health professionals perceived as barriers to mental health help-seeking, including those deemed most and least important and feasible to address. A summary of policy implications is found in figure 18.

Although participants assigned relative importance to all clusters (lowest mean score=3.29 out of 5), the pressures and instability of high-performance sports environments were considered the most important, though least feasible challenges to address. Similarly, the stigma associated with mental health help-seeking and a lack of environmental safety to seek mental health support were also identified as relatively important, but with low feasibility to address. These results indicate that in order to promote help-seeking among Olympic and Paralympic coaches, sporting bodies and organisations must prioritise remediating systemic or environmental contributing factors within their sport. This is consistent with socioecologically informed responses that have been proposed, which acknowledge cultural and environmental influences on mental health in elite sport.[9 27] Fostering psychologically safe high-performance environments is an approach to ameliorating the key risks associated with seeking help among elite coaches, namely job security and fear of negative judgments from organisations/employers.[28 29] This includes sports organisations and leaders embracing and promoting cultural norms that facilitate openness, compassion and vulnerability, along

Sports organisations are encouraged to cultivate psychologically safe high-performance environments that aim to reduce the risks and stigma associated with seeking mental health support. This can be achieved by normalising vulnerability and openness in high-performance cultures, alongside the implementation of protective policies.

Evidence-based mental health literacy interventions that accommodate the unique stressors, risks and time limitations of Olympic and Paralympic coaches could be developed. These may be administered through coach education pathways or development programs.

Clear and accessible pathways to mental health services for coaches should be established. To maximise user relevancy and engagement, both coaches and mental health professionals should be involved in a co-design process to draw upon their diverse perspectives.

Figure 18 Policy implications to promote and support mental health help-seeking for Olympic and Paralympic coaches.

with developing policies and procedures that encourage disclosure safety around mental health help-seeking (eg, contractual protection).[30] Coaches who experience psychological safety may be more likely to openly express their authentic selves, contributing to a normalisation of mental health concerns and reduced stigma, which in turn may increase help-seeking behaviours.[30 31]

While the overall sample emphasised the importance of addressing cultural and environmental barriers to help-seeking, differences emerged between coaches and mental health professionals regarding the perceived importance and feasibility of various challenges. For example, mental health professionals rated stigma towards help-seeking as more important to address than coaches. Conversely, coaches rated the pressures and instability of high-performance sports environments as more feasible to address than mental health professionals. These contrasting views may reflect differences in roles, position (eg, a mental health service provider vs user) or degree of perceived influence within high-performance environments, or distinct perspectives or experiences within sport, which warrants further research exploration. These differing viewpoints underlie the need for both coaches and mental health professionals to be involved in co-design processes when developing mental health support services for Olympic or Paralympic coaches.

While efforts to modify environmental conditions should be prioritised, our findings suggest that shifting cultural perceptions and policy are complex and may take time. Therefore, alongside a longer term focus on environmental and cultural change, coaches and organisations should develop and implement contextually appropriate strategies to address more immediate and feasible barriers to help-seeking. For instance, although mental health literacy was rated the fifth most important cluster to address, participants rated it as the most feasible. Mental health literacy is a dynamic construct that enhances one's ability to recognise symptoms of mental ill-health, seek information and adopt attitudes that promote help-seeking.[32] While interventions are available to enhance the mental health literacy of coaches, current programmes focus on supporting athlete mental health.[33 34] To shift the focus towards the mental health of Olympic and Paralympic coaches, it is imperative that programmes cater for the distinct challenges and risks this population faces. Incorporating tailored and evidence-based mental health literacy programmes through coach education pathways might help to address the stigma around help-seeking, promote the importance of self-care, identify and address environmental risk factors, shift perspectives on mental health professionals and address misconceptions about mental resilience.[35–37] Embedding culturally sensitive mental health literacy interventions should ideally be viewed by sporting organisations as an ongoing process, rather than a one-off activity, in order to build genuine mental 'fitness' in the high-performance environment, and avoid the tendency to shift responsibility back onto the individual to manage their own mental health, which likely reduces help-seeking. Several evidence-based workplace interventions that significantly improve symptom identification and destigmatise help-seeking could be explored and adapted for Olympic and Paralympic coaches (eg, MATES awareness training, Contact Connect).[38 39] Given the prevalence of men and masculine norms in elite coaching,[40] interventions that have shown success in industries dominated by men may be worth considering (eg, mining, construction).[41]

Our findings also suggest that organisations should establish clear and accessible pathways to timely mental health support. Enabling coaches to access internal mental health professionals as well as external support services (such as the Australian Institute of Sport's Mental Health Referral Network)[42] that are available to athletes, or ring-fencing funding for coaches to access support, will provide greater opportunities for Olympic and Paralympic coaches to seek help. These pathways should be easy to access and structured to preserve confidentiality,[30] and draw on 'coaches' and 'clinicians' preferences' (via co-design) to maximise user relevancy and engagement.[5] Despite growing international attention on developing mental health pathways and services for elite athletes and coaches,[43–45] further research is needed to understand how Olympic and Paralympic coaches would prefer to receive and access support (eg, external mental health professionals, online or in-person), including considerations across the Olympic or Paralympic Games cycle.

Limitations

This study has several limitations. A non-random sampling approach was adopted to increase participation due to the exclusive eligibility criteria (eg, Olympic and Paralympic-based coaches and medical professionals) and data collection coinciding with the lead up to the 2024 Olympic and Paralympic Games. Due to the timing of data collection, a decision was also made not to engage additional consumers or community members beyond the researchers to minimise the time burden on potential participants. As a consequence, the skills and expertise of members of the research team were relied on across several steps (eg, the statement synthesis, representation and interpretations of the maps), where input from a consumer or community advisory group would have added further value.

Although similar to other sport-related concept mapping studies,[46–48] the sample size was relatively modest, potentially influencing the reliability, validity and generalisability of results.[23] Despite the stringent alpha values employed ($p<0.01$), the small sample size may have contributed to underpowered results from the independent t-tests, limiting the detection of significant differences. Future studies should gather insights using larger samples and a more equitable representation of participants from different nations. Research should also seek to examine Olympic and Paralympic populations independently to explore the unique challenges that exist in each population.

CONCLUSION

This group concept mapping study identified 10 core challenges that impede Olympic and Paralympic coaches from seeking mental health support. Sporting bodies and organisations can use these insights to develop and deliver targeted and tailored mental health supports for coaches. While dynamic individual factors with high feasibility to address should be explored (eg, mental health literacy), sports organisations should also address the systemic cultural, organisational and environmental barriers viewed as greater obstacles to seeking support (eg, stigma and job insecurity). Considering the differences in perspectives between coaches and mental health professionals, both service providers and users should be engaged when establishing mental health services for Olympic or Paralympic coaches.

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Contributors All authors made substantial contributions towards the study, including the conceptual design (JF, CCW, SMR and RP), concept mapping process (JF and AD), data analysis (JF and AD) and interpretation of results (JF, CCW, AD and RP). All authors read, edited and approved the final manuscript. JF is the guarantor of the study.

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Patient consent for publication Consent obtained directly from patients.

Ethics approval This study involves human participants and was approved by University of Melbourne Human Ethics Research Committee (#25538). Participants gave informed consent to participate in the study before taking part.

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Chapter Summary

Nineteen Olympic coaches, Paralympic coaches and mental health professionals reported 10 core clusters of challenges that Olympic and Paralympic coaches face when seeking mental health support. Findings suggested that the '*pressures and instability within high-performance sports environments*' were considered the most important, yet lest feasible challenges to address. Notably, a '*lack of adequate mental health literacy*' was perceived as the most feasible challenge to address. To promote mental health help-seeking among Olympic, Paralympic and elite-level coaches, sports organisations should make efforts to minimise help-seeking barriers using a combination of short- (e.g. mental health literacy interventions) and long-term strategies and approaches (e.g. eradicating threats to job security). Considering these findings, in conjunction with those reported in *Chapter 2, 3, 4,* and *5*, the following Chapter will address the doctoral thesis' research aims by the synthesising the findings presented. The discussion chapter will also present a set of recommendations and future research directions, an overview of the strengths and limitations of the research project, and a final conclusion.

Chapter 7: Discussion

Chapter Overview

This thesis aimed to investigate the mental health of elite-level coaches to gain insights that could inform future early intervention strategies. This was achieved by examining rates of mental ill-health, factors influencing mental health outcomes, perceptions and attitudes regarding mental health, and barriers to help-seeking among elite-level coaches. This chapter will synthesise the findings from *Chapters 2,3,4,5* and *6,* in relation to the four research aims proposed in *Chapter 1*. The strengths and limitations of the doctoral thesis will also be reviewed to contextualise the findings. Five overarching recommendations are outlined and future research directions are proposed to inform the potential development of mental health frameworks and guidelines targeted for elite-level coaches.

Findings related to Aim 1: To what extent do elite-level coaches experience mental ill-health?

The rates and types of mental ill-health experienced by elite level coaches were initially identified in *Chapter 2* through a systematic scoping review. Current evidence indicates, that similar to elite athletes, coaches may experience a range of symptoms and disorders associated with anxiety, depression, risky alcohol consumption, sleep disturbance, eating disorders, substance abuse and gambling disorders (Frost et al., 2024). Although not considered a mental disorder, the review found that half of the included studies examined burnout, while less than 33% of studies investigated all other symptoms of common mental disorders combined. To better understand the extent to which elite coaches experience mental ill-health, further research is needed to identify whether coaches are at elevated risk of experiencing specific symptoms and disorders by virtue of their working role. This is especially relevant given the influence of *organisational-level* factors that were identified in this doctoral thesis, which lend themselves to early intervention to prevent or ameliorate their negative impacts on coach mental health.

Chapter 4 of this thesis presents results from the largest cross-sectional study examining mental health symptoms among elite coaches to date, reporting that 32% of an international sample met the validated cut-off for risky alcohol consumption. This finding is consistent with other rates of adverse alcohol use identified in previous research, which range from 19% to 48% among elite coaches, respectively (Kegelaers et al., 2021; Pilkington et al., 2022). Considering that meta-analytic rates estimate that approximately 19% of elite athletes engage in risky alcohol consumption (Gouttebarge et al., 2019), and that research has shown significant differences in problematic alcohol use between elite athletes and coaches (Pilkington et al., 2022), sporting organisations and researchers should pay particular attention to alcohol consumption among elite coaches, specifically in relation to its use as a coping strategy to manage the demands of the profession (Roberts et al., 2019). Such patterns

are supported in *Chapter 5*, as elite coaches viewed '*having an occasional alcoholic drink*' to be significantly more helpful for coaches experiencing depression than athletes (using a vignette methodology).

Chapter 4 also presented the reported rates of depressive symptoms (13%), anxiety symptoms (13%) and suicidal ideation (4%) among elite coaches. This study builds upon the growing body of research assessing rates of mental ill-health among elite-level coaches, being the first to report rates of suicidal ideation. This an issue that requires further research attention to establish prevalence (which may be under-reported in this survey given the lower rate that has been observed in community studies of adults among Australians (16.7%) (Australian Bureau of Statistics, 2023)) and correlates of suicidality among current, and potentially retired coaches. The findings from *Chapter 4* are limited, however, in the extent to which they can be compared with previous studies given variations in the use of psychometric measures. As proposed by Frost et al. (2023), future studies should continue to utilise SMHAT-1 tools to draw more accurate comparisons between coaching and athletes samples (Gouttebarge et al., 2021), albeit with the acknowledgement that the SMHAT-1 was developed specifically for measuring symptoms of mental ill-health in elite athletes. In addition, there is a pressing need for longitudinal research to track mental health symptoms and/or disorders amongst elite coaches over time, particularly across different stages of the competitive cycle (e.g. pre-season/competition, during the competitive season or events). These insights may assist sports organisations in supporting the mental health needs of elite coaches during periods of high demand and pressure.

Findings related to Aim 2: What risk and protective factors shape the mental health outcomes of elite-level coaches?

Informed by the socio-ecological systems framework, several risk and protective factors were identified at the individual, interpersonal, organisational and societal level throughout this doctoral thesis. In *Chapter 2* the extant literature indicated that the development of effective psychological skills (e.g. hardiness, resilience), robust social networks and strong organisational supports helped protect the mental health of elite-level coaches. Conversely, ineffective coping strategies, a lack of social supports and excessive workloads were found to increase elite-level coaches' risk of mental ill-health. Confirmation of these factors was noted in *Chapter 3* having been reported in semi-structured interviews by Australian elite-level coaches. For instance, participants described remaining organised, emotion regulation and channelling passion and gratitude for their role as useful skills and strategies to protect their mental health. Given mindfulness, self-reflection and self-compassion have shown promise in supporting the mental health of elite coaches (Hägglund et al., 2024; Hägglund et al., 2025; Longshore & Sachs, 2015), researchers and sports organisations should continue to identify ways to implement these practices through coach education and professional development pathways to nurture resilience, build 'mental fitness' and improve emotional intelligence. Furthermore, Australian elite coaches described employing a range of behavioural coping strategies to maintain their mental wellbeing, including detaching from coaching, focusing on one's physical health and engaging in hobbies/activities. Recognising that elite coaches may struggle to detach from coaching and implement self-care practices (e.g. engaging in regular exercise) due to intense scheduling and travel demands during the competitive season or events, organisations should provide structured opportunities for coaches to psychologically and physically recovery to prevent burnout and mental ill-health (Bentzen et al., 2016; Lundkvist et al., 2012).

Strong social support was also commonly cited as a key protective factor throughout the existing discourse and this research program. In *Chapter 3*, Australian elite coaches reported a range of individuals within elite sport that supported their mental health, including athletes, mentors, support staff and other coaches. Due to the shared experiences that helped foster a greater sense of relatability and connection, mentors and coaching peers were considered particularly important supports, enabling coaches to discuss role pressures, seek feedback and express mental health struggles. Outside elite sport, family and friends were also identified as critical supports in managing the demanding lifestyle of coaching (e.g. looking after children), detaching from their role (e.g. socialising with friends) and maintain an identity beyond coaching. Since social isolation and dissatisfaction with one's social supports have been identified as risk factors of mental ill-health among elite coaches (Olusoga & Kenttä, 2017; Pilkington et al., 2022), leaders of sports organisations (e.g. team or sport general managers or similar) should be cognisant of and actively enquire about (or promote the importance of) the availability and adequacy of social supports present in a coach's life. This is especially important during periods when elite coaches face mounting performance pressure, demanding schedules and extensive travel. Sports organisations should also be cognisant of social supports when coaches' face job insecurity or are dismissed from their role (Kenttä et al., 2016).

Sporting organisations hold considerable influence over the mental health outcomes of elite coaches. As reported in *Chapter 3*, Australian elite-level coaches noted that the expectations, supports and environments set by organisations and their leaders have the potential to either mitigate or amplify a coach's risk of poor mental health. *Chapter 2* and *3* highlighted a range of organisational factors that have been found to be influential, including workload, work-life balance, expectations around performance targets, role structure, remuneration, psychologically safe environments and pathways to mental health supports.

Crucially, *Chapter 4* explored the relationship between organisational risk factors and mental ill-health using a cross-sectional survey, revealing that only job insecurity was significantly associated with symptoms of depression and anxiety in an international sample of elite-level coaches. While further longitudinal research is needed with larger sample sizes and validated measures, this finding suggests that sports organisations seeking to best support the mental health of their elite coaches should focus on ways to better manage inherent job security related to performance outcomes in their competitive environments. This could include offering ongoing psychological resources (e.g. self-compassion) to individually manage job insecurity, maintaining open, transparent communication regarding elite coaches contractual status, especially during periods when coaches are facing performance pressures and approaching contract renewal (Bentzen et al., 2020), and promoting and normalising the value of organisational support services (such as low or no-cost counselling via Employee Assistance Programs [EAP]) to coaches and other high-performance staff. Actions such as these can facilitate more psychologically safe environments within elite sport by encouraging and enabling elite coaches to seek professional support when needed, without any perceived or actual risk attached to their job security. Future research investigating elite coaches' perceptions of approaches that can be employed to support their mental health when facing job insecurity appears warranted.

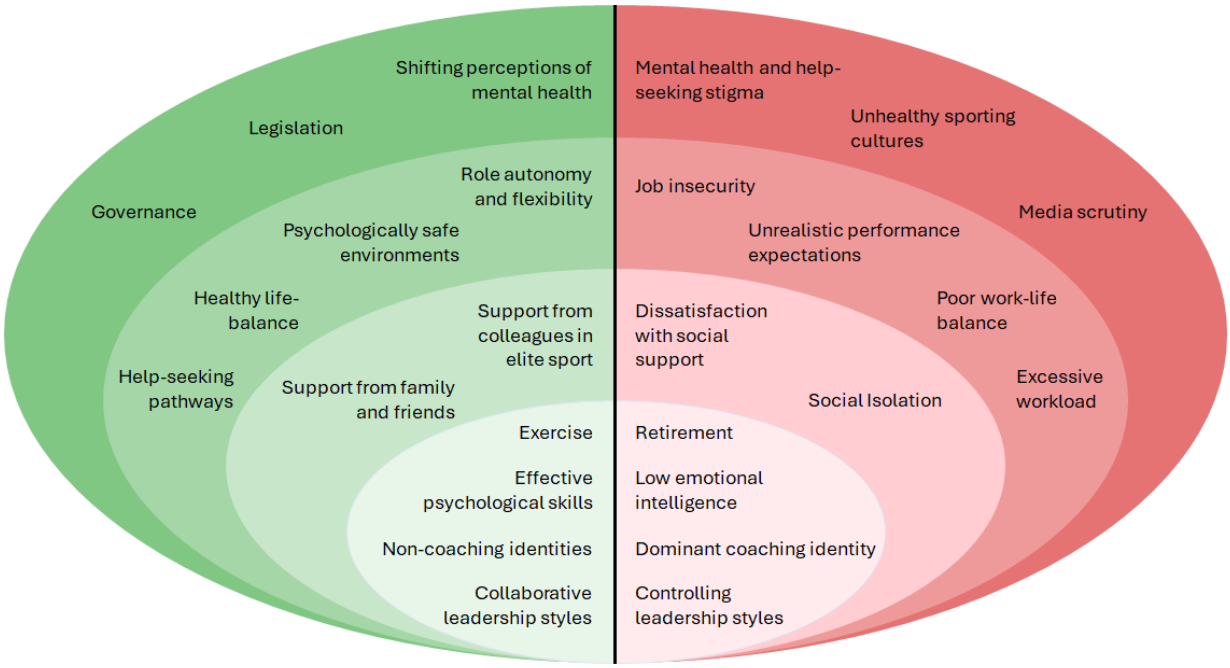
Lastly, a number of societal-level factors were found to shape the mental health of elite coaches in this research program. General stigma towards help-seeking, unhealthy sporting cultures (e.g. hypermasculine environments) and media scrutiny were identified as risk factors influencing the mental health of elite-level coaches in *Chapter 2*. These factors were also reported in *Chapter 3*, where operating in the public eye, stigma towards mental health struggles and help-seeking and the stigmatising influence of masculine norms were expressed by Australian elite-level coaches through semi-structured interviews. Participants

described how both traditional and social media contributed towards mental health challenges for elite coaches, and how intentionally distancing themselves from persistent performance criticisms was beneficial to their mental health. The Australian Institute of Sport (AIS) developed best practice guidelines for safe and effective engagement with social media platforms directed at athletes and coaches, which individual coaches or their sports organisations should consider widely disseminating and implementing (Australian Institute of Sport, 2023). Furthermore, while findings from *Chapter 5* potentially indicate that mental health stigma may be low among elite-level coaches, *Chapter 6* highlighted that stigma is still considered a barrier towards help-seeking among Olympic and Paralympic coaches (see below for further discussion). Despite the lack of protective factors identified at the societal level, further research might investigate the role of governance and legislation (e.g. contractual protection) in supporting the mental health of elite-level coaches (see Figure 19 for a visual summary of multi-level risk and protective factors).

Findings related to Aim 3: What are elite-level coaches' knowledge, perceptions and attitudes regarding mental health?

This doctoral thesis explored elite-level coaches' perceptions and attitudes regarding mental health and help-seeking through several studies and methodological approaches. As outlined above, *Chapter 5* identified low levels of reported stigma towards mental health in a survey of international elite-level coaches. When examining vignette case examples of elite athletes and coaches experiencing burnout and depression, the majority of coach participants disagreed with the propositions that these experiences were considered '*a sign of weakness*' and that *'people with this problem could snap out of it'*. These findings are encouraging and may reflect shifting perceptions of mental health, a potential growing parity between physical and mental health and the role of mental health in performance (Chapter 3). Yet, based upon

Figure 19: Risk (red) and protective (green) factors influencing the mental health of elite coaches using an ecological systems framework



Legend:

- Macrosystem (societal)
- Exosystem (organisational)
- Microsystem (interpersonal)
- Coach (individual)

individual accounts ascertained via qualitative interviews, Chapter 3 highlighted that elite coaches may mask mental health struggles to avoid showing 'weakness', attempting to protect their job security and perceived coaching effectiveness. Taken together, these findings potentially suggest that while elite coaches may outwardly appear comfortable in discussing mental health issues, when their coaching position or effectiveness becomes compromised, concealment may take priority over seeking support. This is reinforced in *Chapter 6*, as results from the group concept mapping indicated that stigma remains a notable barrier to help-seeking, where '*stigma associated with mental health help-seeking*' was considered the

second most important challenge to address for Olympic and Paralympic coaches.

When examining mental health knowledge, *Chapter 5* revealed that elite coaches were better identifying depression than burnout in both elite athlete and coach vignettes. Consistent with previous research (Hegarty et al., 2018), this suggests that elite coaches can detect symptoms of depression accurately. However, since fewer than half of the international sample of elite coaches correctly identified burnout in the athlete and coach vignettes, mental health literacy programs should aim to educate coaches about burnout presentations and its role as a risk factor of mental ill-health (Glandorf et al., 2023; Hassmén et al., 2019; Kegelaers et al., 2022), particularly given the occurrence of burnout amongst coaches discussed in *Chapter 2*.

Chapter 5 also highlighted a variety of approaches and strategies that elite coaches regarded as helpful in managing burnout or depression among themselves or their athletes. Findings indicated that elite coaches generally considered medical/psychological approaches most helpful for athletes or coaches experiencing depression, including consulting a mental health or health professional, utilising antidepressant medication, or seeing a psychiatrist. In contrast, elite coaches were more likely to perceive activity-based interventions as most helpful for managing burnout, including taking time away from coaching or competing, reducing workload and commitments, and prioritising rest and recovery. To prevent symptoms of burnout from progressing into a more severe mental state or crisis, mental health literacy interventions should encourage athletes and coaches to access professional clinical support for this condition. While taking time off from coaching or competing may provide athletes and coaches with the opportunity to psychologically detach and physically recover from their roles (Bentzen et al., 2016; Bicalho & Costa, 2018), addressing the root causes (e.g. dominant coaching identity, poor work-life balance, excessive workload) of

burnout is critical to ensure symptoms do not persist upon the resumption of duties (Lundkvist et al., 2012; Olusoga & Kenttä, 2017).

Findings related to Aim 4: What factors influence mental health help-seeking among elite-level coaches

To date, little is known about mental health help-seeking among elite-level coaches. Current research indicates that elite-level coaches are potentially receptive to mental health treatment (Åkesdotter et al., 2022), with Pilkington et al. (2022) finding that 35% of a sample of Australian elite-level coaches reported having sought treatment at some stage throughout their life. Consistent with this finding, *Chapters 3* and *6* reported that 37% (n=158) and 40% (n=10) of international samples of elite coaches reported seeking treatment for a mental health concern. With meta analytic-rates indicating that approximately 22% of elite athletes have reported seeking mental health support (Cosh et al., 2024), our preliminary findings potentially indicate that elite-level coaches may be more receptive to seeking treatment. To gain more accurate estimates of help-seeking among elite-level coaches, including when and from whom, further research with larger sample sizes is warranted. Considering the majority of elite coaches throughout this research program were men, future research should also consider distinctions in rates and factors influencing help-seeking among genders, particularly since evidence indicates that women are more likely to seek mental health support (Australian Bureau of Statistics, 2023; Nam et al., 2010).

When examining factors influencing help-seeking among elite coaches, using a concept mapping methodology, *Chapter 6* identified 10 core challenges that prevent Olympic and Paralympic coaches from seeking mental health support. Findings revealed that '*pressures and instability within high-performance sports environments*' were considered the most important, yet least feasible challenges to address. Olympic coaches, Paralympic coaches and mental health professionals indicated that high workloads, job insecurity,

expiring contracts and pressures to meet podium goals reduced the likelihood of coaches seeking treatment. As such, the importance of sports organisations making efforts to foster psychologically safe environments that encourage and empower elite coaches to seek treatment without fearing repercussions to their job security and perceived coaching effectiveness is reiterated (Vella et al., 2022; Walton et al., 2024). Cultivating high-performance environments where coaches can openly and safely discuss mental health may normalise such conversations, potentially reducing stigma and promoting help-seeking behaviours (Slowiak et al., 2024).

While sports organisations should prioritise nurturing psychologically safe environments, the structural and cultural complexities involved in facilitating this process (such as the performance-based nature and cultural norms of mental toughness associated with elite sport) suggest that change may be gradual (Taylor et al., 2022). As such, sports organisations should also look to identify more feasible short-term solutions, including improving mental health literacy among elite-level coaches. Findings discussed in *Chapter 6* revealed that both Olympic and Paralympic coaches and mental health professionals indicated that a '*lack of adequate mental health literacy*' was the most feasible challenge to overcome for help-seeking among Olympic and Paralympic coaches. Participants suggested that poor mental health literacy may contribute towards difficulties in identifying symptoms of mental ill-health, limited knowledge of support options, and delays in help-seeking until crisis point. To improve mental health literacy among elite-level coaches, sports organisations should offer evidence-based mental health literacy programs through coach education pathways (Gorczynski & Baron, 2024). Given mental health literacy interventions are primarily targeted towards supporting the mental health of elite athletes (e.g. referral pathways) (Breslin et al., 2022; Diamond et al., 2022), there is a clear need to design

programs that reduce stigma around help-seeking and guide coaches towards appropriate services to support their own mental health.

Strengths and Limitations

A number of strengths and limitations should be considered for this doctoral thesis. Firstly, this research advances the elite coach mental health discourse using a diverse range of methodologies, including qualitative, quantitative and mixed-methods research designs. In particular, novel methodologies such as group concept mapping offer unique insights to the extant literature. It should be noted however, that all studies were cross-sectional in nature, limiting causal inferences and observed changes in mental health symptoms and perceptions across time.

Secondly, there were limitations to the study samples. For instance, while this doctoral thesis gathered rates of mental health symptoms from the largest cohort of elite-level coaches to date, the sample size was relatively small in comparison to studies involving elite athletes (Gouttebarge et al., 2019). Collecting data from a small, hard-to-reach population also resulted in leaving the online survey open for an extended period of time (*Chapter 4* and *5*). As such, participants may have provided data across varying time points when coaches may have faced differing pressures and competitive demands (e.g. pre-season/competition, during competition/competitive season), potentially influencing the way elite coaches reported symptoms of mental ill-health and perceptions regarding mental health.

Furthermore, in *Chapter 4* and *5*, data was gathered from a broad range of international elite coaches. While this carries merit due to the diversity across each sample, various genders, race/ethnicities, sporting codes and coach types may have been under or overrepresented. For example, both samples largely comprised of Australian elite-level

coaches who were men[2], thus potentially influencing the generalisability of findings. The wide-ranging eligibility criteria may also have contributed towards the generalisability of findings. While efforts were made in *Chapter 3* and *6* to gather insights from specific groups within the elite coaching community (e.g. Australian elite coaches, Olympic and Paralympic coaches), findings that emerged from *Chapter 4* and *5* may not be representative of certain elite coaching cohorts (e.g. part-time or volunteer coaches, underrepresented racial groups), and may require further research to unpack the unique experiences and perspectives of distinct coaching populations.

Lastly, self-selection bias may have been present within samples. Those involved in providing insights across the various studies may have possessed an existing interest in or personal experience of elite coach mental health. Therefore, insights may not be reflective of broader self-reported mental health symptoms, influential risk and protective factors and perceptions regarding mental health and help-seeking among elite coaches. In addition, when submitting data, social desirability bias may have also been present among the various samples. Insights offered may similarly not depict the most accurate representation of mental health and help-seeking beliefs among elite coaches, as participants may have provided results that they perceived to appear favourably.

Implications and Future Research Directions

Several recommendations and avenues for future research are identified in this doctoral thesis. Considering mental health frameworks and position papers have primarily been directed towards managing the mental health of elite athletes (Purcell et al., 2019; Purcell et al., 2022; Schinke et al., 2024; Vella et al., 2021), there is a need to focus on developing guidelines that specifically target the mental health of elite coaches. As such, the

[2]Current estimates of women in elite coaching range from 7-13%. Women represented between 17-27% of samples throughout this doctoral thesis.

proposed suggestions may guide and contribute towards the development of early intervention mental health frameworks or guidelines for elite-level coaches. These strategies may be employed by sports organisations to manage coach wellbeing, while concurrently serving as a springboard for further research and the development of future evidence-based interventions. A summary of recommendations and future research directions can be found in Table 10 at the end of the section.

Conceptualising, contextualising and championing mental health in elite sport

The development of a mental health framework for elite coaches necessitates the identification of key concepts for structural purposes. Originally proposed by Kenttä et al. (2023), it is critical that mental health is conceptualised using evidence-informed frameworks such as Keyes' dual-continuum model of mental health, which was outlined in *Chapter 1*. This is pertinent, as it informs sports organisations to consider both mental wellbeing and mental ill-health when assessing and supporting the mental health of elite-level coaches. Such frameworks are valuable as they may help to facilitate early intervention and prevent elite coaches who may be languishing from experiencing mental health crises, mental ill-health or reduced coaching effectiveness. In turn, tailored supports and interventions can be employed to target various aspects of mental wellbeing (e.g. emotional, psychological and social), as well as specific mental health conditions elite coaches may be at increased risk of (e.g. alcohol misuse/disorders). Considering coaches highlighted that mental health was also perceived as a tool to improve coaching performance in *Chapters 3* and *6*, future research might investigate a three-dimensional model of mental health, incorporating *mental performance* as a third construct to examine and account for the complex interactions between mental health and performance (Van Slingerland, 2021).

When delivering interventions and supports to coaches, sports organisations should recognise the importance and relevance of socio-ecological models in elite sport. Such

frameworks can raise awareness around influences at the individual, interpersonal, organisational and societal levels that may operate as risk and protective factors. At the individual level, elite coaches should evaluate the coping strategies they employ to manage various stressors, as well as their current perceptions and attitudes regarding mental health and help-seeking. While these qualities may primarily serve to protect a coach's mental health, considering elite coaches are widely viewed as key leaders within elite sports settings (particularly head coaches), these skills and perceptions may also help to cultivate psychologically safer environments for athletes, fellow coaches and other support staff.

Crucially, as identified in *Chapter 2 and 3*, organisations play a critical role in influencing elite coaches' risk of mental ill-health, often subjecting coaches to excessive workloads or a poor work-life balance (Frost et al., 2024). Since preliminary research suggests that organisational factors may exert the greatest level of influence upon the presence of mental health symptoms among elite-level coaches (i.e. *Chapter 4*) (Kegelaers et al., 2021), sports organisations should be cognisant of the expectations imposed (e.g. delivering unrealistic performance outcomes) and pressures experienced (e.g. high workloads) by elite coaches, to mitigate the influence of such factors and offer appropriate supports (e.g. promoting a healthy work-life balance). While organisational threats to a coach's mental health may vary by sporting code or coach type, organisations should pay particular attention to job insecurity, which was significantly associated with symptoms of depression and anxiety among elite coaches in *Chapter 4*. To reduce strain around job insecurity, organisations should engage in open and transparent communication during periods when elite coaches face considerable performance pressures and as contracts near expiration.

Lastly, to emphasise the importance of mental health, sports organisations should look to promote and champion mental health in elite sports environments. In particular, given the

performance-based nature of elite sport, *coaching effectiveness* might be leveraged by sports organisations as a 'hook' to engage elite-coaches in greater consideration of their mental health needs. For instance, *Chapter 2* presented insights regarding the influence of an elite coach's mental health upon their coaching effectiveness. Findings suggested a coach's mental health may impact a coach's and/or athlete/team's functioning, including a coach's psychological/emotional state (e.g. focus, decision making, confidence), standard of performance (e.g. motivation, presentism, work engagement) and coaching style (e.g. verbal communication, leadership style) and an athlete/team's performance levels (Frost et al., 2024). Accordingly, organisations should cultivate sustainable environments that promote thriving, recognising the importance and value of supporting both performance and wellbeing outcomes, rather than exclusively focusing on establishing a 'win-at-all-costs' culture that may reduce the sustainability of the vocation (Brown et al., 2018). As reported by Mallett and Lara-Bercial (2023), a crucial ingredient attributed to the success and sustainability of 'serial-winning coaches' involved sports organisations fostering thriving conditions, facilitating opportunities for coaches to continuously learn and enabling all actors in their environment to thrive (e.g. athletes). Ultimately, further research is needed to examine and better understand the complex bi-directional relationship between mental health and coaching effectiveness among elite-level coaches. While the construct of coaching effectiveness remains contested, such research might consider investigating the influence of mental health on coaching effectiveness though qualitative inquiry and current quantitative measures, such as the Coaching Behaviour Scale for Sport (CBS-S) (Côté et al., 1999; Mallett & Côté, 2006) or Coach-Athlete Relationship Questionnaire (CART-Q) (Jowett & Ntoumanis, 2004).

Early identification of mental health symptoms among elite coaches

Sports organisations should make efforts to detect the emergence of mental health symptoms in a timely and suitable fashion among their coaching staff. Screening measures

may help to identify mental health symptoms and initiate conversations around the mental health needs and concerns of an elite coach, potentially prompting further support. As proposed in *Chapter 4*, in the absence of a coach-specific mental health questionnaire designed for triage purposes, qualified mental health or medical professionals employed or outsourced by a sports organisation might screen for symptoms of mental ill-health using SMHAT-1 measures (Gouttebarge et al., 2021). Since several instruments have been designed to specifically assess mental health symptoms among elite athletes (e.g. Athlete Sleep Screening Questionnaire), recommended measures may include those deployed in *Chapter 4*, including the GAD-7 (anxiety symptoms), PHQ-9 (depressive symptoms), Item 9 in the PHQ-9 (suicidal ideation), and AUDIT-C (risky alcohol consumption) and the CAGE-AID (Cutting Down, Annoyance by Criticism, Guilty Feeling, and Eye-Openers Adapted to Include Drugs) for detecting substance misuse.

While these measures may serve as a starting point to screen for symptoms of mental ill-health among elite coaches, ultimately, it is critical to determine early identification preferences from the perspectives of elite coaches. Although mental health screening is often suitable for elite athletes given they are regularly screened for other physiological impairments (e.g. cardiovascular conditions, Relative Energy Deficiency in sport (RED-S), concussion) (Ljungqvist et al., 2009; Mountjoy et al., 2023; Nabhan et al., 2021), such processes may be less suitable for coaches. For instance, as reported in *Chapter 4* and *5*, the lack of job security that elite coaches experience may reduce the likelihood of offering accurate mental health screening responses, particularly if such information is provided to organisational leaders or may compromise a coach's position. As such, further research investigating elite coaches' mental health monitoring or screening preferences is warranted (e.g. how and with whom), ensuring that coaches are comfortable in providing confidential information that avoids jeopardising their role or future employment status.

There is also a need to develop screening tools that specifically examine sport-based stressors and detect psychological distress among elite-level coaches. The SMHAT-1 recommends the use of the Athlete Psychological Strain Questionnaire (APSQ) as first triage to identify psychological distress emanating from sports environments (Rice et al., 2020). Future research might therefore look to develop a similar self-reporting measure to assess psychological strain among elite-level coaches, to identify whether future triage of specific symptom-based assessments or additional supports might be required (e.g. PHQ-9). Such measures might include items associated with coach-specific risk factors, such as job insecurity, work-life balance and social isolation. In alignment with elite coaches' preferences, these measures could be administered to elite coaches in a timely fashion, taking into consideration competitive cycles (e.g. pre-season/events, during competitive season/events) and periods when coaches may be at elevated risk of poor mental health (e.g. contractual negotiations).

As described in *Chapter 2* and *5*, given its relevance in elite sports coaching and its overlap with depression (Bianchi et al., 2015), consideration should also be given to assessing burnout. While the Maslach Burnout Inventory (MBI) is typically used to measure burnout in occupational settings (Maslach & Jackson, 1981), the Burnout Prevention Questionnaire for Coaches (BPQ-C) has shown validity in detecting causes of burnout among elite coaches (Schaffran et al., 2019). A future mental health assessment tool tailored to screen and monitor elite coaches may also consider measures that detect burnout symptoms.

Cultivating psychologically safe elite sports environments

As discussed in *Chapter 3, 5*, and *6*, sports organisations play a pivotal role in fostering psychologically safe elite sports environments. In a recent review Vella et al. (2024) identified 5 attributes that underpin psychologically safe sports environments, including the promotion of risk-taking behaviours, absence of psychological threat or harm, positive

interpersonal relationships, a positive emotional state, and equality, inclusiveness and respect. As such, sports organisations should make efforts to strategically review and integrate psychologically safe characteristics into organisational culture and policy. As identified throughout this research program, such reviews may evaluate perceptions of interpersonal risk-taking (e.g. sharing vulnerabilities or discussing mental health issues) and associated repercussions to job security, mental health stigma, attitudes towards help-seeking, mental health literacy levels, and the promotion of flourishing environments that support diversity and inclusion. As a starting point, organisations might look to administer the Sport Psychological Safety Inventory (SPSI) to benchmark and monitor perceived safety among elite coaches (Rice et al., 2022). Since the SPSI has been psychometrically validated with a sample comprised of elite coaches, the SPSI may serve as a practical tool in capturing the perceptions of psychological safety among elite coaches (Frost et al., 2023). Importantly, future research should qualitatively investigate elite coaches' perceptions of attributes and characteristics that represent psychologically safe environments. Such insights may enable sports organisations to cultivate (and monitor) psychologically safer sports environments for elite coaches.

Organisational leaders (e.g. CEOs, sporting directors, technical directors) arguably play the most important role in promoting and nurturing psychologically safe environments. To help coaches feel more comfortable taking interpersonal risks, organisational leaders should model and reinforce cultural norms rooted in vulnerability and compassion delivered through regular and consistent communication (Hägglund et al., 2024; Walton et al., 2024). Organisational leaders should also maintain open and transparent dialogue with coaches, offering members of the coaching staff opportunities to challenge sporting objectives, raise concerns and request feedback without fear of negative repercussions (Vella et al., 2024). In particular, as outlined in *Chapter 6*, organisations should regularly emphasise reassuring elite

coaches that accessing support services will not threaten or compromise one's coaching position. Specifically, organisations or coaching associations might look to develop policies around disclosure safety (e.g. contractual protection), protecting elite coaches from 'punishment' for seeking help or disclosing mental health issues (Walton et al., 2024).

Efforts to advance equality and diversity in elite sports settings should also be addressed by sports organisations. In particular, organisations should be especially mindful of elite coaches from minority or marginalised groups (e.g. coaches of a certain race or ethnicity) (Nesseler et al., 2020). For instance, in the 2020 Tokyo Olympics only 13% of elite coaches identified as women, while current rates of professional women soccer coaches are estimated at 7% (Serpell et al., 2023). Given elite coaches who identify as women have reported that operating in high-performance environments dominated by men can foster hypermasculine cultures that negatively influence their mental wellbeing (Kenttä et al., 2020), sports organisations must prioritise making safe environments by promoting and embracing gender diversity, among other forms of equality

Developing mental health literacy programs for elite coaches

Given mental health literacy programs targeted at elite coaches have primarily involved symptom identification and best management practices for supporting the mental health of elite athletes (Breslin et al., 2022; Sebbens et al., 2016), there is a need to develop evidence-based interventions that also educate coaches on mental health symptoms among themselves and effective self-care strategies. When developing mental health literacy interventions for elite coaches, researchers should consider addressing (1) information on mental health symptoms and disorders among elite athletes and coaches, and the appropriate treatment for such presentations, (2) highlighting socio-ecologically informed risk and protective factors among elite athletes and coaches, (3) offering opportunities to develop effective self-care practices (e.g. self-compassion), (4) promoting positive attitudes that

reduce self and public stigma by normalising experiences of mental ill-health and help-seeking, and (5) facilitating help-seeking by reducing barriers to treatment and outlining formal pathways to care (Gorczynski, 2025; Gorczynski & Baron, 2024). Crucially, while mental health literacy programs remain important for improving attitudes towards mental health and help-seeking at the individual-level, organisations play a critical role in fostering psychologically safe high-performance environments that enable coaches to implement their knowledge into practice without fearing repercussions (e.g. losing one's job).

As discussed in *Chapter 5*, it is important that future mental health literacy interventions consider the distinct and overlapping presentations of various mental health conditions among elite athletes and coaches. Particular attention should also be paid towards specific mental health symptoms and disorders that may be more relevant and prevalent among elite athletes (e.g. eating disorders) and coaches (e.g. alcohol misuse/disorders) (Gouttebarge et al., 2019; Pilkington et al., 2022). Since *Chapter 5* highlighted that elite coaches were significantly better at identifying depression among elite athletes and coaches than burnout, future programs might also address presentations of burnout, particularly considering its role as a risk factor for more serious mental disorders such as depression (Glandorf et al., 2023; Kegelaers et al., 2022). Such programs should consider burnout within a sporting context, focusing on presentations associated with physical and emotional exhaustion (e.g. emotionally drained), sport devaluation (e.g. losing interest in one's sport) and reduced sense of accomplishment (e.g. feelings of underachievement) among athletes and coaches (Raedeke & Smith, 2001). In addition to symptomology, information should also be extended to best treatment practices, encouraging elite coaches to promote or seek professional support rather than solely 'taking time off' or 'having a holiday' when experiencing burnout.

A growing body of research has begun to investigate factors influencing the mental health of elite-level athletes and coaches (Frost et al., 2024; Kuettel & Larsen, 2020), including the identification of self-care practices. When developing future mental health literacy programs, consideration should be given to educating elite coaches about the systems-level factors influencing their mental health, as well as those among elite athletes (Olive et al., 2022). Given elite coaches are also more likely to employ problem-focused coping strategies to manage stressors (Olsen et al., 2021), interventions might focus on equipping elite coaches with effective emotion-focused self-care practices, including those associated with mindfulness (Longshore & Sachs, 2015), self-reflection (Hägglund et al., 2024; Hägglund et al., 2021) and self-compassion (Hägglund et al., 2025). Furthermore, as identified in *Chapter 3*, mental health literacy programs may promote a range of behavioural coping strategies that are supported by sports organisations, helping elite-level coaches to focus on their physical health (e.g. exercise, sleep), detach from their coaching role (e.g. socialising with friends) and harness external coaching identities.

To reduce the burden placed upon an individual coach, it is critical that sports organisations make efforts to provide ongoing education and implement these interventions through accessible coach education or professional development pathways. The delivery of such programs warrants consideration from sports organisations, including the target audience, format (e.g. internet or in-person), type of facilitator and language utilised. Firstly, given the diversity of genders, sporting codes, coach types (e.g. head coach, development coach) and cultures among elite-level coaches, integrated interventions should consider the distinct stressors and experiences of coaches, tailoring such programs to maximise user relevancy and engagement. Regarding format, current mental health literacy programs have been delivered through internet-based interventions, educational workshops/presentations and curriculum-based programs (Gorczynski, 2025). Given the time and scheduled-based

pressures of elite coaches, further research might examine coaching preferences regarding the medium of delivery and timing (e.g. pre-season, mid-season break) of mental health literacy interventions. Such programs should also consider interactive pedagogical approaches (e.g. encouraged problem solving, group discussions, scenario-based activities), learning designs (e.g. balancing theory with practical workshops) and course content (e.g. evidence-based) (Wang et al., 2025). Lastly, it is recommended that mental health literacy programs are facilitated by mental health professionals (e.g. psychologists), medical (e.g. sports medicine physicians) professionals or trained peers (e.g. former coaches who have undergone mental health or first aid training) with strong interpersonal skills (e.g. passionate, humble, approachable) (Purcell et al., 2019; Wang et al., 2025). These coaching educators should consider their communication style, focusing on utilising a clear and direct 'active voice' (e.g. "the athlete accessed the service") to increase the likelihood of behavioural or attitude changes by fostering a greater sense of control among participating coaches (Gorczynski, 2025).

Developing formal help-seeking pathways and services

To reduce barriers to support and stigma towards help-seeking, sports organisations should develop and actively promote formal pathways to mental health services and care. A number of service models have been described in elite sport, including those available in Australia (e.g. Australian Institute of Sport Mental Health Referral Network) (Olive et al., 2021; Rice et al., 2020), Canada (e.g. Canadian Centre for Mental Health and Sport Team) (Van Slingerland et al., 2020) and Sweden (Kenttä & Hyland, 2021). Recently, Pilkington et al. (2025) evaluated services provided by the Australian Institute of Sport (AIS) Mental Health Referral Network, identifying high satisfaction among a sample of service users that included elite coaches. Findings revealed that free services offered by mental health professionals at timely and flexible occasions were perceived favourably. Notably,

participants reported a preference to use external services when seeking mental health support to offset concerns around confidentiality and repercussions associated with help-seeking (e.g. stigma). Given the AIS Mental Health Referral Network was originally developed for elite athletes, future research might explore elite coaches' help-seeking preferences (e.g. how and with whom) to optimise engagement with mental health services.

Since time constraints (e.g. travel commitments, busy work schedules), a lack of access to mental health support (e.g. financial costs, not knowing where to go) and a resistance to engage with mental health practitioners (e.g. concerns around confidentiality) were cited as perceived challenges to help-seeking among Olympic and Paralympic coaches in *Chapter 6*, mental health pathways targeted at elite coaches should consider cost, timing, delivery (e.g. in-person, online), range of service providers (e.g. psychologists, psychiatrists) and types of support offered (e.g. clinicians with specialist training) with such services. Considering the persisting threat of job security in elite coaching, organisations should pay particular attention towards confidentiality in relation to service use, exploring the feasibility of utilising external service providers to reduce concerns around employment. Additionally, sports organisations should consider the sustainability and resourcing of mental health services to preserve long-term accessibility (Pilkington et al., 2025). The active promotion and tailored messaging of such services should also be considered by sports organisations, particularly among groups who may experience greater levels of stigma or may be more hesitant to seek support (Pilkington et al., 2025). Critically, when considering the development of such pathways and services, it is recommended that elite coaches and other relevant stakeholders (e.g. mental health professionals) are both consulted in a co-design process to increase the relevance and feasibility of services offered.

Lastly, while efforts should be made to ensure elite coaches can access treatment and utilise mental health services throughout their tenure, in some cases early intervention efforts

might not be sufficient, and it may be necessary for coaches to take leave or depart their role to prioritise their mental health. Accordingly, sports organisations should ensure current treatment plans or services are extended to coaches who have exercised leave or departed their role. Such supports may play a crucial role in recovery (or maintenance), potentially enabling coaches to return to the industry without having to leave the profession altogether. It has been suggested that 'return-to-coaching' guidelines using a traffic light system (e.g. red, amber, green ratings) reflecting one's clinical condition may help to ensure coaches safely reintegrate into elite sport settings, mitigating the risk or likelihood of relapse (Currie & Purcell, 2021; Frost et al., 2023). These guidelines may mirror similar clinical assessment tools developed for elite athletes (e.g. RED-S) (Mountjoy et al., 2015). As such, further research is needed to develop appropriate rehabilitation and reintegration guidelines, considering the unique role, responsibilities and preferences of elite coaches.

Table 10: Recommendations and areas for future research in supporting the mental health of elite coaches

	Recommendations	Future Research	Chapter Source
1. Conceptualising, contextualising and championing mental health in elite sport			
Defining mental health	Evidence-based dual-continuum models that emphasise aspects of mental wellbeing and mental ill-health should be utilised to frame mental health in elite-level coaches.	Considering mental health was reported as a tool to optimise performance by elite coaches, future research might investigate a three-dimensional model of mental health that incorporates a third construct of performance or coaching effectiveness in elite coaching.	2, 3, & 6
Adopting socio-ecological mental health frameworks	Sports organisations should be cognisant of multi-level systems factors shaping the mental health outcomes of elite coaches. In particular, organisations should be mindful – from a duty of care perspective - of their influence on the mental health of elite coaches (e.g. job insecurity).	Further longitudinal research with larger sample sizes is needed to investigate which multi-level risk and protective factors exert the greatest influence upon the mental health of elite coaches.	2, 3 & 4
Promoting the relationship between mental health and coaching effectiveness	Given preliminary evidence suggests that the mental health of elite coaches may influence their perceived coaching effectiveness, sports organisations may explore coaching effectiveness to leverage greater buy-in and interest in mental health among elite coaches.	Further research is needed to better understand the bi-directional relationship between mental health and coaching effectiveness through qualitative and quantitative (e.g. CBS-S, CART-Q) research designs.	2

	Recommendations	Future Research	Chapter Source
2. Early identification of mental health symptoms among elite coaches			
Screening for mental health symptoms	In the absence of a coach-specific mental health screening tool, and the APSQ being intended for elite athletes, sports organisations might consider monitoring the mental health of elite coaches using SMHAT-1 measures by mental health or medical professionals.	A brief screening tool assessing psychological distress among elite-level coaches should be developed to support initial mental health screening (similar to the APSQ). Considering its prevalence among elite coaches, such measures should consider detecting presentations of burnout. Careful consideration should also be paid towards the timing of using screening tools. Crucially, elite coaches should be consulted in the development of such measures.	4
Understanding elite coaches' preferences for mental health symptom monitoring	Considering the role-related differences and pressures (e.g. job insecurity, confidentiality) experienced by elite athletes and coaches, sports organisations should make efforts to understand how elite coaches prefer to be screened for mental health symptoms (e.g. how and with whom).	Further research is needed to investigate elite coaches' preferences for mental health screening. Such insights may guide the development of a tailored standardised assessment tool (e.g. SMHAT-1) that accommodates the demands and concerns expressed and experienced by elite coaches.	4
3. Cultivating psychologically safe elite sports environments			
Promoting characteristics of psychologically safe environments for elite coaches	Sports organisations and their leaders should look to foster psychologically safe elite sports environments by: • Encouraging adaptive risk-taking (e.g. raising concerns, requesting feedback) and opportunities to make interpersonal mistakes without concerns over job security.	Future studies might investigate elite-level coaches' perceptions of psychological safety in elite sports environments. This may include identifying psychological threats or harm (e.g. impacts upon job security), exploring features that underpin flourishing environments, or	3, 5 & 6

	Recommendations	Future Research	Chapter Source
	• Destigmatising and normalising mental health issues • Promoting mental health support and ameliorating the perceived risks associated with help-seeking (e.g. job security and negative judgments from employers) • Facilitating educational opportunities to enhance the mental health literacy of elite coaches • Nurturing flourishing environments that increase coach confidence, reduce anxiety around performance pressures and promote equality, inclusiveness and respect.	better understanding the experiences of marginalised or minority coaching groups (e.g. women coaches).	
4. Developing mental health literacy programs for elite coaches			
Improving mental health literacy among elite coaches	As reported in *Chapter 5*, sports organisations should seek to enhance mental health literacy among their coaching staff, considering: • Symptom presentation and appropriate treatments of common mental disorders among both elite athletes and coaches • The detection of burnout and best management practices among elite athletes and coaches. • Education around systems-level risk and protective factors • Offering evidence-based interventions to cultivate effective psychological (e.g. self-compassion) and behavioural (e.g. exercising) coping strategies • Reducing self and public stigma by promoting positive attitudes that normalise mental ill-health and help-seeking	There is a need to develop evidence-based mental health literacy interventions tailored to elite-level coaches. Such programs should consider the specific mental health symptoms, risk factors and mental health conditions commonly experienced by both elite athletes and coaches. Research should also take preferred pedagogical approaches and learning designs into account.	2, 3, 5, 6

	Recommendations	Future Research	Chapter Source
	• Offering clear information about formal pathways to care		
Delivery of mental health literacy programs	When delivering ongoing mental health literacy education to elite-level coaches, sports organisations should consider potential facilitators and barriers to engagement, including: • Access to education (e.g. coach education pathways, professional development workshops) • Timing of programs (e.g. pre-season) • Target audience (e.g. gender, sporting code) • Format (e.g. in-person, internet) • Type of facilitator (e.g. mental health professional, medical professional) and the delivery of information (e.g. active voices)	To maximise user relevancy and engagement, future research might explore the facilitators, barriers and delivery preferences of mental health literacy programs from the perspectives of elite-level coaches.	5
5. Developing formal help-seeking pathways and services			
Offering mental health supports and services	Sports organisations should offer and actively promote mental health services tailored specifically for elite-level coaches (including any existing low or no-cost organisational counselling services). To encourage help-seeking, sports organisations should make efforts to reduce help-seeking barriers through short- (e.g. improving mental health literacy) and long-term (e.g. addressing cultural and social barriers) solutions. Such treatments and services should be extended to elite coaches who may take leave or depart their role to prioritise their mental health.	Researchers should engage elite coaches and relevant stakeholders (e.g. service providers) in a co-design approach to develop mental health pathways and services. Such insights may increase the attendance, feasibility and sustainability of services provided. For coaches who have exercised leave or left their role, future research should also gather insights that can be utilised to develop clinical assessment tools for 'return-to-coaching' guidelines.	6

	Recommendations	Future Research	Chapter Source
The structure and availability of services	When developing mental health pathways and services for elite coaches, as outlined in *Chapter 6*, there is a need to consider the accessibility of mental health supports, time constraints and resistance to engage with mental health professionals. Considerations may include: • Cost of services (for the service user and organisation) • Timing (e.g. before or during competition if needed) • Delivery (e.g. in-person, online) • Range of service providers (e.g. psychologists, psychiatrists) • Types of evidence-based treatments offered (e.g. cognitive behavioural therapy, eye movement desensitisation and reprocessing treatment) • Confidentiality (e.g. use of external services)	To optimise the relevancy and engagement of such services, future research might investigate the mental health help-seeking preferences of elite-level coaches (e.g. how and with whom).	6

Overall Thesis Conclusions

By employing a diverse range of methodologies to elicit insights, this thesis has advanced the extant literature exploring the mental health of elite-level coaches. Considering the specific performance, organisational and personal stressors elite coaches face, findings from this doctoral thesis indicate that the mental health needs of elite coaches warrant meaningful attention, necessitating the development of targeted frameworks and interventions to support their wellbeing. Considering the structural demands and pressures associated with the profession (e.g. high workloads, job insecurity), as well as the role's close links with performance outcomes, it is critical that researchers and sports organisations focus on prevention and early intervention strategies to protect elite coaches from being prone to or experiencing more persistent and severe mental health crises or disorders.

A number of valuable insights were discussed throughout this thesis. Firstly, the current empirical landscape has primarily investigated burnout and mental wellbeing among elite coaches, with less attention paid towards the presence of symptoms and disorders associated with mental ill-health. This doctoral thesis yielded insights on the presence of mental health symptoms among the largest sample of elite-level coaches to date, indicating further longitudinal research is needed to monitor and track symptoms over time, with particular attention directed towards rates and patterns of alcohol consumption. Myriad risk and protective factors influencing the mental health of elite-level coaches were also identified using a socio-ecological systems framework. While individual, interpersonal and societal factors all contributed towards shaping the mental health of elite-level coaches, organisational factors were largely perceived to pose the greatest threat to a coach's mental health, particularly job insecurity.

To support the mental health of elite-level coaches, sports organisations should therefore consider employing early intervention strategies and approaches. This may include

the early identification of mental health symptoms among elite coaches, fostering psychologically safe elite sports environments, improving mental health literacy and developing formal help-seeking pathways and services. Researchers and sports organisations may seek to develop evidence-based mental health literacy programs that consider enhancing mental health knowledge (e.g. symptom identification and appropriate treatment), providing education around risk and protective factors, cultivating adaptive coping strategies, reducing self and public stigma and offering information about formal pathways to care. Notably, mental health literacy interventions should consider offering information regarding athlete and coach mental health, giving appreciation to the distinctions between symptom presentation and best management approaches. This should also be extended to developing formal help-seeking pathways and services for elite coaches, given the help-seeking challenges and preferences of coaches may differ from athletes. As such, sports organisations should develop short- (e.g. improve mental health literacy) and long-term (e.g. foster psychologically safe elite sports environments) strategies to reduce the perceived barriers to treatment for elite-level coaches.

The insights discussed may serve as an empirical foundation for the development of mental health frameworks or guidelines to best support the mental health of elite coaches. Mental health assessments (e.g. SMHAT-1) and toolkits (e.g. IOC Mental Health in Elite Athletes Toolkit) that have been developed for elite athletes should also be considered for coaches given the demands, responsibilities and influence they bear (Gouttebarge et al., 2021; IOC, 2021). While the insights from this doctoral thesis shed light upon the mental health needs and perceptions of elite coaches, ultimately, further research is urgently needed to establish a greater body of evidence that can be utilised to support the mental health of elite-level coaches.

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Appendices

Supplementary File 1: PRISMA-ScR Checklist (Tricco et al., 2018).

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	6 - 8
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	9
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	9
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	10 - 12
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	12 - 13
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	12 - 13 (see supplementary file 2)
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	13
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	14 (see supplementary file 3)

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	14
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	14
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	14
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	15
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	See Table 2
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	15 (see supplementary file 4)
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	See Table 2
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	15 - 24
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	24 - 30
Limitations	20	Discuss the limitations of the scoping review process.	30 - 32
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	32 - 33
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	35

Supplementary File 2: Example search strategy for PsycInfo.

elite or high-performance or high performance or professional or olympic or paralympic or national or international or world-class or world class or college or collegiate or highly trained or competitive
AND
mental disorders OR mental health OR stress* OR psychological distress OR suicide OR mental illness OR wellbeing OR well-being OR anxiet* OR anxious OR depress* OR phobi* OR burnout* OR burn-out* OR obsessive-compulsive OR panic OR eating disorder* OR anorexia OR anorexic OR bulimia OR bulimic OR binge eat* OR suicid* OR attention deficit hyperactivity disorder* OR attention deficit disorder with hyperactivity OR adhd OR bipolar OR psychotic* OR psychosis OR psychoses OR flourish* OR languish* OR thriving OR thrive OR alcohol* OR substance abuse OR substance dependence OR addiction OR sleep
AND
coach* or manager or director

Supplementary File 3: Data extraction tool.

Scoping Review Details	
Scoping Review title:	The mental health of elite-level coaches: A systematic scoping review
Review objective/s:	To identify what is known about the way in which high-performance sports coaches experience mental health.
Review question/s:	1. What are coaches' experiences of wellbeing? 2. What is the nature and prevalence of mental ill-health in elite-level coaches? 3. What risk and protective factors influence coach mental health? 4. What are the various ways coaching effectiveness is conceptualised from a mental health perspective? 5. What is the relationship between mental health and coaching effectiveness?
Reasons for inclusion in scoping review	
Peer-reviewed journal	Yes/No
After January 2000	Yes/No
Primary Research	Yes/No
English language	Yes/No
Full-text available	Yes/No
Does the study collect data from elite or high-performance coaches who manage athletes at the Olympic, Paralympic, international, national, professional or NCAA Division I level?	Yes/No
Does the study explore coaches who operate in positions of leadership or responsibility exclusively (e.g. head/assistant/senior coaches) or provide group findings separately where a heterogenous sample (e.g. strength & conditioning coaches) is utilised?	Yes/No

Does the study explore coaches exclusively or provide group findings separately where a sample beyond coaches (e.g. athletes or support staff) is utilised?	Yes/No	
Does the study explore elite coaches exclusively or provide group findings separately where a heterogenous sample (e.g. elite and non-elite) is utilised?	Yes/No	
Does the study report on the mental health (mental wellbeing or mental ill-health) of elite coaches?	Yes/No	
Evidence source Details and Characteristics		
Author		
Date article sourced		
Title		
Year of publication		
Journal		
Type of Study (e.g. qual, quant, cross-sectional)		
Study aims/objective		
Sample size	n =	
Response rate		
Location (of population)		
Participant details	Age	
	Sex	Male = (), Female = ()
	Sport	
	Individual/Team sport	Individual = (), Team = ()
	How is elite-level coaching defined?	
	Level of Coaching (e.g. Olympic, professional, national)	
	Type of Coach (eg. Head or Assistant)	

	Level of Engagement with Profession (e.g. Full-time/Part-Time/Voluntary)	
	Amount of Coaching Experience	
	Other	
Outcome Measures	Wellbeing Measures (e.g. emotional, social, psychological)	
	Mental Ill-Health Measures (e.g. anxiety, burnout, depression)	
Conceptual Framework(s) (e.g. SDT, CMRT)		
Measures (e.g. interviews, wellbeing scales)		
Data Analysis (e.g. t-tests, thematic analysis)		
Context (e.g. preseason, post-season)		
Details/Results extracted from source of evidence		
Results Summary	General results	
	Specific to wellbeing	
	Specific to mental ill-health	
	Specific to risk and protective factors	
	Specific to coach effectiveness	
	Specific to the conceptualisation of coach effectiveness	
Key conclusions by authors		
Future research direction		
Funding body/sponsor		
Author identified limitations		
Additional limitations		
Comments		

Supplementary File 4: Mixed Methods Appraisal Tool (Hong et al., 2018).

Qualitative	**1. Is the qualitative approach appropriate to answer the research question?**	**2. Are the qualitative data collection methods adequate to address the research question?**	**3. Are the findings adequately derived from the data?**	**4. Is the interpretation of results sufficiently substantiated by data?**	**5. Is there coherence between qualitative data sources, collection, analysis and interpretation?**
Baldock et al. [10]	Yes	Yes	Yes	Yes	Yes
Bentzen et al. [97]	No	Yes	Yes	No	No
Bentzen et al. [24]	Yes	Yes	Yes	Yes	Yes
Hägglund et al. [84]	No	No	Yes	Yes	Yes
Kenttä et al. [86]	Yes	Yes	Yes	Yes	Yes
Kenttä et al. [85]	No	No	Yes	Yes	Yes
Lundkvist et al. [100]	Yes	Yes	Yes	Yes	Yes
Olusoga et al. [13]	Yes	Yes	Yes	Yes	Yes
Olusoga & Kenttä [45]	No	Yes	Yes	Yes	Yes
Roberts et al. [110]	Yes	Yes	Yes	Yes	Yes
Quantitative non-randomised	**1. Are the participants representative of the target population?**	**2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?**	**3. Are there complete outcome data?**	**4. Are the confounders accounted for in the design and analysis?**	**5. During the study period, is the intervention administered (or exposure occurred) as intended?**
Balk et al. [90]	No	No	Yes	Yes	Yes
Bentzen et al. [96]	Yes	No	No	Yes	No
Bentzen et al. [87]	Yes	No	No	Yes	No
Bentzen et al. [88]	Yes	No	No	Yes	No
Carling et al. [82]	No	No	No	No	Yes
de Sousa Pinheiro et al. [94]	No	Yes	Yes	No	Can't Tell
Kellmann et al. [95]	Yes	Yes	Yes	No	No
Ruddock et al. [79]	Yes	Can't Tell	Can't Tell	Can't Tell	Can't Tell
Ruddock et al. [80]	Yes	Can't Tell	Can't Tell	Can't Tell	Can't Tell

Quantitative Descriptive	**1. Is the sampling strategy relevant to address the research question?**	**2. Is the sample representative of the target population?**	**3. Are the measurements appropriate?**	**4. Is the risk of nonresponse bias low?**	**5. Is the statistical analysis appropriate to answer the research question?**
Åkesdotter et al. [108]	Yes	No	No	Can't Tell	Yes
Carson et al. [92]	Yes	No	Yes	No	Can't Tell
Foretić et al. [109]	Can't Tell	No	No	Yes	Yes
Gencay & Gencay [101]	Yes	No	No	Can't Tell	Yes
Georgios & Nikolaos [102]	Can't Tell	No	No	Can't Tell	Yes
Hjälm et al. [99]	Yes	Yes	Can't Tell	Yes	Yes
Kaski & Kinnunen [93]	Yes	No	No	No	Yes
Kegelaers et al. [11]	Can't Tell	Yes	No	No	Yes
Kim et al. [111]	Yes	No	Can't Tell	Yes	Yes
Lee & Chelladurai [89]	Yes	No	No	No	Yes
Lee [103]	Yes	No	Yes	No	Yes
Lundkvist et al. [104]	Yes	No	Yes	No	Yes
Nikolaos [105]	Can't Tell	No	No	Can't Tell	Yes
Pilkington et al. [12]	Yes	No	Can't Tell	No	Yes
Ruddock et al. [78]	Can't Tell	Can't Tell	Can't Tell	Can't Tell	Can't Tell
Ryska et al. [106]	Yes	No	No	No	Yes
Seo et al. [107]	Yes	No	No	Yes	Yes
Smith et al. [81]	Can't Tell	No	Can't Tell	Can't Tell	Can't Tell
Smith et al. [113]	Yes	No	Can't Tell	No	Yes
Vinberg et al. [112]	Yes	No	No	No	Yes
Mixed Methods	**1. Is there an adequate rationale for using a mixed methods design to address the research question?**	**2. Are the different components of the study effectively integrated to answer the research question?**	**3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?**	**4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?**	**5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?**
Baldock et al. [83]	Yes	Yes	Yes	Yes	No
Hassmén et al. [98]	Yes	No	No	Can't Tell	No
Longshore & Sachs [91]	No	No	Yes	No	No

Supplementary File 5: List of references addressing the risk and protective factors that influence mental health in elite-level coaches.

Protective Factors			**Wellbeing**	**Mental Ill-Health**
Individual	Effective psychological skills or emotional regulation	6	• Hägglund et al. [84] • Kenttä et al. [86] • Longshore & Sachs [91]	• Georgios & Nikolaos [102] (Burnout) • Kegelaers et al. [11] (Anxiety/Depression) • Lee & Chelladurai [89] (Burnout – Emotional Exhaustion) • Longshore & Sachs [91] (Anxiety)
	Effective coping strategies	5	• Baldock et al. [10] • Baldock et al. [83] • Bentzen et al. [88]	• Hjälm et al. [99] (Burnout) • Lee [103] (Anxiety)
	Exercise	2	• Kenttä et al. [85]	• Hassmén et al. [98] (Burnout)
	Coaching experience/age	2	• Nikolaos [105] (More experience was protective)	• Pilkington et al. [12] (Older age was protective) (Psychological Distress)
	High levels of mental wellbeing	2		• Lee & Chelladurai [89] (Positive affect was negatively associated with burnout - emotional exhaustion) • Pilkington et al. [12] (Satisfaction with life balance was negatively associated with anxiety, depression, psychological distress and risky alcohol consumption)
	Working full-time or part-time	2		• Hassmén et al. [98] (Working part-time was protective) (Burnout) • Hjälm et al. [99] (Working full-time was protective) (Burnout)
	External non-coaching identities	2		• Hassmén et al. [98] (Burnout) • Lundkvist et al. [100] (Burnout)

	High intrinsic and identified motivations	1		• Bentzen et al. [96] (Burnout – Emotional Exhaustion)
	Collaborative Leadership style	1		• Ryska [106] (Burnout)
Microsystem	Strong social support	8	• Bentzen, et al. [88] • Kenttä et al. [85] • Kenttä et al. [86]	• Georgios & Nikolaos [102] (Burnout) • Lee [103] (Anxiety) • Nikolaos [105] (Burnout) • Olusoga & Kenttä [45] (Burnout) • Pilkington et al. [12] (Anxiety, Depression & Psychological Distress)
	Engaging with a psychologist	2		• Hassmén et al. [98] (Burnout) • Olusoga & Kenttä [45] (Burnout)
Exosystem	Organisation and federation support	6	• Bentzen et al. [87] • Bentzen et al. [88] • Kaski & Kinnunen [93]	• Bentzen et al. [87] (Burnout) • Gencay & Gencay [101] (Burnout) • Hjälm et al. [99] (Burnout) • Roberts et al. [110] (Depression)
	Sufficient recovery	2	• Kenttä et al. [85]	• Bentzen et al. [96] (Burnout – Emotional Exhaustion)
	Reduced workload	1	• Kaski & Kinnunen [93]	
Macrosystem	N/A	0		

Risk Factors			**Wellbeing**	**Mental Ill-Health**
Individual	Stress-related factors	7	• Baldock et al. [83] (Severity of stressors) • de Sousa Pinheiro et al. [94] (Perceptions of stress) • Olusoga et al. [13] (Perceptions of stress)	• Georgios and Nikolaos [102] (Perceptions of stress) (Burnout) • Kegelaers et al. [11] (Organisational stressors were positively associated

				with symptoms of anxiety and depression) • Kim et al. [111] (Quantity of stressors) (Depression) • Nikolaos [105] (Perceptions of stress) (Burnout)
	Ineffective coping strategies	3	• Baldock et al. [10] • Baldock et al. [83]	• Baldock et al. [83] (Burnout) • Lee [103] (Anxiety)
	Mental ill-health comorbidity (symptoms)	3		• Lee [103] (Subjective anxiety was positively associated with emotional exhaustion) • Ruddock et al. [78] (Emotional exhaustion was associated with depression, anxiety and psychological distress) • Ruddock et al. [79] (Emotional exhaustion was associated with depression, anxiety and psychological distress. Depersonalisation was associated with anxiety and psychological distress. Reduced personal accomplishment was associated with depression and psychological distress)
	Coaching experience/age	3		• Bentzen et al. [97] (Lack of experience was a risk factor) (Burnout) • Gencay & Gencay [101] (More experience was a risk factor) (Burnout) • Pilkington et al. [12] (Younger age was a

				risk factor) (Psychological Distress)
	Low autonomous motivation	2	• Bentzen et al. [87]	• Bentzen et al. [97] (Burnout) • Bentzen et al. [87] (Burnout – Cynicism & Reduced Personal Accomplishment)
	Maladaptive Perfectionism	2		• Lundkvist et al. [100] (Burnout) • Olusoga & Kenttä [45] (Burnout)
	Gender (women)	2	• Kenttä et al. [85]	• Kaski & Kinnunen [93] (Burnout)
	Transitional phases	2	• Kenttä et al. [86] (Job termination)	• Kim et al. [111] (Retirement) (Depression)
	Low levels of wellbeing	1		• Lee & Chelladurai [89] (Negative affect was positively associated with burnout - emotional exhaustion)
	Low Emotional Intelligence	1		• Lee & Chelladurai [89] (Burnout – Emotional Exhaustion)
	Controlling leadership style	1		• Ryska [106] (Burnout)
	Dominant coaching identity	1		• Lundkvist et al. [100] (Burnout)
	Family history of a mood disorder	1		• Kim et al. [111] (Depression)
	Working full-time	1		• Kaski & Kinnunen [93] (Working full-time was a risk factor) (Burnout)
Microsystem	Lack of social support	3		• Georgios & Nikolaos [102] (Burnout) • Olusoga & Kenttä [45] (Burnout) • Nikolaos [105] (Burnout)
Exosystem	Excessive workload	6	• Bentzen et al. [87]	• Bentzen et al. [97] (Burnout)

				• Bentzen et al. [96] (Burnout – Emotional Exhaustion) • Bentzen et al. [87] (Burnout) • Hassmén et al. [98] (Burnout) • Lundkvist et al. [100] (Burnout) • Olusoga & Kenttä [45] (Burnout)
	Lack of organisation or federation support	4	• Kenttä et al. [86]	• Bentzen et al. [97] (Burnout) • Gencay & Gencay [101] (Burnout) • Olusoga & Kenttä [45] (Burnout)
	Lack of recovery	4	• de Sousa Pinheiro et al. [94] • Kellmann et al. [95]	• Bentzen et al. [96] (Psychological detachment and relaxation) (Burnout – Emotional Exhaustion) • Lundkvist et al. [100] (Burnout)
	Poor work-life balance	3	• Kenttä et al. [85]	• Bentzen et al. [96] (Burnout – Emotional Exhaustion) • Olusoga & Kenttä [45] (Burnout)
	Job insecurity	2	• Bentzen et al. [88] • Bentzen et al. [24]	
	Excessive organisational influence	1		• Bentzen et al. [97] (Burnout)
	Sport type	1		• Kegelaers et al. [11] (Team sport was risk factor) (Risky Alcohol Consumption)
Macrosystem	Stigma towards help-seeking	2		• Olusoga & Kenttä [45] (Burnout) • Roberts et al. [110] (Depression)
	Sporting culture	2	• Kenttä et al. [85] (Hypermasculine culture)	• Hassmén et al. [98] (Constant pressure to perform) (Burnout)

	Media Scrutiny	1		• Olusoga & Kenttä [45] (Burnout)

Supplementary File 6: List of references addressing the relationship between mental health and coaching effectiveness in elite-level coaches.

Coach Performance			
Psychological/Emotional State	Focus	3	Lee [103] Longshore & Sachs [91] Lundkvist et al. [100]
	Decision making	1	Olusoga & Kenttä [45]
	Emotional regulation	1	Longshore & Sachs [91]
	Confidence	1	Lundkvist et al. [100]
Standard of Performance	Motivation	1	Olusoga & Kenttä [45]
	Presenteeism	1	Seo at al. [107]
	Work engagement	1	Balk et al. [90]
Coaching Style	Verbal communication	1	Lundkvist et al. [100]
	Leadership style	1	Lundkvist et al. [100]

Athlete/Team Performance			
Standard of Performance	Performance levels	1	Olusoga & Kenttä [45]

Supplementary File 7: The semi-structured interview script.

Interview Questions

Introduction

Thanks for agreeing to participate in this interview about the factors that influence your mental health and well-being as a high-performance coach. As you know, elite-level coaches encounter a range of stressors that have the potential to influence or compromise their mental health and well-being. As a result, we're interested in finding out a bit more about the factors that contribute towards a coach's experience of mental health. We're also interested in understanding how a coach's mental health may influence their coaching effectiveness and performance to help guide future research in this space. This study will form a part of my broader PhD research, which aims to understand the experiences and perceptions of mental health among elite-level coaches, with a particular focus on Australian coaches. The research primarily aims to identify and explore ways to better support the mental health of elite-level coaches.

This interview will be recorded and transcribed by an independent transcription service. Findings from these interviews may be utilised to inform specific mental health frameworks and interventions for coaches, and will be reported in scientific journals. In any publication, information or data will be reported in such a way that you cannot be identified. Findings will also not be passed on to anyone outside the research team without your permission.

Your participation is voluntary and you can stop the interview at any time. You can also choose to skip any questions if there is a particular topic that you don't feel comfortable discussing.

This interview will be recorded and transcribed. Are you happy to continue?

Questions

1. Can you describe some of the demands you face as a high-performance coach?
    a. Do these demands impact your mental health at all? How?

2. How do you manage these demands from a wellbeing perspective?
    a. Are there things that you do or use to make these challenges more manageable?

3. Do you support your mental health during the competitive season? If yes, in what way(s)?
    a. How does this help or what are the barriers to doing this?

4. Can you talk about your support network (if any) and how this relates to your mental health? and/or ability to coach effectively?
    a. Do you ever feel socially isolated, and if so, how does this impact your mental health?

5. What role, if any, do you think your organisation, sporting body or federation has in regard to supporting your mental health? Why? What is their role, or what do you think it should be? Please remember that we will mask aspects of your response in any publications so that they are unidentifiable. Your organisation will also not receive any of the information provided.
    a. Do you ever believe your organisation or federation ever contributes positively/negatively towards your mental health?

6. If there was one major change that could be made to improve coach mental health in Australia, what do you think that would be?
    a. Some examples may include stigma towards mental health help-seeking, the sporting culture, media scrutiny, or even law or legislation (e.g. contractual protection) pertaining to your profession

7. Do you think your mental health impacts your ability to coach effectively at all?
    a. If yes, how?
    b. If no, why?

8. Is there anything else that you think is important for us to understand about mental health in high-performance coaching? Anything from your experience that we might have missed/haven't talked about that is important in this area?

Supplementary File 8: The process of theme and code development while undertaking reflexive thematic analysis. Changes across iterations are reflected by italics.

Iteration	**Theme**	**Sub-Theme #1**	**Sub-Theme #2**	**Process**
Iteration 1	"I think there's just an understanding that it'll magically get done and what the flow on load or the flow on effect to that coach or even to that staff member is not often factored in. So, it's a very much just get on with it type of industry. If you don't get on with it, someone else will."			Data items were initially extracted from interview transcripts through semantic and latent coding.
Iteration 2	*Workload*			Initial codes representing data items were developed.
Iteration 3	*Organisational Support*	Workload		Codes were then grouped under a broader theme, resulting in the development of sub-themes.
Iteration 4	*Organisational Level*	Workload		The socioecological framework was applied to categorise themes for interpretation purposes.
Iteration 5	Organisational Level	Workload	*Risk*	Within each sub-theme, codes were split into risk and protective factor groups to assist with interpretation.
Iteration 6	Organisational Level	*Management Team or Board*	Risk	Sub-themes were refined, merged or removed to develop broader themes and capture a more meaningful representation of the data.
Iteration 7:	*Organisational Influence*	Management Team or Board	Risk	Recognising that risk and protective factors rarely exist in isolated socioecological levels, themes were further refined by combining and evolving themes across socioecological levels.
Iteration 8	*Sports organisations influence the mental health of elite-level coaches through expectations and support*	*Standard and expectations of leaders*		Themes and sub-themes were carefully reviewed and refined to emphasise narratives and shared meaning within themes, rather than topics. This process also involved removing risk and protective factor groups.

Iteration 9	*The demands imposed and supports provided by sports organisations*	*Organisational expectations of leaders*		The ongoing refinement of themes and sub-themes were supported from the input of a critical friend.
Iteration 10	*The influence of organisational expectations and support*	*Organisational leaders shape culture and expectations*		The final themes and sub-themes were settled in the 10th iteration of analysis.

Supplementary File 9: Primary sporting disciplines of Chapter 4 participants.

Primary Sport	Total (n=158)	Percentage (%)
Australian Rules Football	66	41.8
Soccer	15	9.5
Swimming	12	7.6
Athletics	7	4.4
Volleyball	5	3.2
Fencing	4	2.5
Boccia	3	1.9
Cricket	3	1.9
Hockey	3	1.9
Wrestling	3	1.9
Curling	2	1.3
Figure Skating	2	1.3
Rowing	2	1.3
Rugby Union	2	1.3
Triathlon	2	1.3
American Football	1	0.6
Badminton	1	0.6
Basketball	1	0.6
Beach volleyball	1	0.6
Blind Soccer	1	0.6
Canoeing	1	0.6
Cheerleading	1	0.6
Cycling	1	0.6
Diving	1	0.6
Equestrian	1	0.6
Freestyle Ski	1	0.6
Handball	1	0.6
Ice Hockey	1	0.6
Netball	1	0.6
Para Archery	1	0.6
Para Table Tennis	1	0.6
Sailing	1	0.6
Skiing	1	0.6
Squash	1	0.6
Table Tennis	1	0.6
Taekwondo	1	0.6
Tenpin Bowling	1	0.6
Trampoline Gymnastics	1	0.6
Ultimate Frisbee	1	0.6
Weightlifting	1	0.6
Wheelchair Curling	1	0.6
Wheelchair Tennis	1	0.6

Supplementary File 10: Participants responses to single-item risk factor questions (strongly agree, agree, neutral, disagree, strongly disagree).

	Sustainability	%	Remuneration	%	Job Security	%	Workload	%
Strongly Agree	8	5.1	3	1.9	34	21.5	7	4.5
Agree	52	32.9	17	10.7	59	37.3	68	43.0
Neutral	28	17.7	18	11.4	27	17.1	30	19.0
Disagree	48	30.4	78	49.4	27	17.1	43	27.2
Strongly Disagree	22	13.9	42	26.6	11	7.0	10	6.3

Supplementary File 11: Welch's t-tests comparing symptoms of depression and anxiety in elite coach subgroups (*p <.01, **p<.001).

Groups	**Depression**			**Anxiety**		
	Mean (SD)	p value	Cohen's *d*	Mean (SD)	p value	Cohen's *d*
Gender						
Men	4.46 (4.67)	.252	0.23	4.49 (3.96)	.272	0.22
Women	5.56 (5.42)			5.39 (4.66)		
Children						
Yes	3.94 (3.58)	.017	0.48	3.87 (3.38)	**.002***	**0.60**
No	6.21 (6.41)			6.27 (4.96)		
Former Elite Athlete						
Yes	4.25 (4.42)	.115	0.28	4.28 (4.01)	.087	0.29
No	5.60 (5.53)			5.48 (4.33)		
Diagnosis						
Yes	8.27 (7.67)	.022	0.56	8.14 (5.80)	**.005***	**0.71**
No	4.18 (4.03)			4.17 (3.56)		
Treatment Seeking						
No	4.16 (4.21)	.072	0.30	4.12 (3.97)	.021	0.30
Yes	5.73 (5.76)			5.73 (4.30)		

Supplementary File 12: Proportions tests for risky alcohol consumption in elite coach subgroups (*p <.01, **p<.001).

Groups	**Risky Alcohol Consumption**				
	Proportion	Test Statistic (Z)	p-value	95% CI	Cohen's *h*
Gender		3.049	0.081	-0.002, 0.330	0.37
Men	0.359				
Women	0.195				
Children		0.000	1.000	-0.167, 0.152	0.02
Yes	0.314				
No	0.321				
Former Elite Athlete		1.246	0.264	-0.266, 0.067	0.21
Yes	0.280				
No	0.379				
Diagnosis		0.000	1.000	-0.215, 0.210	0.01
Yes	0.318				
No	0.321				
Treatment Seeking					
No	0.286	0.919	0.338	-0.079, 0.253	0.19
Yes	0.373				

Supplementary File 13: Fisher's Exact Test for suicidal ideation in elite coach subgroups (*p <.01, **p<.001).

Groups	**Suicidal Ideation**	
	p-value	OR
Gender	.377	0.448
Children	.098	0.204
Former Elite Athlete	.708	0.765
Diagnosis	**<.001****	**19.706**
Treatment Seeking	.103	4.491

Supplementary File 14: Kruskal-Wallis comparing symptoms of depression and anxiety in elite coach subgroups (*p <.01, **p<.001).

Groups	**Depression**				**Anxiety**		
	Mean (SD)	p value	ε^2		Mean (SD)	p value	ε^2
Age		.872	.00			.601	.00
25-34	3.56 (2.53)				4.11 (2.93)		
35-44	4.91 (5.15)				5.12 (4.26)		
45-54	5.18 (5.37)				4.87 (4.58)		
55≥	4.86 (5.28)				4.25 (4.33)		
Nature of Employment		.515	.00			.158	.01
Full time employed	4.82 (5.12)				4.91 (4.37)		
Part time	3.89 (4.09)				3.70 (4.11)		
Contract or a casual/as needs basis	5.53 (4.74)				5.24 (2.68)		
Volunteer	5.50 (3.54)				3.50 (2.12)		
Relationship Status		.065	.03			.046	.04
Single/never married	8.83 (8.75)				8.17 (6.47)		
Partnered	3.53 (2.78)				4.53 (3.04)		
De-facto/living together	5.42 (4.10)				5.11 (2.92)		
Married	3.98 (4.05)				4.11 (3.84)		
Previously married	5.25 (3.72)				3.83 (3.13)		
Type of Coach		.317	.00			.092	.02
Head/Lead Coach	5.35 (5.69)				5.52 (4.66)		
Assistant Coach	3.91 (3.46)				3.52 (3.10)		
Development Coach	4.90 (4.13)				4.60 (3.79)		
Specialist Coach	2.00 (2.28)				2.83 (1.83)		
Stage of Season		.956	.00			.407	.00
In competition	5.18 (5.83)				5.22 (4.57)		
Pre-season	4.32 (4.38)				4.32 (4.30)		
Off-Season	4.33 (3.53)				4.21 (3.50)		

Supplementary File 15: Fully adjusted linear regression model examining associations between potential risk factors and symptoms of depression in elite-level coaches (*p <.01, **p<.001).

	Depression		
Predictor	B	95% CI	p-value
Intercept	2.11	1.67, 2.56	<0.001
Job Sustainability (Ref: Disagree)			
Neutral	-0.35	-0.80, 0.10	0.130
Agree	-0.30	-0.74, 0.14	0.184
Remuneration (Ref: Disagree)			
Neutral	-0.08	-0.59, 0.43	0.757
Agree	-0.48	-1.00, 0.03	0.065
Job Security (Ref: Disagree)			
Neutral	-0.38	-0.88, 0.11	0.129
Agree	**-0.55**	**-0.96, -0.14**	**0.009***
Workload (Ref: Disagree)			
Neutral	-0.30	-0.75, 0.15	0.186
Agree	-0.22	-0.67, 0.22	0.322
Coach Type (Ref: Head Coach)			
Assistant Coach	-0.23	-0.60, 0.13	0.209
Development/Youth Coach	-0.02	-0.51, 0.47	0.929
Specialist Coach	**-1.12**	**-1.96, -0.28**	**0.009***
Children (Ref: No)	-0.32	-0.64, 0.01	0.056
Diagnosed Mental Disorder (Ref: No)	**0.62**	**0.16, 1.07**	**0.008***

Supplementary File 16: Fully adjusted linear regression model examining associations between potential risk factors and symptoms of anxiety in elite-level coaches (*p <.01, **p<.001).

	Anxiety		
Predictor	B	95% CI	p-value
Intercept	2.25	1.84, 2.67	<0.001
Job Sustainability (Ref: Disagree)			
Neutral	-0.25	-0.65, 0.15	0.213
Agree	-0.00	-0.39, 0.39	0.993
Remuneration (Ref: Disagree)			
Neutral	-0.10	-0.55 – 0.35	0.662
Agree	-0.24	-0.69, 0.22	0.308
Job Security (Ref: Disagree)			
Neutral	-0.16	-0.60, 0.28	0.464
Agree	**-0.63**	**-0.99, -0.28**	**0.001****
Workload (Ref: Disagree)			
Neutral	-0.40	-0.79, -0.00	**0.048**
Agree	-0.37	-0.77, 0.02	0.066
Coach Type (Ref: Head Coach)			
Assistant Coach	**-0.56**	**-0.88, -0.24**	**0.001****
Development/Youth Coach	-0.24	-0.67, 0.19	0.265
Specialist Coach	-0.78	-1.52, -0.05	0.037
Children (Ref: No)	**-0.46**	**-0.74, -0.17**	**0.002***
Diagnosed Mental Disorder (Ref: No)	0.42	0.03, 0.87	0.067
Mental Health Treatment (Ref: No)	0.28	-0.05, 0.61	0.100

Supplementary File 17: Fully adjusted logistic regression model examining associations between potential risk factors and risky alcohol consumption in elite-level coaches (*p <.01, **p<.001).

	Risky Alcohol Consumption		
Predictor	Odds Ratios	95% CI	p-value
Intercept	0.99	0.43, 2.28	0.985
Job Sustainability (Ref: Disagree)			
Neutral	0.40	0.13, 1.15	0.100
Agree	0.41	0.14, 1.11	0.086
Remuneration (Ref: Disagree)			
Neutral	0.60	0.17, 1.83	0.389
Agree	0.40	0.10, 1.31	0.152
Job Security (Ref: Disagree)			
Neutral	0.57	0.17, 1.80	0.348
Agree	0.95	0.40, 2.31	0.908
Workload (Ref: Disagree)			
Neutral	0.70	0.23, 2.00	0.516
Agree	1.90	0.71, 5.30	0.208
Gender (Ref: Man)	0.35	0.13, 0.83	0.022

Supplementary File 18: Vignettes.

Coach – Burnout

Jamie is a 51-year-old swimming coach who has been working with Olympic athletes for the past 15 years. Over the last three months Jamie has begun to feel physically and emotionally exhausted due to workload pressures and a string of poor performances at international competitions. Even though Jamie has been spending more time in the office and working longer hours to meet the demands and expectations of the job, Jamie has started to care less about whether an athlete wins or loses a race. Due to this combination of exhaustion and disinterest, Jamie now dreads going into work and has been considering resigning from the role.

Coach – Depression

Alex is a 42-year-old professional rugby league coach who has been feeling unusually down for the past few months. These feelings have been accompanied by constant negative thoughts such as “I'm not good enough” and “I can't handle things anymore”. Feelings of worthlessness have also begun to arise, which has led to Alex withdrawing and disengaging from friends, family and colleagues more than usual. Alex isn’t sure if it’s possible to be happy again and has started to consider whether it’s worth continuing with life.

Athlete – Burnout

Ash is a 28-year-old international soccer player. Having recently finished a long and gruelling domestic club season, Ash is scheduled to participate in an international competition in less than a month’s time. Ash has described feeling mentally and emotionally drained, which has been reflected by lower levels of energy throughout training. Ash has also become unusually impatient and hostile towards teammates when performing in pre-tournament warm-up matches. Given Ash’s level of emotional and physical fatigue, Ash has told close teammates that the end of the competition can’t come soon enough.

Athlete – Depression

Sam is a 24-year-old professional tennis player. For the past few weeks Sam has been experiencing regular low moods. Sam has always loved playing tennis but doesn’t seem to be interested anymore. Sam has also been trying to avoid training sessions and has lost quite a bit of weight due to not eating properly. This is having a negative impact on Sam’s training and competitive performances. Sam has described feeling empty inside, which has led to thoughts about ending things.

Supplementary File 19: Demographics, sport-related information and employment characteristics of Chapter 5 participants.

	% (n)		% (n)
Age		**Years in Elite Sport**	
Mean (SD)	44.2 (10.97)	Mean (SD)	12.77 (9.9)
25-34	18.2 (26)	**Coach Type**	
35-44	35.0 (50)	Head/Lead Coach	52.4 (75)
45-54	30.1 (43)	Assistant Coach	29.4 (42)
55≥	16.8 (24)	Development/Youth Coach	14.7 (21)
Gender		Specialist Coach	3.5 (5)
Men	72.7 (104)	**Former Elite Athlete**	
Women	27.3 (39)	Yes	65.0 (93)
Nation		No	35.0 (50)
Australia	68.5 (98)	**Employment**	
Canada	29.6 (28)	Full time employed	72.0 (103)
United States	9.1 (13)	Part time	14.7 (21)
United Kingdom	1.4 (2)	Contract or a casual/as needs basis	11.9 (17)
Brazil	0.7 (1)	Volunteer	1.4 (2)
Philippines	0.7 (1)	**Stage of the Season**	
Race/ethnicity		In competition	49.0 (70)
White	88.8 (127)	Off-season	39.2 (56)
Hispanic or Latino	2.8 (4)	Pre-season	11.9 (17)
Black or African American	2.1 (3)	**Mental Health Diagnosis**	
Asian	2.1 (3)	No	83.2 (119)
Indigenous, Aboriginal or Torres Strait Islander	1.4 (2)	Yes	15.4 (22)
Middle Eastern or North African	0.7 (1)	Prefer not to say	1.4 (2)
Italian	0.7 (1)	**Help-Seeking – Mental Health Treatment**	
Indian	0.7 (1)	No	60.8 (87)
Prefer not to say	0.7 (1)	Yes, more than 12-months ago	23.8 (34)
Relationship		Yes, within last 12-months	9.8 (14)
Married	54.5 (78)	Yes, currently	4.9 (7)
Partnered	11.9 (17)	Prefer not to say	0.7 (1)
De-factor/living together	12.6 (18)	**Help-Seeking – Mental Health Service/Professional**	
Single/never married	12.6 (18)	An external mental health professional (e.g. psychologist or psychiatrist)	28.7 (41)
Previously married (divorced, separated or widowed)	8.4 (12)	A GP	4.2 (6)
Children		An Employee Assistance Program	2.8 (4)
Yes	62.2 (89)	Your Sport's Psychologist	2.8 (4)
No	37.8 (54)	Counsellor	1.4 (2)

Supplementary File 20: Primary sporting disciplines of Chapter 5 participants.

	Total (n=143)	Percentage (%)
Australian Rules Football	61	42.7
Soccer	13	9.1
Swimming	11	7.6
Athletics	5	3.5
Volleyball	4	2.8
Boccia	3	2.1
Cricket	3	2.1
Fencing	3	2.1
Hockey	2	1.4
Wrestling	2	1.4
Figure Skating	2	1.4
Rowing	2	1.4
Rugby Union	2	1.4
Triathlon	2	1.4
American Football	1	0.7
Badminton	1	0.7
Basketball	1	0.7
Beach volleyball	1	0.7
Blind Soccer	1	0.7
Canoeing	1	0.7
Cheerleading	1	0.7
Curling	1	0.7
Cycling	1	0.7
Diving	1	0.7
Equestrian	1	0.7
Freestyle Ski	1	0.7
Handball	1	0.7
Ice Hockey	1	0.7
Netball	1	0.7
Para Archery	1	0.7
Para Table Tennis	1	0.7
Sailing	1	0.7
Skiing	1	0.7
Squash	1	0.7
Table Tennis	1	0.7
Taekwondo	1	0.7
Tenpin Bowling	1	0.7
Trampoline Gymnastics	1	0.7
Ultimate Frisbee	1	0.7
Weightlifting	1	0.7
Wheelchair Curling	1	0.7
Wheelchair Tennis	1	0.7

Supplementary File 21: Chi-square Tests comparing the correct identification of depression and burnout between vignettes.

Comparison	χ^2 (df)	p-value	Effect Size (Cramér's V)
Recognition of Depression/Burnout			
Coach Depression vs Coach Burnout	11.1320 (1)	**<.001****	0.28
Coach Depression vs Athlete Depression	1.3203 (1)	0.251	0.10
Coach Burnout vs Athlete Burnout	1.2105 (1)	0.271	0.10
Athlete Depression vs Athlete Burnout	9.8236 (1)	**0.002***	0.27

*p <.01. **p<.001

Supplementary File 22: Chi-square and Fisher's Exact Tests comparing help-seeking intentions between vignettes.

Comparison	χ^2 (df)	p-value	Effect Size (Cramér's V)
Talk to or see a mental health professional (therapist, counsellor, psychologist, sports psychologist)			
Coach Depression vs Coach Burnout	1.5238 (1)	0.217	0.19
Coach Depression vs Athlete Depression	3.8788 (1)	0.049	0.24
Coach Burnout vs Athlete Burnout	0.8621 (1)	0.353	0.17
Athlete Depression vs Athlete Burnout	15.8679 (1)	**<.001****	0.55
Time away from coaching or competing			
Coach Depression vs Coach Burnout	12.7368 (1)	**<.001****	0.58
Coach Depression vs Athlete Depression[a]		0.033	8.65†
Coach Burnout vs Athlete Burnout	0.5455 (1)	0.460	0.09
Athlete Depression vs Athlete Burnout[a]		**<.001****	0.01†
Talk to or see a professional (not specified)			
Coach Depression vs Coach Burnout	1.8148 (1)	0.178	0.26
Coach Depression vs Athlete Depression	0.1111 (1)	0.739	0.06
Coach Burnout vs Athlete Burnout	0.5294 (1)	0.467	0.18
Athlete Depression vs Athlete Burnout	4.1667(1)	0.041	0.42
Talk over with high-performance support network (colleagues, mentors, coaches)			
Coach Depression vs Coach Burnout	0.6667 (1)	0.414	0.17
Coach Depression vs Athlete Depression	0.1538 (1)	0.695	0.08
Coach Burnout vs Athlete Burnout	0.0000 (1)	1.000	0.00
Athlete Depression vs Athlete Burnout	0.1818 (1)	0.670	0.09
Talk to or see a health professional (medical, doctor/GP)			
Coach Depression vs Coach Burnout[a]		**<.001****	9.60†
Coach Depression vs Athlete Depression	0.5333 (1)	0.465	0.13
Coach Burnout vs Athlete Burnout[a]		1.000	0.69†
Athlete Depression vs Athlete Burnout[a]		0.015	4.81†
Reduce workload			
Coach Depression vs Coach Burnout[a]		**<.001****	0.06†
Coach Depression vs Athlete Depression[a]		0.620	0.49†
Coach Burnout vs Athlete Burnout	0.7273 (1)	0.394	0.18
Athlete Depression vs Athlete Burnout[a]		0.029	0.19†
Increase rest & recovery			
Coach Depression vs Coach Burnout[a]		0.185	0.21†

Coach Depression vs Athlete Depression[a]		1.000	N/A†
Coach Burnout vs Athlete Burnout[a]		**0.004***	0.20†
Athlete Depression vs Athlete Burnout[a]		**<.001****	0.00†
Talk over with social support group (family and friends)			
Coach Depression vs Coach Burnout[a]		0.214	2.57†
Coach Depression vs Athlete Depression	0.2857 (1)	0.593	0.14
Coach Burnout vs Athlete Burnout[a]		0.493	0.50†
Athlete Depression vs Athlete Burnout	0.0000 (1)	1.000	0.00
Talk to or see someone			
Coach Depression vs Coach Burnout[a]		0.170	0.41†
Coach Depression vs Athlete Depression[a]		0.441	2.56†
Coach Burnout vs Athlete Burnout[a]		0.042	3.90†
Athlete Depression vs Athlete Burnout[a]		0.676	0.63†
Talk over with employer/sports organisation			
Coach Depression vs Coach Burnout[a]		0.192	0.36†
Coach Depression vs Athlete Depression[a]		0.245	N/A†
Coach Burnout vs Athlete Burnout[a]		0.200	2.60†
Athlete Depression vs Athlete Burnout[a]		0.114	0.00†
More support (not specified)			
Coach Depression vs Coach Burnout[a]		0.308	0.43†
Coach Depression vs Athlete Depression[a]		1.000	1.50†
Coach Burnout vs Athlete Burnout[a]		0.159	3.33†
Athlete Depression vs Athlete Burnout[a]		1.000	0.96†
Individual coping & self-care strategies			
Coach Depression vs Coach Burnout[a]		0.477	0.52†
Coach Depression vs Athlete Depression[a]		0.245	N/A†
Coach Burnout vs Athlete Burnout[a]		0.486	1.80†
Athlete Depression vs Athlete Burnout[a]		0.114	0.00†
Review values			
Coach Depression vs Coach Burnout[a]		0.053	0.14†
Coach Depression vs Athlete Depression[a]		1.000	0.99†
Coach Burnout vs Athlete Burnout[a]		0.059	6.73†
Athlete Depression vs Athlete Burnout[a]		1.000	0.96†
Talk to a non-medical professional			
Coach Depression vs Coach Burnout[a]		1.000	0.00†
Coach Depression vs Athlete Depression[a]		0.497	0.00†
Coach Burnout vs Athlete Burnout[a]		1.000	0.00†
Athlete Depression vs Athlete Burnout[a]		1.000	0.96†

Take medication			
Coach Depression vs Coach Burnout[a]		1.000	N/A†
Coach Depression vs Athlete Depression[a]		1.000	0.99†
Coach Burnout vs Athlete Burnout[a]		1.000	0.00†
Athlete Depression vs Athlete Burnout[a]		1.000	N/A†
Mental health hotline			
Coach Depression vs Coach Burnout[a]		1.000	N/A†
Coach Depression vs Athlete Depression[a]		1.000	0.99†
Coach Burnout vs Athlete Burnout[a]		1.000	0.00†
Athlete Depression vs Athlete Burnout[a]		1.000	N/A†

*p <.01. **p<.001

[a]Fisher's Exact Test used

†Odds Ratios used for effect size

N/A: Odds ratio is infinite due to one-sided data (e.g., no observations in one group)

Supplementary File 23: Chi-square and Fisher's Exact Tests comparing the perceived helpfulness of person-based interventions between vignettes.

Comparison	χ^2 (df)	p-value	Effect Size (Cramér's V)
Psychologist			
Coach Depression vs Coach Burnout	0.6247 (1)	0.429	0.07
Coach Depression vs Athlete Depression[a]		0.745	0.66†
Coach Burnout vs Athlete Burnout	0.0283 (1)	0.866	0.01
Athlete Depression vs Athlete Burnout[a]		0.054	3.35†
Counsellor			
Coach Depression vs Coach Burnout	0.2657 (1)	0.606	0.04
Coach Depression vs Athlete Depression	0.0954 (1)	0.757	0.03
Coach Burnout vs Athlete Burnout	1.6844 (1)	0.194	0.11
Athlete Depression vs Athlete Burnout	2.4474 (1)	0.118	0.13
Close Friends			
Coach Depression vs Coach Burnout	0.0675 (1)	0.795	0.02
Coach Depression vs Athlete Depression	1.4270 (1)	0.232	0.10
Coach Burnout vs Athlete Burnout	0.1107 (1)	0.739	0.03
Athlete Depression vs Athlete Burnout	1.5425 (1)	0.214	0.11
Family			
Coach Depression vs Coach Burnout	0.3146 (1)	0.575	0.05
Coach Depression vs Athlete Depression	0.0000 (1)	1.000	0.00
Coach Burnout vs Athlete Burnout	0.0000 (1)	1.000	0.00
Athlete Depression vs Athlete Burnout	0.2000 (1)	0.655	0.04
General Practitioner			
Coach Depression vs Coach Burnout	1.4404 (1)	0.230	0.10
Coach Depression vs Athlete Depression	0.5895 (1)	0.443	0.06
Coach Burnout vs Athlete Burnout	2.6009 (1)	0.107	0.14
Athlete Depression vs Athlete Burnout	15.2930 (1)	**<0.001****	0.33
Telephone Counselling Service			
Coach Depression vs Coach Burnout	4.5807 (1)	0.032	0.18
Coach Depression vs Athlete Depression	0.0000 (1)	1.000	0.00
Coach Burnout vs Athlete Burnout	6.0204 (1)	0.014	0.22
Athlete Depression vs Athlete Burnout	23.8597 (1)	**<0.001****	0.42
Psychiatrist			
Coach Depression vs Coach Burnout	11.3343 (1)	**<0.001****	0.29
Coach Depression vs Athlete Depression	0.6151 (1)	0.433	0.07
Coach Burnout vs Athlete Burnout	0.0370 (1)	0.847	0.02
Athlete Depression vs Athlete Burnout	4.4029 (1)	0.036	0.18

Social Worker			
Coach Depression vs Coach Burnout	2.3533 (1)	0.125	0.13
Coach Depression vs Athlete Depression	0.0065 (1)	0.936	0.01
Coach Burnout vs Athlete Burnout	0.2477 (1)	0.619	0.04
Athlete Depression vs Athlete Burnout	6.0963 (1)	0.014	0.21
Religious Leader (e.g. Clergy, Minister or Priest)			
Coach Depression vs Coach Burnout	1.1745 (1)	0.278	0.09
Coach Depression vs Athlete Depression	0.0147 (1)	0.903	0.01
Coach Burnout vs Athlete Burnout	0.0088 (1)	0.925	0.01
Athlete Depression vs Athlete Burnout	1.2199 (1)	0.269	0.09
Naturopath/Herbalist			
Coach Depression vs Coach Burnout	0.0000 (1)	1.000	0.00
Coach Depression vs Athlete Depression	0.0000 (1)	1.000	0.00
Coach Burnout vs Athlete Burnout	0.3877 (1)	0.534	0.05
Athlete Depression vs Athlete Burnout	0.4218 (1)	0.516	0.06
Pharmacist			
Coach Depression vs Coach Burnout[a]		0.014	4.29†
Coach Depression vs Athlete Depression	3.1841 (1)	0.074	0.15
Coach Burnout vs Athlete Burnout[a]		0.242	0.42†
Athlete Depression vs Athlete Burnout	0.1778 (1)	0.673	0.04

*p <.01. **p<.001

[a]Fisher's Exact Test used

†Odds Ratios used for effect size

Supplementary File 24: Chi-square and Fisher's Exact Tests comparing the perceived helpfulness of medication-based interventions between vignettes.

Comparison	χ^2 (df)	p-value	Effect Size (Cramér's V)
Vitamins and Minerals			
Coach Depression vs Coach Burnout	2.2241 (1)	0.136	0.13
Coach Depression vs Athlete Depression	0.0046 (1)	0.946	0.01
Coach Burnout vs Athlete Burnout	0.0001 (1)	0.994	0.00
Athlete Depression vs Athlete Burnout	1.1676 (1)	0.280	0.09
Antidepressants			
Coach Depression vs Coach Burnout[a]		**<0.001****	16.27†
Coach Depression vs Athlete Depression	0.3714 (1)	0.542	0.05
Coach Burnout vs Athlete Burnout[a]		1.000	1.03†
Athlete Depression vs Athlete Burnout[a]		**<0.001****	12.89†
Tonics or Herbal Medicines			
Coach Depression vs Coach Burnout	0.0499 (1)	0.823	0.02
Coach Depression vs Athlete Depression	0.0000 (1)	1.000	0.00
Coach Burnout vs Athlete Burnout	0.0034 (1)	0.953	0.01
Athlete Depression vs Athlete Burnout	0.0160 (1)	0.899	0.01
Sleeping Pills			
Coach Depression vs Coach Burnout[a]		0.108	2.70†
Coach Depression vs Athlete Depression[a]		0.099	3.02†
Coach Burnout vs Athlete Burnout[a]		1.000	1.03†
Athlete Depression vs Athlete Burnout[a]		1.000	0.93†
Pain Relievers			
Coach Depression vs Coach Burnout[a]		1.000	1.80†
Coach Depression vs Athlete Depression[a]		0.497	N/A†
Coach Burnout vs Athlete Burnout[a]		1.000	1.03†
Athlete Depression vs Athlete Burnout[a]		0.482	0.00†
Antipsychotics			
Coach Depression vs Coach Burnout[a]		0.247	N/A†
Coach Depression vs Athlete Depression[a]		0.245	N/A†
Coach Burnout vs Athlete Burnout[a]		1.000	0.00†
Athlete Depression vs Athlete Burnout[a]		0.482	0.00†
Tranquilizers			
Coach Depression vs Coach Burnout[a]		0.498	N/A†
Coach Depression vs Athlete Depression[a]		1.000	2.00†
Coach Burnout vs Athlete Burnout[a]		1.000	NaN†
Athlete Depression vs Athlete Burnout[a]		1.000	N/A†

Antibiotics			
Coach Depression vs Coach Burnout[a]		0.498	N/A†
Coach Depression vs Athlete Depression[a]		0.497	N/A†
Coach Burnout vs Athlete Burnout[a]		1.000	NaN†
Athlete Depression vs Athlete Burnout[a]		1.000	NaN†

*p <.01. **p<.001

[a]Fisher's Exact Test used

†Odds Ratios used for effect size

N/A: Odds ratio is infinite due to one-sided data (e.g., no observations in one group)

NaN: The odds ratio could not be calculated because the necessary data or variability for computation was unavailable

Supplementary File 25: Chi-square and Fisher's Exact Tests comparing the perceived helpfulness of activity and treatment-based interventions between vignettes.

Comparison	χ^2 (df)	p-value	Effect Size (Cramér's V)
Taking a holiday or taking a day off work now and then (taking leave)			
Coach Depression vs Coach Burnout	0.3785 (1)	0.538	0.05
Coach Depression vs Athlete Depression	0.0755 (1)	0.783	0.02
Coach Burnout vs Athlete Burnout[a]		0.489	0.56†
Athlete Depression vs Athlete Burnout[a]		0.047	0.26†
Counselling			
Coach Depression vs Coach Burnout	1.7924 (1)	0.181	0.11
Coach Depression vs Athlete Depression[a]		1.000	0.80†
Coach Burnout vs Athlete Burnout	0.0000 (1)	1.000	0.00
Athlete Depression vs Athlete Burnout[a]		0.054	3.32†
Cutting down on the number of commitments (reducing commitments)			
Coach Depression vs Coach Burnout[a]		0.108	0.37†
Coach Depression vs Athlete Depression	0.8012 (1)	0.371	0.07
Coach Burnout vs Athlete Burnout[a]		0.204	0.23†
Athlete Depression vs Athlete Burnout[a]		**<0.001****	0.05†
Attending courses on relaxation, stress management, meditation or yoga (relaxation activities)			
Coach Depression vs Coach Burnout	0.0939 (1)	0.759	0.03
Coach Depression vs Athlete Depression	0.0011 (1)	0.974	0.00
Coach Burnout vs Athlete Burnout	2.0086 (1)	0.156	0.12
Athlete Depression vs Athlete Burnout	0.4218 (1)	0.516	0.06
Reading about people with similar problems			
Coach Depression vs Coach Burnout	1.5995 (1)	0.206	0.11
Coach Depression vs Athlete Depression	0.1760 (1)	0.675	0.04
Coach Burnout vs Athlete Burnout	0.6008 (1)	0.438	0.07
Athlete Depression vs Athlete Burnout	0.7518 (1)	0.386	0.07
Becoming physically more active, such as playing more sport, or doing a lot more walking or gardening (increasing physical activity)			
Coach Depression vs Coach Burnout[a]		**0.003***	7.97†
Coach Depression vs Athlete Depression[a]		**<0.001****	10.86†
Coach Burnout vs Athlete Burnout	35.9515 (1)	**<0.001****	0.53
Athlete Depression vs Athlete Burnout	30.7185 (1)	**<0.001****	0.47

Taking up new recreational activities (new recreational activities)			
Coach Depression vs Coach Burnout	0.6652 (1)	0.415	0.07
Coach Depression vs Athlete Depression	1.7532 (1)	0.185	0.11
Coach Burnout vs Athlete Burnout	1.6802 (1)	0.195	0.11
Athlete Depression vs Athlete Burnout	0.7694 (1)	0.380	0.07
Getting out and about more (getting out more)			
Coach Depression vs Coach Burnout	3.1875 (1)	0.074	0.15
Coach Depression vs Athlete Depression	3.1777 (1)	0.075	0.15
Coach Burnout vs Athlete Burnout	8.9930 (1)	**0.003***	0.26
Athlete Depression vs Athlete Burnout	9.8536 (1)	**0.002***	0.27
Cutting out alcohol			
Coach Depression vs Coach Burnout	0.0000 (1)	1.000	0.00
Coach Depression vs Athlete Depression	6.0733 (1)	0.014	0.21
Coach Burnout vs Athlete Burnout	0.0394 (1)	0.843	0.02
Athlete Depression vs Athlete Burnout	8.1078 (1)	**0.004***	0.24
Massage or spinal manipulation			
Coach Depression vs Coach Burnout	0.0000 (1)	1.000	0.00
Coach Depression vs Athlete Depression	0.0000 (1)	1.000	0.00
Coach Burnout vs Athlete Burnout	0.7388 (1)	0.390	0.08
Athlete Depression vs Athlete Burnout	0.7741 (1)	0.379	0.08
Psychotherapy			
Coach Depression vs Coach Burnout	2.7954 (1)	0.095	0.14
Coach Depression vs Athlete Depression	0.0573 (1)	0.811	0.02
Coach Burnout vs Athlete Burnout	0.1087 (1)	0.742	0.03
Athlete Depression vs Athlete Burnout	3.2347 (1)	0.072	0.15
Going on a special diet			
Coach Depression vs Coach Burnout	2.4346 (1)	0.119	0.13
Coach Depression vs Athlete Depression	3.6003 (1)	0.058	0.16
Coach Burnout vs Athlete Burnout	0.5607 (1)	0.454	0.07
Athlete Depression vs Athlete Burnout	1.1207 (1)	0.290	0.09
Having an occasional alcoholic drink			
Coach Depression vs Coach Burnout	0.5074 (1)	0.476	0.06
Coach Depression vs Athlete Depression[a]		**0.004***	5.12†
Coach Burnout vs Athlete Burnout	0.6008 (1)	0.438	0.07
Athlete Depression vs Athlete Burnout[a]		**0.003***	0.19†
Hypnosis			
Coach Depression vs Coach Burnout	0.0000 (1)	1.000	0.00
Coach Depression vs Athlete Depression	0.0000 (1)	1.000	0.00
Coach Burnout vs Athlete Burnout[a]		1.000	0.96†

Athlete Depression vs Athlete Burnout[a]		1.000	0.98†
Being admitted to a psychiatric ward of a hospital (psychiatric ward)			
Coach Depression vs Coach Burnout[a]		0.060	N/A†
Coach Depression vs Athlete Depression[a]		0.441	2.56†
Coach Burnout vs Athlete Burnout[a]		1.000	0.00†
Athlete Depression vs Athlete Burnout[a]		0.497	N/A†
Electro-convulsive therapy			
Coach Depression vs Coach Burnout[a]		0.060	N/A†
Coach Depression vs Athlete Depression[a]		0.058	N/A†
Coach Burnout vs Athlete Burnout[a]		1.000	0.00†
Athlete Depression vs Athlete Burnout[a]		1.000	0.00†

*p <.01. **p<.001

[a]Fisher's Exact Test used

†Odds Ratios used for effect size

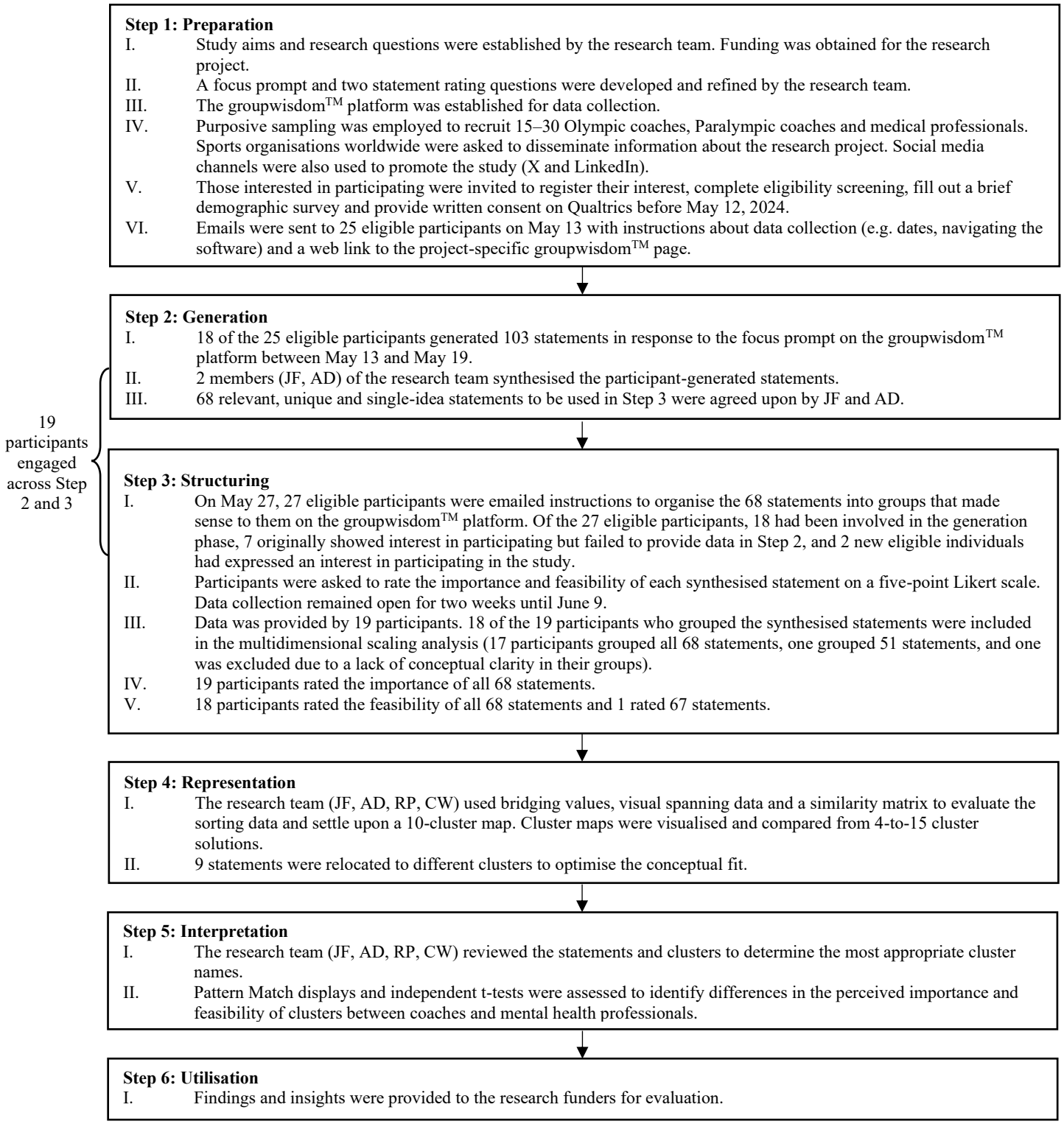
N/A: Odds ratio is infinite due to one-sided data (e.g., no observations in one group)

Supplementary File 26: STROBE Statement—Checklist of items that should be included in reports of observational studies.

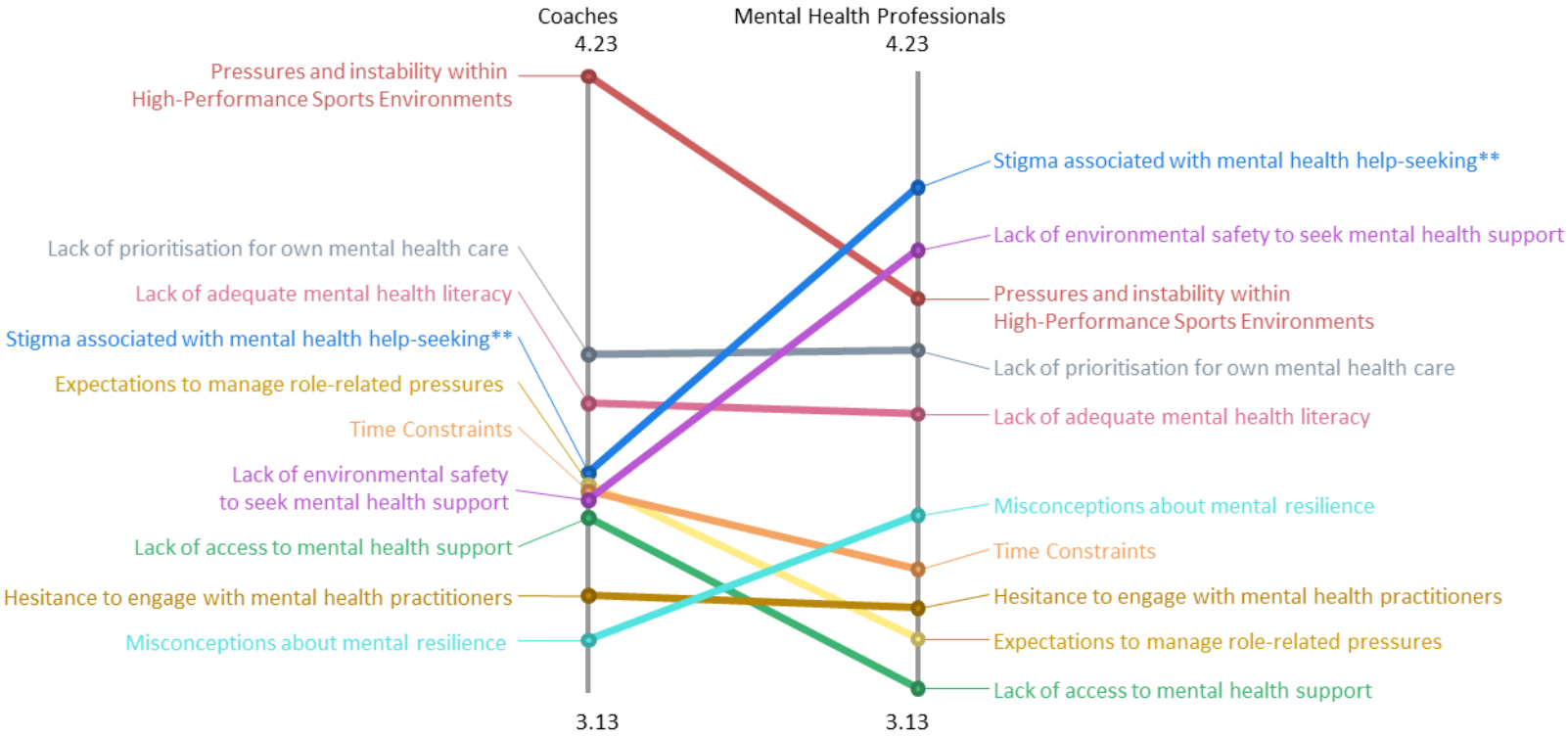
	Item No	Recommendation	
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	Yes
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	Yes
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Yes
Objectives	3	State specific objectives, including any prespecified hypotheses	Yes
Methods			
Study design	4	Present key elements of study design early in the paper	Yes
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Yes
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	Yes
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Yes
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	Yes
Bias	9	Describe any efforts to address potential sources of bias	Yes
Study size	10	Explain how the study size was arrived at	Yes
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Yes
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	Yes
		(*b*) Describe any methods used to examine subgroups and interactions	Yes
		(*c*) Explain how missing data were addressed	Yes
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	N/A
		(*e*) Describe any sensitivity analyses	N/A
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Yes
		(b) Give reasons for non-participation at each stage	Yes
		(c) Consider use of a flow diagram	Yes
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	Yes

		(b) Indicate number of participants with missing data for each variable of interest	Yes
Outcome data	15*	Report numbers of outcome events or summary measures	Yes
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	N/A
		(*b*) Report category boundaries when continuous variables were categorized	N/A
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	Yes
Discussion			
Key results	18	Summarise key results with reference to study objectives	Yes
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	Yes
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Yes
Generalisability	21	Discuss the generalisability (external validity) of the study results	Yes
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Yes

Supplementary File 27: The six-step concept mapping procedure. Adapted from Kane and Trochim (2007) and Staley et al. (2024).



Supplementary File 28: A pattern match display comparing the relative mean importance of each cluster between coaches and mental health professionals (significant differences between clusters = *p <.01, **p<.001)[3].



[3]The full scales for each rating question were 1-5. For the purposes of visual display and highlighting differences between cluster ratings, the scales on these graphs have been truncated at the mean values for the highest and lowest rated clusters on each scale.

Supplementary File 29: A pattern match display comparing the relative mean feasibility of each cluster between coaches and mental health professionals (significant differences between clusters = *p <.01, **p<.001)[4].

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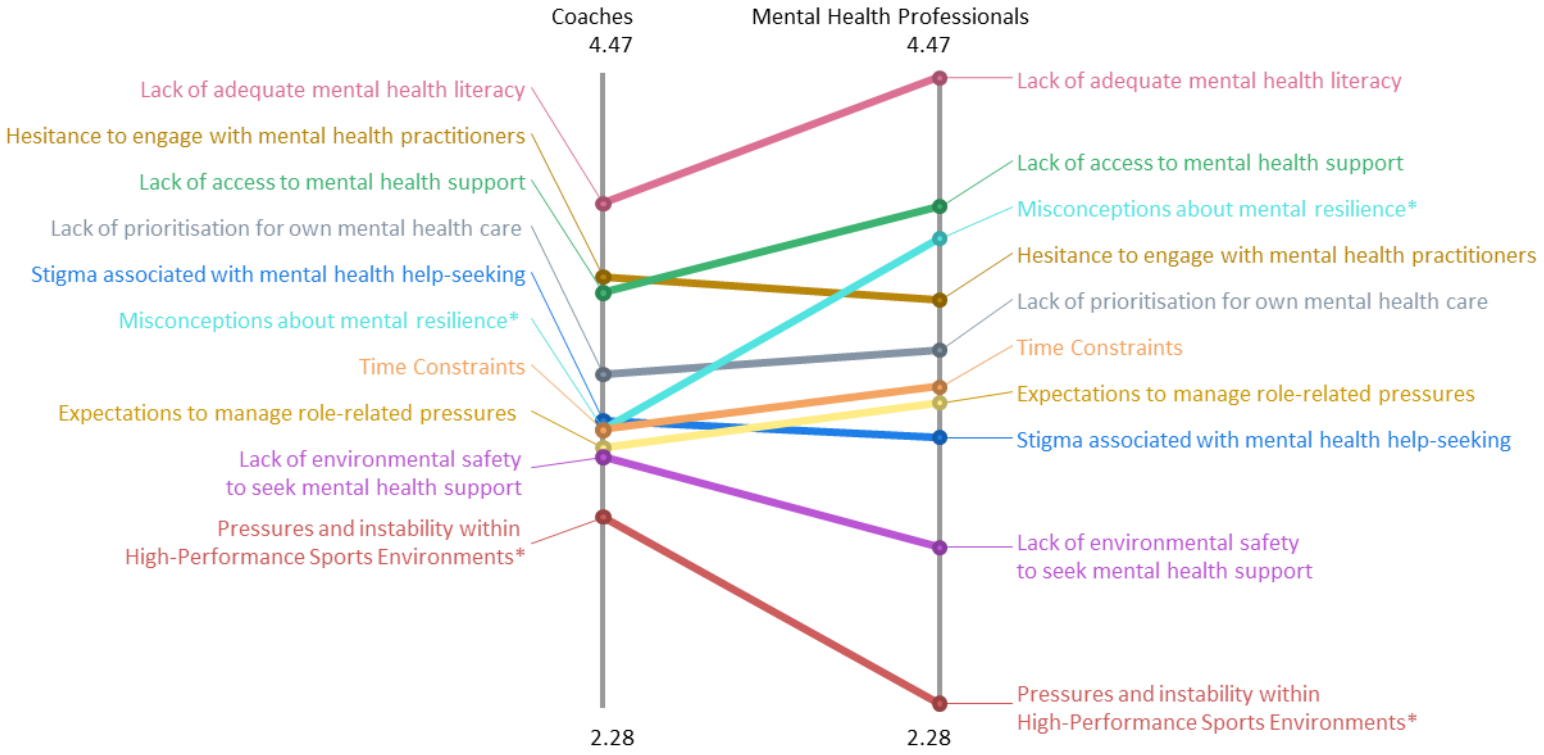

[4]The full scales for each rating question were 1-5. For the purposes of visual display and highlighting differences between cluster ratings, the scales on these graphs have been truncated at the mean values for the highest and lowest rated clusters on each scale.

Supplementary File 30: Independent t-tests scores comparing mean importance and feasibility between coaches and mental health professionals (*p <.01, **p<.001).

	Importance			**Feasibility**		
	Mean (Coaches)	Mean (MH Pros)	Sig. (2-tailed)	Mean (Coaches)	Mean (MH Pros)	Sig. (2-tailed)
Pressures and instability within High-Performance Sports Environments	4.23	3.83	.032	2.93	2.28	**.001***
Stigma associated with mental health help-seeking	3.52	4.03	**<.001****	3.27	3.21	.593
Lack of prioritisation for own mental health care	3.73	3.74	.959	3.43	3.52	.712
Lack of environmental safety to seek mental health support	3.47	3.92	.152	3.14	2.83	.106
Lack of adequate mental health literacy	3.65	3.63	.897	4.03	4.47	.014
Time constraints	3.49	3.35	.458	3.24	3.39	.307
Expectations to manage role-related pressures	3.50	3.22	.314	3.18	3.33	.351
Misconceptions about mental resilience	3.22	3.44	.358	3.24	3.91	**.002***
Lack of access to mental health support	3.44	3.13	.074	3.72	4.02	.194
Hesitance to engage with mental health practitioners	3.30	3.28	.947	3.78	3.69	.831