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Mental health in elite athletes: International Olympic Committee consensus statement (2026)

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► Additional supplemental material is published online only. To view, please visit the journal online (https://doi.org/10.1136/bjsports-2025-111514).

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Accepted 1 June 2026

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To cite: Reardon CL, Gouttebarge V, Kroshus-Havril E, *et al*. *Br J Sports Med* Epub ahead of print: [*please include* Day Month Year]. doi:10.1136/bjsports-2025-111514

ABSTRACT

This consensus statement represents an update to *Mental Health in Elite Athletes: International Olympic Committee Consensus Statement (2019)*. To advance a more standardised, evidence-based approach to mental health in elite athletes, an International Olympic Committee (IOC) Consensus Group critically evaluated the current science via a systematic literature review, sought consensus using Delphi methodology and provided recommendations relevant to this topic. Key themes include that mental health symptoms and disorders are (1) common among elite athletes; (2) may have sport-related aetiologies and manifestations; and (3) can impact performance. Routine screening for and monitoring of mental health symptoms and disorders in elite athletes using validated instruments is recommended. Management strategies should promote mental well-being in addition to preventing and treating mental health symptoms and disorders. These strategies should address all contributors to mental health symptoms, including factors within the environments in which athletes train and compete. Treatment may include psychotherapy, medication and other culturally or contextually appropriate modalities. With appropriate support and treatment, many athletes experiencing mental health symptoms and disorders can continue to train and compete safely, but sometimes modification of sport participation may be necessary. Elite athletes who are transitioning out of sport, elite Para athletes and elite young (adolescent) athletes are relatively understudied and may have distinct mental health concerns, in addition to those impacting elite athletes in general.

INTRODUCTION

In 2018, the International Olympic Committee (IOC) Medical and Scientific Commission established a Mental Health in Elite Athletes Consensus Group comprised of a variety of relevant disciplines. The group reviewed the best evidence to date in order to provide a consensus statement for clinical practice and individual and systemic interventions to improve mental health among elite athletes.[1] Since then, the IOC has undertaken several activities to implement their consensus statement findings in the 'real world' of elite sport and to respond to the field's unaddressed needs (box 1).

In the interim, there has been significant research productivity, confirming that mental health symptoms are commonly reported by current and former elite athletes as well as by their entourage members, including coaches and medical professionals.[2–10] The latest research also increasingly recognises two significant themes in how mental health in elite athletes is understood.

First, elite athlete mental health exists on a continuum.[11–14] The IOC defines the mental health continuum as a model that describes the range of mental health experiences an individual can have from optimal mental well-being to mental health symptoms and disorders.[11 12] Athletes' experiences on the continuum can and often do change over time.[13 15] While recognition of overt mental health disorders in elite athletes remains essential, situating athlete well-being within a dynamic continuum offers an additional framework for understanding the spectrum of psychological functioning in this population. For example, elite athletes may experience transient stress reactions related to competitions, to various temporary setbacks that are a normal and common part of elite athlete life, or to intense training periods.[13 16 17] Thus, there are important mental health considerations even if an athlete does not have a diagnosable disorder.[13]

Second, factors impacting elite athlete mental health are not confined to attributes of the individual athlete.[13 18–21] While this ecological approach to understanding determinants of mental health symptoms and disorders has long been part of discourse outside of sport,[22] this perspective has only recently become central to the understanding of mental health in sport. For example, the adaptation of an ecological systems model to elite athlete mental health by Purcell *et al*[18] describes the multiple layers of sport-related factors that influence elite athlete mental health (figure 1).

Taking these factors into account, the IOC convened a second consensus meeting on 10-12

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KEY POINTS

⇒ Mental health support for elite athletes should extend beyond individual management and should include assuring that the training environments, leadership behaviours, safeguarding systems and organisational culture are also supporting elite athlete mental health and well-being.
⇒ Clinicians and sport organisations should proactively address stigma, confidentiality concerns, fear of deselection and low mental health literacy as part of routine elite athlete care.
⇒ Sport organisations should implement routine screening and surveillance of elite athlete mental health at predefined time points and following significant events.
⇒ All elite sport settings should establish, rehearse and regularly review mental health emergency action plans with defined roles and escalation pathways.
⇒ Management of mental health symptoms and disorders should be individualised, evidence-based and culturally responsive, integrating psychotherapy, pharmacotherapy and other contextually appropriate modalities as indicated.
⇒ Psychological responses to injury should be routinely assessed, and return-to-sport for elite athletes with mental health symptoms and disorders should incorporate athlete safety, stability and function as guiding principles.
⇒ Athletes should receive targeted mental health screening and support before, during and after major transitions in sport.
⇒ Mental health assessment and care for elite Para athletes must account for disability-specific stressors, accessibility barriers, classification systems and heightened transition risks.
⇒ Mental health screening and support for elite adolescent athletes should reflect developmental stage, educational demands, family dynamics and the early onset of many common mental health disorders.
⇒ Coaches, support staff and health professionals for elite athletes should receive role-appropriate mental health education to support early recognition, safe referral and psychologically informed practice.

June 2025 in Lausanne, Switzerland, at which experts and athlete representatives reviewed the scientific literature addressing mental health in elite athletes. The Consensus Group defined elite athletes in the same way as the first consensus statement: those competing at professional, Olympic or collegiate (higher-education/tertiary) levels. The Consensus Group was charged with the following:

- To review the literature describing prevalence, screening and monitoring, diagnosis, impact on performance and management considerations regarding specific mental health symptoms and disorders in elite athletes.
- To review the literature describing stressors and environmental factors across ecological systems that impact elite athletes along the mental health continuum.
- To make actionable recommendations for health care providers of elite athletes using a consensus approach.
- To disseminate the above information in a consensus statement intended to serve as a resource for health care providers of elite athletes, other elite athlete entourage members and sports organisations.

An outline of this manuscript is provided as a guide in box 2.

Box 1 Major International Olympic Committee (IOC) work products addressing mental health in elite athletes since the organisation's 2019 consensus statement on mental health in elite athletes

⇒ Formation of the IOC Mental Health Working Group (standing working group of the IOC)
⇒ Development of a comprehensive set of mental health screening tools (IOC Sport Mental Health Assessment Tool 1 (SMHAT-1), IOC Sport Mental Health Recognition Tool 1 (SMHRT-1), IOC Sport Mental Health Assessment Tool 2 (SMHAT2) and IOC Sport Mental Health Recognition Tool 2 (SMHRT2)) for use in elite athletes[28 29]
⇒ Expansion of Athlete365 e-learning modules[783]
⇒ Creation of the IOC Mental Health in Elite Athletes Toolkit[11]
⇒ Publication of a mental health surveillance supplement to the IOC consensus statement on injury and illness surveillance[40]
⇒ Establishment of IOC Diploma and Certificate programmes on mental health in elite sport[784 785]
⇒ Creation of the IOC Mental Health Action Plan[12] as the IOC's strategic roadmap to promote mental well-being across the Olympic movement
⇒ Dissemination of IOC Mental Health Guidelines for Major Sporting Events[701 786]

METHODS

Consensus approaches are appropriate for aggregating expert opinion when there is a limited evidence base or no gold standard guidance that is appropriate across populations and settings.[23] For this project, consensus was sought using (1) literature reviews that informed candidate actionable guidance statements; (2) an in-person meeting to discuss the reviews and statements; (3) Delphi methodology to vote on and revise the statements; and (4) finalisation of the statements and consensus manuscript.[24] The consensus process (figure 2) was finalised by the consensus meeting co-chairs (VG, BH, CLR) and Delphi expert (EK-H) and is consistent with the *British Journal of Sports Medicine* author guidelines for consensus statements.[25]

Panel selection

The meeting co-chairs and IOC leadership from the Health, Medicine and Science Department (organising work group) identified members of a panel, ultimately comprised of 31 individuals with lived, clinical and/or scientific expertise in the mental health of elite athletes. Clinical or scientific expertise was determined by a literature search of peer-reviewed academic publications on the planned consensus sub-topics, as published during the previous 5 years. The panel also included an elite athlete representative (CC), selected from among the IOC's Mental Health Ambassadors, and two International Sports Federation representatives (SF and AM), selected based on their engagement in IOC mental health initiatives.

Equity, diversity and inclusion statement

Considerations for panel selection across all roles included inviting participants from different countries and regions of the world and from equity-deserving groups. To that end, panellists completed a brief demographic intake form (see online supplemental file 1) querying their race and ethnicity, gender identity, sexual orientation and disability status. These demographic data were reviewed by the organising work group as panel membership was finalised to ensure that equity-deserving groups were

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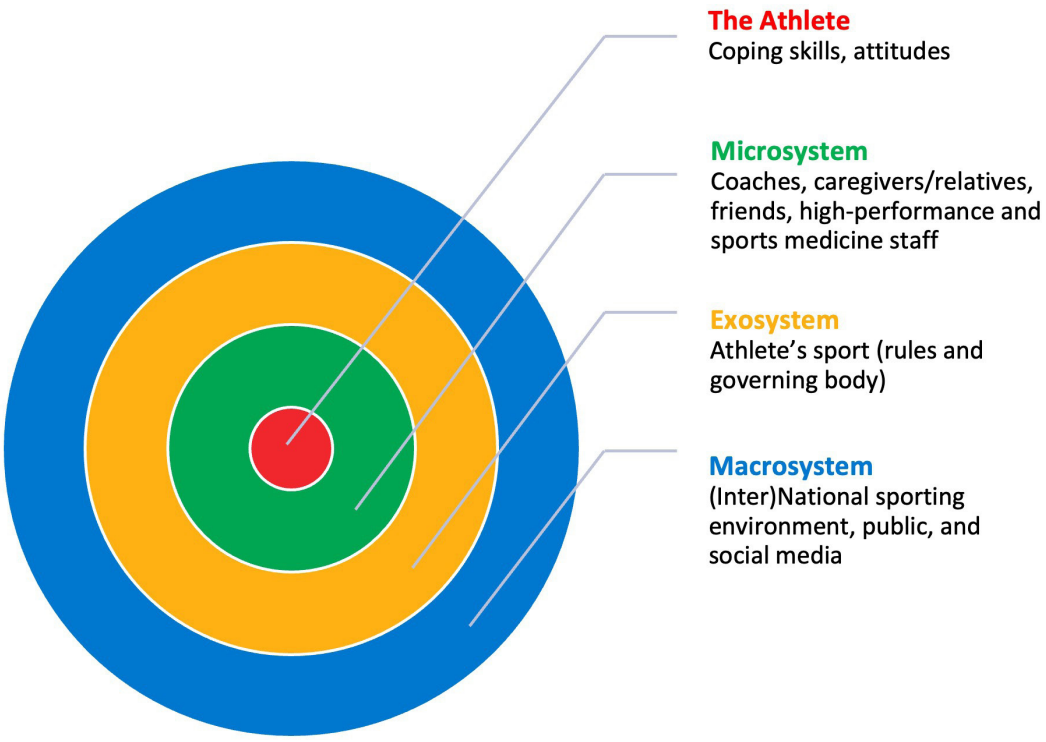


Figure 1 An ecological systems model for describing the multiple layers of sport-related factors that contribute to elite athlete mental health. Adapted and reprinted with permission from Purcell *et al*.[18]

represented. Countries represented on the panel were Australia, Botswana, Brazil, Canada, China, Hong Kong China, Norway, South Africa, South Korea, Switzerland, UK and USA.

Evidence review

The organising work group initially identified 27 focal topic areas, each with lead author(s) determined based on scientific and clinical expertise. An experienced librarian (MH) conducted a systematic search of each topic area spanning database inception to May 2024 using PubMed (Medline), SportDiscus (Ebsco), PsycINFO (Ebsco), Scopus (Elsevier) and any additional literature databases felt relevant by individual topic leaders, for each topic. Leaders of topics without a recent published systematic review were invited to write separate, more detailed, subspecialty papers on their topics; these will be published separately. Each topic team was asked to draft a review that summarised the key information from their literature search and to propose actionable guidance statements for clinicians based on their review. Written reviews and draft guidance statements were shared with panellists prior to the in-person meeting.

In-person meeting and discussion

The organising work group and other panellists met in person from 10 June to 12 June 2025 in Lausanne, Switzerland. The purpose of the meeting was to discuss the quality and level of evidence from the literature reviews, clinical and lived experiences relevant to the focal topics and any literature gaps. For each focal topic, panellists reviewed and critiqued the candidate actionable guidance statements for clinicians. Panellists were also encouraged to consider appropriateness and feasibility of candidate statements across populations and contexts. At the conclusion of the in-person meeting, participants were provided with an anonymous open-ended exit form to share any further suggestions about the candidate statements.

Determination of guidance statements for clinicians

Meeting discussion notes and output of the anonymous open-ended exit feedback form were reviewed by the organising work group and used to make edits to the candidate actionable guidance statements for clinicians. These statements were then emailed to panellists via an anonymous web-based survey. After each statement, participants were asked to rate the extent to which they agreed with including this guidance, with response options ranging from 1 (strongly disagree) to 9 (strongly agree). Participants who rated a guidance statement as <7 were asked to explain the reason for their score. The minimal threshold for a guidance statement to be included in the consensus output was set a priori as requiring two conditions to be met: (1) 70% or more of participants scoring as 7–9, and (2) no participants scoring as 1–3. The first condition (percent agreement) is among the most common approaches to operationalising consensus using the Delphi method.[26] The second condition was included to ensure that the perspectives of participants with specialised and unique skillsets or lived experiences were not overlooked because the group average for a given statement was high. There is precedent for using this type of more stringent approach to operationalising consensus in Delphi studies, pending the topic/nature of the guidance and the participant group.[26]

Open-ended feedback for statements not meeting the minimal consensus thresholds was discussed by the consensus meeting co-chairs, Delphi expert and relevant topic expert(s). They determined whether there were modifications that would address the concerns raised while keeping

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Box 2 Outline of *Mental Health in Elite Athletes: International Olympic Committee Consensus Statement (2026)*

⇒ Screening and surveillance of mental health symptoms and disorders in elite athletes
⇒ General approaches to management of mental health symptoms and disorders in elite athletes
  Psychotherapy
  Pharmacological treatment
  Mental health considerations for removal from and return to sport
⇒ Specific mental health symptoms and disorders in elite athletes
  Sleep disorders and sleep concerns
  Major depressive disorder and depression symptoms
  Suicide
  Anxiety disorders and obsessive-compulsive and related disorders
  Trauma- and stressor-related disorders
  Eating disorders and Relative Energy Deficiency in Sport (REDs)
  Attention-deficit/hyperactivity disorder
  Bipolar and psychotic disorders
  Personality disorders
  Substance misuse and use disorders
  Gambling disorder and other behavioural addictions
  Neuropsychiatric aspects of sport-related concussion
⇒ Stressors and environmental factors that impact elite athlete mental health
  Creating an environment that supports mental well-being and resilience in elite athletes
  Cultural considerations
  Barriers to mental health care seeking
  Social media and mental health
  How injury, performance and mental health intersect
  Mental health emergencies
  Transitions in elite sport
⇒ Elite Para athletes
⇒ Elite young (adolescent) athletes
⇒ Sport as a subset of physical activity to promote mental health
⇒ Final considerations
  Actionable recommendations
  Dissenting viewpoints
⇒ Discussion
⇒ Conclusion

the guidance consistent with the underlying evidence base. Participants were provided aggregated quantitative results and comments from each round of ratings and were asked to re-rate each statement that was modified, following the same process as outlined above. An a priori limit of no more than three rounds of ratings was established.[26] All guidance statements meeting the consensus threshold at the end of this process were included in the final consensus output. Any guidance statement included in this final output that had one or more ratings of ≤5 was highlighted as having dissenting opinions, with a synthesis of the open-ended feedback about the statement presented in the consensus output.

Final manuscript

The initial draft topic summaries were edited based on discussion at the meeting. The systematic literature searches were reconducted to identify materials published between 1 April 2024 and 30 June 2025, with duplicates removed by Endnote X20, using the same search strategies as initially used. The edited final document was circulated for review and further editing by the panel.

RESULTS

The results of the systematic literature reviews are summarised as follows.

Screening and surveillance of mental health symptoms and disorders in elite athletes

Routine screening and surveillance for mental health symptoms and disorders at regularly scheduled time points and at the time of significant occurrences/events remain uncommon in elite sports.[27] Mental health *screening* involves the use of tools to identify individual athletes who may be experiencing mental health symptoms or disorders in order to facilitate appropriate support. Mental health *surveillance* involves the systematic collection, analysis and interpretation of athlete mental health data for either clinical or research purposes. Clinically, surveillance can be used to identify and monitor athletes who need mental health support and, from a research perspective, surveillance at a cohort level can identify mental health trends and risk factors and inform interventions.

Screening

Few mental health screening tools have been validated in elite athletes. The IOC Sport Mental Health Assessment Tool 1 (SMHAT-1) was developed for sports medicine physicians and other licensed/registered health professionals to identify elite athletes (aged ≥16 years) potentially experiencing mental health symptoms and disorders to facilitate timely referral of those in need of support and/or treatment.[28] Based on evaluations of the accuracy and utility of the SMHAT-1, this measure was revised and the IOC Sport Mental Health Assessment Tool 2 (SMHAT2) was developed to provide a more comprehensive three-step approach including: universal screening (five validated disorder-specific screening questionnaires) as step 1, conditional screening (two validated disorder-specific screening questionnaires) as step 2 and an aid to clinical assessment and management as step 3.[28–30] Importantly, steps 1 and 2 of the SMHAT-1 and SMHAT2 are symptom screeners but not diagnostic tools, with step 3 of these tools focusing on clinical assessment and diagnosis that should be conducted by clinicians.

Surveillance

The IOC published a consensus statement in 2019 on injury and illness surveillance,[31] which defined guideline procedures for monitoring athlete health in a variety of sporting contexts, such as over the course of a sports season or at major sports events. Subsequently, sport-specific statements with recommendations tailored for several specific sports[32–37] and for Para sport[38] were published. Supplemental manuscripts to address female athlete nuance[39] and specifically athlete mental health symptoms and disorders[40] were also subsequently published.

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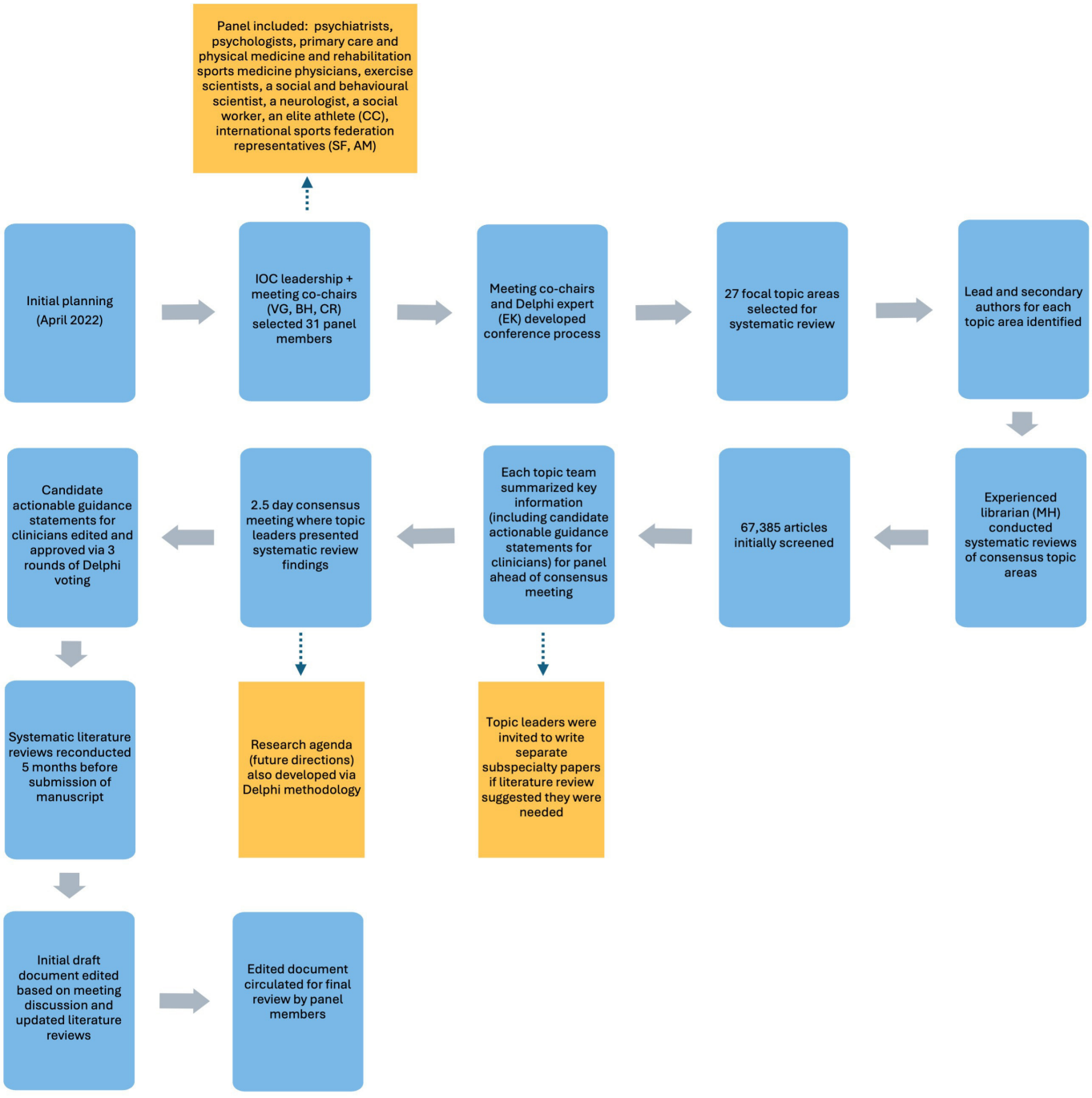


Figure 2 Methodology for the International Olympic Committee consensus meeting on mental health in elite athletes.

The supplemental manuscript on athlete mental health symptom and disorder monitoring defines the principles of athlete mental health surveillance including terminology, classification coding, mode of onset, aetiology, severity and tracking of multiple and/or recurrent episodes. Practice guidelines to implement athlete mental health surveillance (when, who and how) are discussed. Finally, this publication provides four examples of mental health surveillance tools that can be used depending on the resources available, the timing and location of the surveillance, the study design and/or the clinical scenario. Table 1 summarises the recommended surveillance tools.

General approaches to management of mental health symptoms and disorders in elite athletes

Management of mental health symptoms and disorders in elite athletes should consider all the psychological, general medical, sociocultural and ecological factors that may contribute to their presentation. Clinicians (licensed health care professionals) should consider the most appropriate consensus or evidence-based recommendations from multidisciplinary sources, while recognising cultural diversity as well as differences in access to and acceptability of certain treatments.[1]

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Table 1 Summary of the types of mental health surveillance tools, timing of data collection for each type, the recommended tools within each type and the roles of the athlete and the health professional

Type of surveillance	Timing of data collection	Tool	Athlete role	Health professional role
Screening	At specific or episodic time points (eg, pre-season, post major event, significant injury)	IOC SMHAT2	Data entry: completion of questionnaire(s)	To analyse and respond to athlete reporting
Longitudinal athlete-based surveillance	At regular predetermined time intervals throughout the season (eg, weekly, bi-weekly, monthly)	MH OSTRC-H (online supplemental file 2)	Data entry: completion of questionnaire	To analyse and respond to athlete reporting
Longitudinal surveillance by a health professional	Throughout the entire season as MH problem(s) occur	Modified IOC Season Surveillance Tool (online supplemental file 3)	Reporting of MH symptoms to the entourage health care provider	Data entry: to record cases that receive medical attention; to analyse and respond to athlete reporting
Sport event-related surveillance	At regular predetermined time intervals during sporting events (eg, daily reporting during Olympic Games, Tournaments, World Championships)	Modified IOC (Multi-) Sport Event Surveillance Tool (online supplemental file 4)	Reporting of MH symptoms to the entourage health care provider	Data entry: to record the cases that receive medical attention; to analyse and respond to athlete reporting

Table (modified) and supplemental files reprinted with permission from Mountjoy *et al*.[40]
IOC, International Olympic Committee; MH, mental health; OSTRC-H, Oslo Sport Trauma Research Center-Health; SMHAT2, Sport Mental Health Assessment Tool 2.

Psychotherapy

Psychotherapy is defined as the application of psychological modalities for the treatment of mental health symptoms and disorders, problems of living and/or facilitation of personal growth.[41 42] It is generally regarded as first-line treatment, where it is available, for individuals with mild to moderate mental health symptoms or disorders, either as monotherapy or combined with other non-pharmacological and pharmacological strategies. Principles of psychotherapy form an important foundational component of the management of mental health symptoms and disorders in elite athletes.[43] Psychotherapy is a form of treatment delivered by psychotherapists (licensed providers trained in specific psychotherapeutic modalities), distinguishing it from the many other types of support, guidance and mental health promotion that can be delivered outside of a treatment setting by individuals such as faith leaders, performance coaches, advisors, mentors and other members of the athlete support group.

Multiple psychotherapeutic modalities have shown empirical effectiveness across a range of mental health symptoms and disorders, particularly within general populations (table 2). Psychoeducation is an evidence-based foundational feature across psychotherapeutic modalities that provides information for patients and their supports to better understand and cope with mental health symptoms and disorders. Incorporating psychoeducational factors into psychotherapy can reduce stigma, normalise responses, clarify purposes of therapeutic interventions and create a shared language for athletes and their support networks, all of which support long-term change.[44] Furthermore, it provides a proactive approach to assist athletes in developing skills and competencies to cope with sporting career challenges and challenging environments.[45] From a performance standpoint, psychotherapy can bring together tools from mental health treatment and from performance psychology to help elite athletes achieve optimal performance. Examples include well-being frameworks grounded in positive psychology and performance science, which emphasise the optimisation of mental states, the cultivation of resilience and the capacity to function effectively under pressure.[46 47]

Essential for psychotherapy treatment planning is understanding the multifactorial elements leading to the athlete's struggles and contributing to ongoing challenges, balanced with the athlete's inherent strengths.[48] A biopsychosocial formulation is a valuable tool that includes cultural, ethnic and socioeconomic considerations.[49] When engaging elite athletes in psychotherapy, the psychotherapist must be aware of how the athlete's personal factors (including personality, beliefs and misgivings) and sport-related factors (including schedules, demands and expectations) may impact treatment. Incorporating an appreciation of the ecological systems (eg, family, coaches, teammates, national governing bodies) in which the athlete functions is important.[43]

Reluctance to engage in psychotherapy can be due to stigma, minimisation of symptoms, scheduling conflicts that prioritise training and fear. Mindfulness-based therapies can sometimes be accessible first interventions in the face of these barriers, particularly given their efficacy regarding overall health and performance.[50] Flexibility in the type of medium through which psychotherapy is delivered may also help overcome barriers. Although there are limited data on the use of online delivery of psychotherapy with elite athletes, there is evidence of its efficacy and efficiency.[51] It is essential to consider safety, stability and function when determining the most appropriate method and location of evaluation and treatment.[52] Elite Para athletes can have additional barriers to engaging in psychotherapy. Factors that may impact accessibility for this group include stigma, sensory impairment and intellectual disabilities.[53] Providing access to diverse treatment providers may facilitate engagement and inclusion in psychotherapy across all groups of elite athletes.

The transnational mobility of elite athletes and coaches, coupled with the complexity and diversity of those who seek mental health support, necessitates a culturally responsive and inclusive approach to psychotherapy.[54 55] Psychotherapists must ground themselves in the cultural contexts of their clients. Effective psychotherapists accommodate the language and culture of the client. A significant number of elite athletes from indigenous communities and low- and middle-income countries do not have access to psychotherapists, and psychotherapists may not speak the most common languages in these areas. In addition, some elite athletes and coaches find benefit in the use of approaches to wellness that may lack a robust evidence base,[55 56] but that are important in their culture. For example, athletes in sub-Saharan Africa have used verbal incarnations, juju and psyching verses as a source of intrinsic motivation and coping mechanisms for dealing with adversity.[56 57] Consequently, providers across cultures must collaborate and share knowledge to provide contextual support and bridge any language/cultural gaps.

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Table 2 Select types of psychotherapy for targeted mental health symptoms and disorders

Psychotherapy type	Targeted symptoms and disorders
Acceptance and commitment therapy[787]	► Transdiagnostic
Cognitive and behavioural therapies*[788]	► Insomnia (CBT-I) ► Depression ► Anxiety disorders ► Obsessive-compulsive disorder ► Post-traumatic stress disorder ► Eating disorders ► Attention-deficit/hyperactivity disorder ► Bipolar disorder ► Schizophrenia ► Personality disorders ► Substance misuse and use disorders ► Behavioural addictions ► Relationship distress ► Anger ► Chronic pain
Dialectical behaviour therapy[402 789–791]	► Depression ► Anxiety disorders ► Post-traumatic stress disorder ► Bulimia and binge-eating disorder ► Borderline personality disorder ► Substance misuse and use disorders ► Self-injurious behaviour ► Suicidal thoughts and behaviours
Eye movement desensitisation and reprocessing (EMDR)[792]	► Post-traumatic stress disorder
Interpersonal psychotherapy[793]	► Interpersonal deficits ► Grief and bereavement ► Role dispute ► Role transition
Mindfulness-based therapies*[794–796]	► Depression ► Anxiety disorders ► Post-traumatic stress disorder ► Substance misuse and use disorders ► Chronic pain
Motivational enhancement therapy*[470 797]	► Substance misuse and use disorders ► Behavioural addictions
Psychodynamic psychotherapy[798]	► Depression ► Anxiety disorders ► Eating disorders ► Personality disorders ► Chronic pain ► Relationship distress
Social rhythm therapy[799]	► Bipolar disorder
Solution-focused therapy[800]	► Transdiagnostic
Supportive psychotherapy[801]	► Transdiagnostic

*Evidence exists for elite athletes.
CBT-I, cognitive behavioural therapy for insomnia.

Pharmacological treatment

Pharmacological treatment is generally considered when mental health symptoms or disorders are moderate to severe and/or they cause significant dysfunction.[1] Typically, a combination of medication and psychotherapy is regarded as superior to medication alone.[58] Clinicians should consider the degree of distress or functional impairment, diagnosis and athlete willingness to take medication.[48] Pharmacological treatment of mental health disorders in elite athletes should take into account established treatment algorithms and clinical practice guidelines, such as those from national psychiatric associations, which have been shown to improve outcomes in the general population.[48 59–62] However, additional considerations for elite athletes are necessary. Specifically, health care providers should understand: (1) any potential negative impacts of the medication on sport performance; (2) any safety risks of the medication when used by elite athletes; and (3) whether the medication is prohibited by any sport governing body, such as the World Anti-Doping Agency (WADA).[1]

Athletes and their providers should be aware of and monitor for potential side effects that may interfere with performance, without forgoing effective treatment out of fear of side effects, which can often be managed. In a 2024 international survey of sports psychiatrists, the side effects that most commonly impact their choice of psychiatric medications for athletes were: (1) sedation (which can be both a performance and a safety issue); (2) weight gain; and (3) general reduction in performance from any cause.[63]

Medications may improve sports performance by virtue of improvement in the disorder they were designed to treat. For example, if an athlete's depression improves with use of an antidepressant medication, this may be associated with improved sports performance as they return to their baseline interest in and motivation for sport.[1] However, if a medication could produce a performance advantage beyond that attributable to improvement in the condition (eg, stimulants in athletes without attention-deficit/hyperactivity disorder), then it may be considered ergogenic and would likely be prohibited by WADA and/or other governing bodies.[64] If an elite athlete who is subject to such rules has a medical condition that requires a prohibited medication, then they must follow the rules of their governing body(s), which often involves application for a Therapeutic Use Exemption (TUE) (or similar application) from the athlete's relevant anti-doping organisation.[65]

Table 3 shows the broad categories of psychiatric medications, symptoms/disorders commonly treated by each, relevant side effects/safety concerns for elite athletes, potential performance impact and prohibitions in elite sport. There are several caveats for the information included in this table. First, data on the use of psychiatric medications in elite athletes are limited, with frequently underpowered sample sizes (often n<10), typically single-dose designs (rather than real-world chronic use at typical dosages) and few female subjects. Additionally, participants in these studies typically have not had the mental health

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Table 3 Different categories of psychiatric medications and features of each category relevant to elite athletes

Medication category	Symptoms/disorders most commonly treated	Relevant side effects/safety concerns	Performance impact	Prohibitions
Sedative-hypnotics	► Insomnia and other sleep disorders ► Anxiety disorders	► Sedation including hangover effect[1 66] ► Benzodiazepines (especially those with short half-lives)[802] may cause dependence[803–805]	► Inconsistent impact of benzodiazepines and imidazopyridines (eg, zolpidem) per two systematic reviews, with possible greater negative impact from medications in these classes with longer half-lives (n=9 and n=10 studies, respectively)[66 806] ► Several studies[807 808] and a systematic review (n=15 studies)[161] have demonstrated no consistent negative impact of melatonin	► Melatonin and magnesium are non-regulated supplements in some countries, and thus as with all such products could unknowingly contain prohibited substances[63 366]
Antidepressants	► Depression ► Anxiety disorders and obsessive-compulsive and related disorders ► Trauma- and stressor-related disorders ► Sleep disorders (sedating antidepressants) ► Eating disorders (especially fluoxetine) ► Pain	► Serotonin-enhancing medications may cause gastrointestinal upset (often temporary) ► Bupropion may increase risk of heat illness[809] and, in athletes with eating disorders, of seizures[810] ► TCAs and mirtazapine are relatively more likely than other antidepressants to cause sedation and weight gain[366] ► TCAs may cause orthostatic dizziness, cardiac side effects (eg, tachycardia, supraventricular and ventricular arrhythmias, chronotropic incompetence)[811 812] and theoretically blood levels could fluctuate with exercise[813] ► Some antidepressants may cause emotional blunting[814]	► Single-dose bupropion at high dosing (600 mg) may be associated with performance enhancement in warm[809 815] but not temperate[816] conditions ► Inconsistent findings (neutral or negative impact on performance) from six studies on the SSRI paroxetine[817–822] ► Two studies on the most activating SSRI, fluoxetine, demonstrated no impact on performance after acute[319 823] or continuous dosing[823] ► Several studies on single-dose reboxetine (NRI) demonstrated a negative impact on performance per systematic review (n=5 studies)[66]	► Bupropion is currently included in WADA's *in competition* monitoring programme (being monitored for patterns of misuse in sport but not prohibited)[824]
Other anxiolytics	► Anxiety disorders	► Buspirone may cause dizziness[825] ► Beta-blockers (used for performance anxiety in non-athletes) may cause decreased pulse and blood pressure[826]	► Single 45 mg dose of buspirone demonstrated negative impact on performance in one study[827] ► Beta-blockers may problematically decrease cardiopulmonary capacity[828]	► Beta-blockers are prohibited *in competition* by WADA in automobile, billiards, darts, golf, mini-golf, and some skiing/snowboarding sports and both in and out of competition in archery, shooting, and underwater sports[64]
Stimulants and other ADHD medications	► ADHD ► Binge-eating disorder ► Narcolepsy and related sleep disorders	► Stimulants may cause weight loss, insomnia, anxiety, cardiac side effects (eg, tachycardia), and increased risk of heat illness[829] ► Atomoxetine and viloxazine may cause gastrointestinal discomfort and sedation or insomnia[343 830] ► Guanfacine and clonidine may cause sedation and cardiac side effects (eg, hypotension, bradycardia, QTc prolongation)[831 832]	► Stimulants may cause performance enhancement, especially in the heat, per several studies[829 833–835] and a systematic review (n=4 studies)[66]	► Stimulants are prohibited *in competition* by WADA,[64] the NCAA,[836] and many professional sports leagues
Mood stabilisers	► Bipolar disorder	► Sedation ► Weight gain ► Tremor ► Lithium blood levels may fluctuate with exercise[837 838] and increase with concomitant NSAID use[839 840] ► Polyuria (lithium)[839]	► Unknown	–

Continued

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Table 3 Continued

Medication category	Symptoms/disorders most commonly treated	Relevant side effects/safety concerns	Performance impact	Prohibitions
Antipsychotics	► Psychotic disorders ► Bipolar disorder ► Antidepressant augmentation	► Sedation ► Weight gain ► Tremor and other movement disorder side effects[366] ► QTc prolongation (especially ziprasidone and typical antipsychotics)[841] ► Increased risk of heat illness[842 843]	► Impairing effects per single studies each of oxypertine,[844] olanzapine,[845] risperidone,[845] and clozapine[846]	–
Medications for substance use disorders	► Withdrawal and cravings in substance use disorders	► Varenicline may cause nausea, insomnia, and vivid dreams[847] ► Naltrexone may cause gastrointestinal upset ► Nicotine vaping devices (used by some as a smoking cessation intervention) may have a negative impact on lung physiology and immune function[848]	► Unknown	► Opioid agonists (eg, buprenorphine, methadone) prohibited *in competition* by WADA[64]

ADHD, attention-deficit/hyperactivity disorder ; NCAA, National Collegiate Athletic Association; NRI, norepinephrine reuptake inhibitor ; NSAID, non-steroidal anti-inflammatory drug; SSRI, selective serotonin reuptake inhibitor; TCA, tricyclic antidepressant; WADA, World Anti-Doping Agency.

disorders the medications are designed to treat,[66] making the results difficult to interpret. Second, the availability and usage of psychiatric medications varies across countries. Relatedly, elite athletes who are travelling for sport and their prescribing clinicians should be aware that they may not be allowed to bring particular medications, especially controlled substances such as stimulants, opioids and benzodiazepines, across geographic borders into certain countries.[67] Third, non-traditional, experimental, controversial and/or emerging pharmacotherapies such as psychedelics (eg, psilocybin) are not included in this table, given the limited evidence base.[68] An important concern with such substances is that purity may not be guaranteed, which risks adverse analytical findings on drug testing. Fourth, for elite Para athletes there may be complex medical backgrounds impacting medication choices.[69 70] Finally, while this table highlights potential issues of relevance to elite athletes, it is not meant to dissuade consideration of medication treatment, which can be helpful and necessary, for this population.

Mental health considerations for removal from and return to sport

Elite athletes may experience a continuum of mental health experiences ranging from optimal mental well-being to the presence of mental health symptoms and disorders,[71] and can often continue to meet the demands of training and competition.[72] When mental health symptoms or disorders are experienced on an intense or disruptive level, there may be occasions when the athlete's health care team and/or sport team must decide if the athlete should be removed from the sport environment. While protocols for modifications and interruptions related to injury or general medical illness are relatively well defined in the sports medicine literature, protocols related to mental health symptoms and disorders (outside of eating disorders) are not well defined. This is likely due, in part, to the complex influences that various types of mental health symptoms have on cognition, behaviour, function and performance, in addition to the fact that individuals who experience mental health symptoms can have preservation of function and stability much of the time. However, individuals who experience mental health symptoms or disorders may experience impairment in their sport participation and performance.[72]

Removal from sport (RFS) involves the intentional exclusion of the athlete from training and/or competition. RFS may be partial, with defined restrictions and monitoring, or complete, with no form of training or competition permitted. Having a mental health diagnosis by itself should not preclude sport participation; however, it is important to recognise how certain mental health symptoms or disorders can potentially influence sport participation. Symptoms and disorders that can sometimes compromise safety, stability and function (table 4) may result in the athlete either having to modify sport participation with medical monitoring or having to be removed from sport participation until such a time that they are deemed suitable to return.[72]

As a result of these complexities, an athlete's suitability to participate in sport should be assessed within a framework that is anchored in the key elements of safety, stability and function.[72] Specifically, safety must be considered from medical and psychological perspectives. Medical safety involves the influence of one's medical state on overall morbidity and mortality, including cardiovascular, respiratory, neurological, neuropsychiatric, metabolic and musculoskeletal elements. Psychological safety involves the influence of cognitive, emotional and behavioural elements on the risk of physical or psychological harm to self or others. Stability must also be considered from medical and psychological perspectives, both of which should be further defined according to a specified time period or exposure to varying conditions as appropriate. Medical stability entails the ability to sustain medical wellness, while psychological stability involves the ability to sustain cognitive, emotional and behavioural wellness. Function reflects the person's ability to attend to their personal needs, navigate fundamental skills required to independently care for themselves (ie, activities of daily living), fulfil responsibilities and engage in meaningful relationships.

Return to sport (RTS) often entails clearance of an athlete by a licensed clinician before training or competition resumes. Clearance may be graduated (with adjustments guided by monitoring and benchmarks), partial or complete. When an athlete has been

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Table 4 Examples of impairment caused by select mental health symptoms and disorders that can interfere with continued sport participation

Mental health symptoms or disorders*	Potential negative impact on sport
Depression[176]	▶ Lack of engagement ▶ Amotivation ▶ Insomnia or other factors leading to low energy ▶ Negative thinking ▶ Negative body language ▶ Distractibility ▶ Social isolation ▶ Emotional dysregulation ▶ Low appetite leading to inadequate intake
Anxiety, obsessive-compulsive and trauma/stressor-related disorders[176]	▶ Distractibility ▶ Insomnia or other factors leading to low energy ▶ Emotional dysregulation ▶ Poor confidence ▶ Low appetite or gastrointestinal upset leading to inadequate intake ▶ Inability to execute tasks (may be due to 'fight, flight or freeze' response, fear of negative judgment or failure, lack of confidence or negative self-talk) ▶ Panic attacks during sport (which affect breathing, cognition, heart rate and physical and mental composure) ▶ Interference with function via the need to perform rituals or compulsions ▶ Avoidance of sport circumstances reminiscent of past traumas
Eating disorders or disordered eating[176 849 850]	▶ Low energy (may be associated with Relative Energy Deficiency in Sport or insomnia associated with eating disorders) ▶ Electrolyte imbalances and cardiac risks may be amplified with exertion ▶ Cognitive fogginess, decreased explosivity and reduced endurance during sporting activities
Bipolar mania[176 349]	▶ Intrusive and/or disruptive behaviour ▶ Distractibility ▶ Emotional dysregulation ▶ Aggression ▶ Inflated self-esteem or self-appraisal ▶ Sexual disinhibition ▶ Impaired insight and judgment ▶ Intensity/stimulating environment of sport could perpetuate manic symptoms
Psychosis[176 349 851 852]	▶ Disruption in the sport environment due to: – Delusions (which may appear as confrontations or accusations against teammates and staff) – Bizarre behaviour and unusual thought patterns – Impaired cognitive/executive function – Negative symptoms (including restricted emotional expression and avolition)
Personality disorders[176]	▶ Sanctions, legal difficulties, anti-doping violations, injuries and conflict with team
Substance misuse or use disorders[176 418]	▶ Sport performance while under the influence of (or experiencing withdrawal from) substances may be negatively impacted by: – Impaired judgment, concentration, cognitive processing, reaction time, motor coordination, and cognitive awareness – Emotional dysregulation – Insomnia or hypersomnia ▶ Relationships with teammates and staff may be strained if substance use and its effects interfere with: – Team environment – Individual behaviour – Performance ▶ Substance use may lead to positive drug tests, which can compromise the career of the individual and have effects on the team

*Symptoms may either fulfil clinical criteria for diagnosis or may not fulfil full criteria yet result in clinically significant impairment in safety, stability and/or function.

away from the sport environment due to mental health symptoms or disorders, the athlete's health care team should be deliberate and collaborative in guiding their RTS.[72] It is important to consider the elements of the athlete's sport ecosystem when planning for RTS. Specific elements that are bidirectionally impacted by an athlete's RTS include teammates, coaches, staff, family, organisations and other aspects of their sport environment. Consideration needs to be given to the potential risks associated with training and competing (both at home and on the road). These elements and the athlete's overall symptom load can be considered under the same three themes of safety, stability and function.

Treatment contracts or agreements may be helpful to establish conditions by which the reintegration into sport can be facilitated and supported with ongoing monitoring. This can be particularly helpful in cases involving eating disorders,[72 73] behavioural disturbances and severe mental health disorders that require adherence to treatment protocols.

Specific guidelines have been established for exclusion or withdrawal from and return to sport for individuals with anorexia nervosa and bulimia nervosa,[74–76] but not for other mental health symptoms and disorders. In any case, RFS and RTS decision-making and planning should involve multidisciplinary collaboration and monitoring and, to the extent it is safe to do so, shared decision-making with the athlete.[77–79]

Specific mental health symptoms and disorders in elite athletes

Sleep disorders and sleep concerns

Prevalence

The prevalence of diagnosed sleep disorders among elite athletes is not well established, primarily because these conditions are

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under-diagnosed.[80 81] However, data from several sources estimate that average sleep duration among elite athletes is below the recommended 7 hours, with typical sleep duration being approximately 6.5 hours[81–84] and athletes reporting that they do not get sufficient sleep an average of 3.8 days per week.[85] Regarding poor sleep quality, studies report prevalence estimates of about 20%, and up to 50% depending on the sport and setting.[85–91] For example, among a cohort of Olympic athletes, 50% demonstrated poor sleep quality.[86] Among elite Paralympic athletes, disturbances in sleep amount and quality have been reported across South African,[92] Israeli,[92] Brazilian[93 94] and Swedish[95] cohorts; across cohorts, approximately one-third reported excessive sleepiness, one-third reported habitual sleep duration of ≤6 hours and >50% reported poor sleep quality.

Regarding other sleep disorders, insomnia disorder appears prevalent among elite athletes. Of collegiate athletes, 22% reported persistent difficulty falling asleep at least 3 nights per week and, relatedly, 61% reported excessive daytime tiredness at least 3 days per week.[85] Other studies in elite athlete cohorts estimate the prevalence of likely insomnia disorder to be >25%.[96 97] The prevalence of sleep apnoea is not well-established, but it is estimated that 8% of collegiate American football players are at high risk of sleep apnoea,[98] while ice hockey players had a 10% prevalence[99] and 24% of a sample of elite rugby players had been diagnosed with sleep apnoea.[100] The prevalence of restless legs syndrome is not well-known but is estimated to be approximately 13% among elite runners.[101] Circadian rhythm sleep-wake disorders may be common among elite athletes.[102] Specifically, delayed sleep-wake phase disorder is especially common among younger adults[103–106] due to normal delays in circadian rhythms that occur in adolescence and young adulthood. This has been observed among students and others who require early awakening for morning activities.[102 107] Finally, other disorders also disproportionately common among adolescents and young adults (eg, non-REM parasomnias, narcolepsy) may be relatively more common among elite athletes who are in these age groups,[108–111] but prevalence rates compared with general populations are unknown.

Diagnosis

Insomnia disorder is diagnosed based on patient report or prospective sleep diary and is defined as a persistent difficulty initiating or maintaining sleep at least 3 nights per week, lasting at least 3 months despite adequate opportunity for sleep and resulting in some kind of daytime impairment.[112] Typically, taking at least 30 minutes to fall asleep, being awake for at least 30 total minutes trying to resume sleep during the night and/or awakening at least 30 minutes before desired awakening time are criteria for likely diagnosis.[113] This is differentiated from insomnia symptoms, such as more transient, infrequent, situational and/or less severe difficulties falling and/or staying asleep. Sleep apnoea is defined as the presence of at least five respiratory events (eg, apnoeas, hypopnoeas) per hour during sleep as observed using diagnostic equipment at home or in-laboratory. Sleep apnoea can be obstructive (most events are due to an obstruction of the airway), central (most events are due to a reduced respiratory drive, absent physical obstruction) or mixed (a combination of both types).[112] Restless legs syndrome is a neuromuscular disorder that is diagnosed by patient report and includes an uncomfortable (non-painful) sensation in the legs that occurs predominantly at night or when lying down, creates an urge to move and is relieved by movement.[112] Diagnosis of the latter may also be supplemented by serum ferritin levels, as levels ≤50 µg/L indicate risk.[112 114 115] Differential diagnosis should consider nocturnal leg cramps (which can be painful and related to cardiovascular and/or musculoskeletal issues)[116] and periodic limb movement disorder (a neuromuscular condition that involves involuntary movements during sleep).[117] Circadian rhythm sleep-wake disorders are typically diagnosed by self-report and arise when the available sleep period is misaligned relative to the endogenous circadian rhythms.[118 119] For example, delayed sleep-wake phase disorder occurs when an individual's natural sleep phase is later in the night, but the preferred sleep phase (eg, per schedule demands) is earlier. Non-REM parasomnias are also typically diagnosed by patient report and include incomplete arousals from sleep in the form of sleep-talking, sleep-walking, night terrors or other similar wake-like behaviours that are occurring in non-REM sleep.[110 112] Hypersomnia disorders such as narcolepsy and idiopathic hypersomnia are diagnosed using a combination of patient report and in-laboratory observation.[112 120 121] Sleep specialists (sleep medicine or behavioural sleep medicine) are important referrals for assuring proper diagnostic evaluation, although access to specialised clinicians and/or proper diagnostic tools and technology may be a barrier to diagnosis and care.

Impact

Shorter sleep duration among athletes has been associated with worse physical and mental performance, increased injury risk,[122] impaired recovery and increased risk for a range of mental health symptoms and disorders, including suicidal ideation.[1 80 81 85 122–126] Irregularity of sleep schedules has been associated with worse physical and mental performance and impaired general health.[107 127–129] Unhealthy timing of sleep (sleeping at a time inconsistent with the body's internal sleep-wake rhythms) has been associated with depressed mood, increased anxiety and worse performance.[130 131]

Insomnia disorder is associated with impaired athletic performance and increased risk for adverse mental health outcomes among athletes. Prospective data indicate that baseline insomnia disorder and daytime sleepiness increase the likelihood of sustaining a sport-related concussion within the subsequent year.[132] Furthermore, meta-analyses show that insomnia is a reliable predictor of depressive disorders, anxiety disorders and substance use disorders. Insomnia is also a well-established suicide risk factor, with symptoms that persist for extended periods of time (eg, >3 months) and/or insomnia disorder associated with an approximate tripling of suicidal ideation, attempts and deaths.[125 133–139] Untreated sleep apnoea, regardless of aetiology, increases fatigue, elevates risk for cardiometabolic disease (eg, obesity, dyslipidaemia, inflammation and hypertension),[140–142] is associated with depression and other mental health symptoms[143 144] and impairs athletic performance.[145–147] Repetitive head impact exposure in contact sports can also be causally implicated in REM Behaviour Disorder.[148]

Management

To improve sub-clinical sleep issues and sleep and circadian health in general (eg, sleep duration, sleep timing, sleep quality, daytime sleepiness), current guidelines include a combination of regular screening and education.[80 81 102 149] Additional components may include tracking (eg, wearables),[150–152] schedule modification,[149 153 154] environmental manipulations[149 155] and instituting programmes around sleep banking and adapting to travel.[81 102]

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Non-pharmacological/behavioural strategies are often recommended for sleep disorders in elite athletes because they are effective and because many medications are associated with increased injury risk, unacceptable side effects and/or performance impairment. The recommended treatment for insomnia disorder is cognitive behavioural therapy for insomnia (CBT-I), a multicomponent intervention that differs from other CBT approaches in that it includes stimulus control therapy, sleep restriction therapy and other techniques specific to insomnia.[156–158] Interventions based on CBT-I (eg, sleep coaching) may also be effective at improving sleep health.[159]

While behavioural interventions remain first-line, pharmacological and nutraceutical approaches are sometimes considered when symptoms persist or when short-term support is needed. An international survey of sports psychiatrists showed that melatonin and magnesium were top choices of medications/supplements for insomnia in athletes.[63 160] Melatonin is the best-studied pharmacological sleep aid in athletes and does not appear to adversely impact performance.[161–165] It often improves sleep quality, but it may have limited utility for those with more severe symptoms.[166] Melatonin and magnesium are often purchased as non-prescription supplements, which may contain impurities—including prohibited substances—and unknown quantities of the labelled ingredients. Imidazopyridines (eg, zolpidem and zopiclone) and benzodiazepines are effective for insomnia disorder but frequently cause next-day performance impairments and may cause tolerance and dependence.[167] Trazodone, gabapentin, hydroxyzine, mirtazapine and many other medications are sometimes used as sleep aids but have not been studied in elite athletes.

For sleep apnoea, the recommended treatment is usually positive airway pressure therapy.[168] Alternatively, oral appliances are recommended for some individuals, especially those with mild to moderate symptoms.[169 170] For circadian rhythm disturbances, melatonin and timed light exposure are the treatments of choice.[118 119 171] For hypersomnia disorders, recommended treatments include stimulants as well as hypersomnia-specific agents (eg, modafinil, armodafinil, solriamfetol, pitolisant); in the case of narcolepsy, oxybate-based medications for sleep consolidation are also frequently used.[172–174] A TUE is required for all of these medications when prescribed for the management of hypersomnia disorders.

Major depressive disorder and depression symptoms

Major depressive disorder (MDD) is characterised by low mood and/or loss of interest or pleasure in activities. Burnout and overtraining syndrome (OTS) share overlapping features with depression, although each has distinct characteristics,[175] and burnout and OTS are not included in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR).[176]

Prevalence

Most research in elite athletes has examined depressive symptoms rather than a formal diagnosis of MDD and has been cross-sectional in nature, with few longitudinal studies conducted.[177–179] Depressive symptoms have been reported as highest in the mid-season compared with the off- and pre-season.[180] Reports have shown depressive symptoms within elite athletes range between 1% and 68%, depending on variability in sampling techniques, instrumentation and data collection methods,[1 181–184] with higher rates of symptoms reported when anonymity is preserved.[183] Overall, depressive symptom rates are similar between elite athletes and non-athletes.[185] Comparisons between current and retired athletes have shown a lower prevalence of symptoms in retired athletes.[186] Regarding the probable prevalence of overt depressive episodes, one meta-analysis provided a pooled prevalence of 16.2% of elite athletes experiencing at least moderate levels of depression, although there was much heterogeneity among the included studies.[183]

High levels of burnout have been reported in adolescent elite athletes, with 21.8% reporting medium levels and 9.1% severe levels.[187] Although overall prevalence results for different elite sports are lacking, cross-temporal meta-analytical results between 1997 and 2019 indicate that burnout symptoms for athletes have worsened with time.[188] Specifically, athletes have developed a reduced sense of athletic accomplishments and an increased sense of sport devaluation over time, which may contribute to higher levels of burnout. The prevalence of OTS is difficult to estimate as it depends on the definition of a syndrome that lacks clear diagnostic boundaries.[189] Nonetheless, prevalence of OTS in elite athletes has been reported to be between 7% and 18%.[190]

Diagnosis

To diagnose MDD, symptoms must be both persistent (minimum 2 weeks) and pervasive across activities.[176] Distinguishing among burnout, OTS and MDD can be challenging (table 5), but is important for providing the most effective treatment. Burnout in sports is commonly defined by physical and emotional exhaustion, reduced sense of accomplishment and a devaluation of the sport itself.[191 192] OTS is characterised by physical exhaustion, objectively impaired sporting performance and mood disturbances.[193] In MDD, the symptoms and impairments are pervasive, while symptoms of burnout and OTS are largely context specific (confined to sport).[175] The situation is further complicated as problematic low energy availability (LEA) and Relative Energy Deficiency in Sport (REDs) are also associated with depressive symptoms and fatigue,[194] although LEA and REDs are not independent risk factors for MDD in the absence of disordered eating (DE) or an eating disorder (ED).[195]

The ecological systems model can be used to stratify sport-specific risk factors for MDD and depressive symptoms.[7 10 196] Individual athlete risk factors include female sex, concussion or other injury, surgery, adverse life events, osteoarthritis, chronic pain, being under 25 years of age, enduring stress, burnout, perfectionism, competitive anxiety, poor sleep, negative attribution after failure, negative coping strategies, high athletic identity and sudden transition out of sport. Microsystem (interpersonal) factors include low social support, coach conflicts and

Table 5 Comparison of key features of burnout, overtraining syndrome and major depressive disorder

	Mood	Anhedonia	Motivation	Energy	Considerations
Burnout	Decreased, context specific	Present, context specific	Decreased, context specific	Decreased, context specific	Improves with rest and other environmental changes
OTS	Decreased, context specific	Present, context specific	May remain high	Decreased, pervasive	Improves with rest and other environmental changes
MDD	Decreased, pervasive	Present, pervasive	Decreased, pervasive	Decreased, pervasive	Worsens with rest

MDD, major depressive disorder; OTS, overtraining syndrome.

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family issues such as separation. Exosystem (athlete's sport) and macrosystem factors include those that pertain to the sporting institution such as physical settings, cultural norms, regulatory policies, individual versus team sports (higher rates of depression in individual sports), certain positions, levels of play and exposure to non-accidental violence. Athletes also experience a similar range of biological/genetic, social/environmental and psychological risk factors as their non-athletic counterparts.[1 177]

Impact

The consequences of depressive symptoms can be physical (eg, decreased performance, injury risk), cognitive (eg, loss of interest, diminished motivation), behavioural (eg, increased risk of leaving sport, difficult adhering to injury rehabilitation programmes), relational (eg, strained team and family relationships), financial (eg, loss of sponsorship) and psychological.[1 175 196] Athletes with a depressive disorder may be at increased risk of developing other mental health conditions including gambling disorder,[197] substance misuse,[198] exercise addiction, REDs or EDs.[194 199]

Management

Treatment for MDD typically involves psychotherapy, with or without medication.[177] CBT is suitable for many athletes due to its structured self-directed approach.[200] Medications are typically considered in moderate to severe depression.[1] In a 2024 international survey of practising sports psychiatrists, bupropion was a top choice for use in athletes with depression without an anxiety component, while selective serotonin reuptake inhibitors (SSRIs) (escitalopram, fluoxetine and sertraline, respectively) were the top choices for depression with an anxiety component.[63] Note that, while commonly prescribed in some countries, bupropion is not licensed as an antidepressant in some regions, potentially limiting its use. Additionally, athletes with OTS may exhibit impaired immune function and depressive symptoms, for which SSRIs may be less effective.[201–203]

Suicide

Prevalence

Studies on suicidal ideation in professional athletes show prevalence rates between 6.9% and 18%.[204] An analysis of deaths by suicide within the National Collegiate Athletic Association (NCAA) between 2002 and 2022 revealed increases for both males and females over time, with higher rates of suicide among Division I and II (larger college) athletes compared with Division III athletes.[205] Over this 20-year period, suicide rose to the second most common cause of death for collegiate athletes after accidents. Comparative studies suggest that elite athletes generally face a lower risk of death by suicide compared with non-athletes,[204] with identified risk factors including male sex,[206 207] non-white race[206 208] and depression.[209 210]

Management

Although elite athletes often avoid seeking help due to the stigma surrounding mental health, improving mental health literacy through access to information about symptoms and support services can be beneficial. Effective prevention and management of mental health symptoms, particularly MDD, are crucial.[204 205 211 212] Other prevention strategies include identifying risk factors, targeted support, management of social media, which may impact feelings of self-worth, and structured safety plans. Responsible media reporting practices are critical to reduce suicide contagion risk, as recommended by major health organisations.[213–215] Postvention strategies that provide support to individuals who have lost someone to suicide have been shown to be effective in non-sport and should be considered.[216]

Anxiety disorders and obsessive-compulsive and related disorders

Anxiety disorders include generalised anxiety disorder, panic disorder, agoraphobia, social anxiety disorder, specific phobia and separation anxiety disorder. Anxiety disorders are among the most common and most studied mental health disorders affecting elite athletes.[9] Among elite athletes (n=221) seeking mental health treatment at outpatient clinics in Sweden, 69% met the diagnostic criteria for an anxiety disorder.[9] In elite Para athletes, symptoms of mixed anxiety/depression range from 34%[95] to 76%[217] and may be severely exacerbated during the Paralympic games compared with pre- and post-competition periods.[218] Obsessive-compulsive and related disorders include obsessive-compulsive disorder (OCD), body dysmorphic disorder, hoarding disorder, trichotillomania and excoriation disorder, all of which have generally been less well studied in elite athletes.

Prevalence and diagnosis of specific disorders

Generalised anxiety symptoms and disorder (GAD): GAD is characterised by excessive and persistent worry about multiple events or activities. The GAD-7 is the most utilised measure of anxiety in elite sport, implemented in at least 40 studies to date. The percentage of elite athletes meeting 'moderate to severe' generalised anxiety based on the GAD-7 ranges from 1.2%[219] to 29.5%.[220] Consistent with the general population, female elite athletes report higher GAD-7 scores than males,[14 219–227] and gender-fluid or gender-nonconforming athletes report higher anxiety than female athletes.[228] Generalised anxiety in elite athletes is associated with comorbid depression,[226 229–234] DE,[226 233] REDs[194] and LEA,[235] post-traumatic stress disorder (PTSD),[236] attention-deficit/hyperactivity disorder (ADHD),[237] sleep disturbance[124 234] and psychological distress.[238 239] Sport-related factors associated with increased generalised anxiety include injury,[221 223 237] post-concussion symptoms,[240] higher training load[233] and sport burnout.[238] Conversely, more match experience,[230] satisfaction in sport[237] and team sports[223] are associated with lower anxiety. Personal factors associated with reduced anxiety in elite athletes include self-esteem,[233 239] coping skills,[239] basic psychological needs satisfaction,[238] mental toughness,[237] resilience[241] and older age.[230]

Panic disorder and agoraphobia: Panic disorder is characterised by intense and unexpected panic attacks and the anticipatory fear of experiencing another attack or losing control. Agoraphobia is characterised by a marked fear or anxiety about situations in which escape might be difficult or assistance unavailable should panic-like symptoms or other incapacitating or potentially embarrassing symptoms occur. The prevalence of panic disorder in elite athletes ranges from 2.8%[242] to 4.5%,[221] while agoraphobia ranges from 1.8%[242] to 7%.[243] Rates are higher in elite female athletes than elite male athletes.[221 242] Agoraphobia symptoms in a sample of male elite Para athletes were lower compared with non-athletic peers with a disability.[244]

Social anxiety disorder: Social anxiety disorder is characterised by the fear of interaction with and negative evaluation by others. The estimated prevalence of social anxiety disorder diagnosis or caseness in elite athletes ranges from 1.3%[242] to 14.7%.[221] Most studies report no sex differences,[221 242 245] with the exception of higher rates of clinically significant social anxiety symptoms in collegiate female athletes (37%) compared with male collegiate athletes (22%).[246] Social anxiety disorder

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in elite athletes may manifest as avoidance of team meetings or other group activities (eg, meals, training or rehabilitation sessions).[247]

Social physique anxiety (SPA): SPA is not an official DSM-5-TR diagnosis but generally refers to anxiety associated with being observed or judged on one's appearance. Several studies have focused on SPA in female cohorts of adolescent and collegiate athletes.[248–253] None have reported the estimated prevalence of SPA, but key correlates of increased SPA in adolescent female elite athletes include higher BMI[248 251] or overweight perceptions,[249] participation in individual aesthetic sports,[248] perfectionism,[252 254] body dissatisfaction,[252] bulimia nervosa,[252] DE attitudes[253] and female sex.[254 255] Elite Para athletes report lower SPA in comparison with non-Para athletes,[256] and elite athletes exhibit lower SPA compared with non-athletes.[257] SPA may be reduced by focused attention to sport-specific tasks.[253]

Competitive performance anxiety: Competitive performance anxiety is not an official DSM-5-TR diagnosis, but it is one of the most researched forms of anxiety in elite athletes. It refers to a state or trait-like response to competition or other stressful sport situations in which the athlete fears that they will be unable to perform as desired or to manage stress, coupled with anxious cognitive appraisals, behavioural responses and/or physiological arousal.[258] Competitive performance anxiety can overlap with other anxiety disorders (eg, GAD or social anxiety) and should be carefully distinguished, taking into account the pattern of symptom onset (usually proximal to competition), duration and intensity.

Obsessive-compulsive disorder (OCD): OCD is characterised by the experience of intrusive and distressing thoughts, images or impulses (obsessions) and/or repetitive behaviours or rituals (compulsions) that are usually performed to negate intrusive thoughts. The estimated prevalence of OCD in elite athletes varies from 1.7%[242] to 5–8%[9 259] through to 18.9% for combined 'OCD and related disorders' (eg, body dysmorphia, hoarding, trichotillomania).[260] Reported rates are higher among female athletes in some[242 260] but not all studies.[9] These rates are higher than the estimated 1.3% lifetime prevalence observed in community samples.[261] OCD *symptoms* are also commonly reported among elite athletes.[259] Idiosyncratic rituals and magical thinking, which are not pathological if they do not cause significant distress or dysfunction, are also common in this population.[262] Comprehensive assessment is necessary to differentiate OCD from more commonplace superstitions among elite athletes.[263]

Body and muscle dysmorphia: Body dysmorphic disorder refers to a preoccupation with perceived imperfections or flaws in appearance that cause distress and/or impairment. To date, only one study has examined rates of body dysmorphia in elite athletes, with 7.8% of female NCAA athletes reporting increased symptoms.[264] Research has instead focused on muscle dysmorphia (MD), a subtype of body dysmorphic disorder that refers to preoccupation with the idea that one's body build is too small or insufficiently muscular. Most studies have been conducted with male cohorts of weightlifters or body builders.[265 266] Rates of MD at or above threshold in weightlifters—particularly in relation to body size and symmetry—range from 6.3% to 8%.[267 268] Rates of MD at or above threshold in mixed-sport athletes are reportedly 13%.[269] In mixed sex samples, male athletes report higher body size and symmetry concerns than female athletes.[270] Higher rates of LEA are associated with higher MD symptoms in female elite and sub-elite athletes.[269] No epidemiological studies were found on other anxiety disorders or OCD-related disorders in elite athletes.

Impact

Anxiety disorders and anxiety sensitivity[271] (the fear of experiencing anxiety-related sensations including physiological, cognitive and social symptoms based on the belief that these symptoms have harmful consequences) are often associated with comorbid mental health symptoms or disorders in elite athletes.[226 229–234] Anxiety, OCD and related disorders can be debilitating and lead to impaired sport training or performance.[272–274] Competitive performance anxiety may also negatively impact sport performance and concomitantly be associated with other mental health symptoms or disorders such as depression or suicidal ideation.[272 273]

Management

There is a paucity of intervention studies for anxiety, OCD and related disorders in elite athletes relative to the number of epidemiological studies. Sport-specific contributing factors should be assessed and considered when tailoring a management plan to the individual athlete. Cognitive and behavioural therapies are regarded as first-line treatments for mild to moderate anxiety disorders,[42 48] with anxiolytic medications considered for more severe presentations or for athletes for whom psychotherapy has been ineffective.[247] According to a 2024 survey of sports psychiatrists, top medication choices across these disorders are the SSRIs escitalopram, fluoxetine and sertraline (in unspecified order).[63] Given the prevalence of anxiety, OCD and related symptoms in elite athletes and the potential for such conditions to become persistent and debilitative, it is critical to prioritise prevention and early detection and intervention.

Trauma- and stressor-related disorders

Exposure to traumatic or stressful event(s) is a precondition for a diagnosis of trauma- and stressor-related disorders. Among these disorders, athlete research has focused mostly on PTSD, which is characterised by at least 1 month of fear-based re-experiencing (eg, nightmares), avoidance and hyperarousal symptoms, and negative cognitions/mood.[176] Acute stress disorder is distinguished from PTSD as the duration of the former is 3 days to 1 month.[176] Adjustment disorder is the development of emotional or behavioural symptoms within 3 months of an identifiable stressor, resolving within 6 months after the stressor or its consequences have terminated.[176] Adjustment disorders are frequently co-morbid with other conditions. Prolonged grief disorder is a trauma-related disorder that can be diagnosed after 12 months of clinically significant distress or impairment following the death of a loved one.[176]

Prevalence

Accurate prevalence estimates of trauma- and stressor-related disorders in elite athletes are yet to be established across settings, but the numbers are likely significant. For example, stressor-related disorders (including acute stress reactions, adjustment disorder and PTSD) were recently observed in 25% of Swedish elite athletes and 72% of high performance coaches[9] among mental health treatment-seeking cohorts, although these numbers were derived from clinician diagnosis rather than structured interview. Prior research indicates 13.3% of professional athletes across sports who had been exposed to at least one traumatic event reported symptoms consistent with a PTSD diagnosis.[275] Limited research is available on the prevalence of PTSD symptoms in elite Para athletes. However, the risk may be as high or higher than in general populations of elite athletes, given

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that a substantial proportion of elite Para athletes have acquired disabilities directly resulting from trauma.[53]

Diagnosis

The diagnosis of PTSD and other stressor-related disorders can be complicated given the complexities of expression in the elite athlete population.[53 276] Athletes' high tolerance for physical and psychological distress coupled with avoiding situations or mood states that the athlete perceives might interfere with training and competition can contribute to mental health symptoms being masked by perfectionism, compartmentalisation and dissociation.[277] Masking strategies may serve as temporarily adaptive coping techniques common to sport, enabling athletes to sustain engagement in both training and competition. However, they can simultaneously be maladaptive by creating a barrier to diagnosis of mental health disorders and by inhibiting long-term symptom improvement.[277]

For elite athletes, precipitating traumatic or stressful events may include organisational and institutional maltreatment,[276 278] interpersonal violence, concussion[279] and musculoskeletal injury.[280 281] Secondary or vicarious trauma can occur within sport teams following the serious injury or death of a teammate.[282] Elite athletes also may have experienced trauma or stressors outside of and/or prior to their sport participation. For example, 4.7% of male elite athletes and 15.1% of female elite athletes reported childhood sexual abuse. In female athletes this is associated with increased suicidal ideation.[283] Additionally, Para athletes are at a higher risk of experiencing interpersonal and sexual violence compared with their elite athlete peers without a disability.[278]

Cultural factors should be considered in assessments, with attention to 'idioms of distress' (ie, culturally influenced ways of coping).[276 284] For example, among African Americans in the USA, PTSD appears to be more prevalent yet less often diagnosed due to intersecting factors including stigma surrounding mental illness, reluctance to seek help beyond family networks, concerns about racial bias in health care and limited access to culturally competent care.[285] Consideration must be given to guilt, shame and stigma associated with traumatic experiences, as they complicate disclosure and therefore treatment. Lack of help seeking can be particularly common among athletes in environments that minimise pain, discourage emotional expression and/or promote hyper-masculine ideals.[286–288]

Acute and persistent symptoms, both emotional and physical, should be viewed through a trauma- and violence-informed lens.[289] This involves attention to individual developmental factors, cultural marginalisation, racialised trauma and transgenerational trauma.[276] Attending to the integrated effects from a biopsychosocial perspective can increase the potential for diagnostic accuracy, which then can inform treatment approaches.[276]

Early identification and treatment of athletes experiencing trauma-related symptoms including those of acute stress disorder may prevent progression to PTSD, while treatment of athletes already meeting criteria for PTSD may improve individual and sports performance outcomes.[276 289]

Impact

Symptoms can appear in the form of somatic or performance breakdowns/complaints.[277] Specifically, athletes may exhibit mood dysregulation, behavioural difficulties, problems concentrating and social withdrawal, all of which can lead to inconsistent performance. Trauma- and stressor-related disorders may predispose to injury as well. For example, athletes who undergo orthopaedic surgery may have had more cumulative (eg, childhood) trauma.[280] Without appropriate identification and intervention, trauma-related disorders can lead to ongoing impairment in social, occupational and sport function.[276]

Management

In general populations with PTSD, there is strong support for the use of structured and time-limited psychotherapy including prolonged exposure therapy, cognitive processing therapy and trauma-focused cognitive behavioural therapy,[290 291] with increasing support for eye movement desensitisation and reprocessing therapy.[276 292] Relaxation (eg, mindfulness) and somatic (eg, yoga) therapies may support symptom management.[276] Therapeutic alliance is critical for effective treatment given its impact on dropout, treatment adherence and outcomes.[276] First-line pharmacological treatment for PTSD includes SSRIs or SNRIs.[276] A 2024 international survey of sports psychiatrists showed that sertraline, escitalopram and fluoxetine were the top choices for medication management of PTSD in athletes.[63]

Additionally, team-based approaches with the athletes and staff directly or indirectly affected by secondary/vicarious trauma can provide effective intervention. Where indicated, a licensed mental health professional can provide psychological first aid for teams, reducing the stigma of seeking help in the case of vicarious trauma.[276] Promotion of a trauma- and violence-informed, non-judgmental, destigmatising culture may mitigate the complications of shared trauma as well as increase the likelihood of athletes receiving early intervention.[276 290]

Eating disorders and Relative Energy Deficiency in Sport (REDs)

Anorexia nervosa, bulimia nervosa, binge-eating disorder and other specified feeding or eating disorder are among the eating disorders (EDs) with defined criteria as outlined in the DSM-5-TR.[176] Disordered eating (DE) consists of abnormal eating behaviours not meeting criteria for an ED.[75] REDs is a syndrome marked by impaired physiological and psychological functioning caused by exposure to problematic (severe and prolonged) LEA.[293] REDs is caused by either under-fuelling or by over-expenditure of energy through high volumes of exercise. Specifically, under-fuelling can be either intentional (eg, via dieting or EDs) or unintentional (eg, via lack of knowledge or food insecurity). In both cases, there is a mismatch between energy intake through food and energy requirements of the body to maintain exercise and bodily function.[293]

Prevalence

Estimated ED prevalence is higher among elite female and male athletes (up to 42% and 33%, respectively)[294–298] compared with non-athletes.[74 295 297] In elite Para athletes, elevated Eating Disorder Examination Questionnaire (EDE-Q) scores have been reported in 36.7% and 26.4% of females and males, respectively.[299] The estimated prevalence of REDs is 22–80%[90 300–306] and 28–80% in elite female and male athletes, respectively, depending on the sport.[303 304 307–309]

Diagnosis

A multidisciplinary health care team (sports medicine physicians, dietitians and licensed mental health professionals) should monitor for signs of EDs and REDs during periodic health evaluations or when medically indicated.[41 293] Screening athletes for EDs poses unique challenges including under-reporting and difficulties in distinguishing between normative and pathological behaviours in an elite sport context.[297] Specifically, the

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sport-specific diet, training volume and the drive to optimise body composition/weight can obscure ED symptoms and result in diagnostic challenges.[41] The EDE-Q[310] is a sensitive and specific validated screening tool to identify elite athletes at risk for EDs.[298 311 312] However, clinical interviews are needed to diagnose an ED.[297] The 2023 International Olympic Committee's REDs Clinical Assessment Tool (IOC REDs CAT2) is a validated instrument that facilitates clinical diagnosis and risk stratification for REDs.[311]

Elite athletes experience sport-specific risks for EDs such as early sport specialisation, performance pressures, problematic body composition measurement practices, frequent weight regulation, injury and erroneous coaching behaviours.[75 295] Risk factors for REDs include high volumes of exercise, problematic practices to improve power-to-weight ratio, attempts to achieve excessive leanness and sport-specific physique demands.[293]

Impact

The impacts of EDs on health are complicated by medical comorbidities across the neuroendocrine, skeletal, nutritional, gastrointestinal, dental and reproductive systems.[313] The most prevalent mental health comorbidities for EDs in general are anxiety, mood, substance use and trauma- and stressor-related disorders.[313]

The impact of REDs on health varies across individuals and over time. Across sexes, the reproductive system is most often affected, resulting in menstrual disturbances in females, decreased libido in males and females and erectile dysfunction in males. Other body systems are also often affected.[293] Mental health impacts include anxiety, mood symptoms and fluctuations, sleep disturbances, exercise addiction and EDs/DE.[194]

EDs and REDs may not initially affect athletic performance but, over time, power, endurance, strength, motivation, cognitive skills, recovery, training responses and athlete availability may be reduced.[293] Elite athletes with an ED or REDs may require modifications to their training and competition until they achieve predetermined health status improvements.[293 311 314]

Management

A multidisciplinary team, which may include a sports medicine physician, dietitian and licensed mental health professional(s), should manage most elite athletes who present with DE, EDs or REDs.[314] Attention to common comorbidities such as depression and anxiety is important.[315] Suicide risk assessment is an integral component of treatment given the high suicide risk among individuals with EDs.[316] Ongoing monitoring is essential to ensure compliance and monitor clinical progress.[314] Addressing both the psychological and physiological aspects typically yields the best outcomes.[314] Treatment should be tailored to each athlete's specific presentation and comorbidities. CBT has been shown to be as effective in athletes as in non-athletes in treating EDs.[317]

Fluoxetine has been shown to reduce bingeing and purging, as well as improve mood and anxiety,[318] without affecting sports performance.[319] Lisdexamfetamine also may help binge eating disorder.[318] However, a TUE is required for the latter as lisdexamfetamine is a prohibited substance for those athletes subject to testing under the World Anti-Doping Code.[64]

Treatment of REDs should first attempt to reverse the problematic LEA via changes to energy intake and/or expenditure. If no clinical improvement occurs in 4–6 weeks, then the possibility of an underlying ED should be considered if it has not already been identified. Simultaneously, treatment should address specific presenting body system dysfunction(s) (eg, low bone mineral density and gastrointestinal dysfunction).[315 320]

To prevent EDs and REDs, it is important to proactively address body dissatisfaction, unhealthy dieting behaviours, exercise addiction and exposure to problematic LEA.[315] Research on ED prevention programmes for elite athletes is limited but promising.[321 322] Successful prevention efforts involve multiple sport partners (eg, athletes, coaches and sports administrators), interactive methods to discuss evidence-based information regarding growth and development, body composition, nutrition and training, and the creation of safe spaces for athletes to share experiences regarding body image and performance.[315 321 322] For example, an educational intervention programme developed for coaches of elite high school athletes showed that the intervention coaches had higher index scores on total knowledge, had a better understanding of how to address challenges related to weight management issues, and had improved ED recognition and management relative to control coaches at 9 months follow-up.[323]

Additionally, International Sports Federations can play an important role in prevention of EDs and REDs by developing health-focused sport regulations,[324] such as adjusting/increasing BMI criteria for certain sports where appropriate,[325] altering judging criteria in aesthetic sports and adhering to the IOC risk assessments for REDs and RTS guidelines.[311]

Attention-deficit/hyperactivity disorder

Prevalence

Attention-deficit/hyperactivity disorder (ADHD) is a brain developmental disorder characterised by persistent inattention and/or hyperactivity-impulsivity that interferes with functioning and/or development.[176] The prevalence of ADHD in elite athletes may be as high or higher than in the general population and may be even more prevalent in elite athletes in certain sports. ADHD prevalence in general populations ranges from 2.5% to 7.2% globally, but there are few studies on elite athletes.[326] The positive reinforcement of physical activity may attract children with ADHD to sports, which could lead to a higher prevalence.[327 328]

A systematic review exploring ADHD prevalence in youth and young adult athletes reported a prevalence range of 4.2–8.1% in athletes between the ages of 15–19 years,[329] and the percentage of athletes taking stimulant medications for ADHD in one university in the USA was reported as 7.1% during the 2009–2010 academic year.[330] Between 2017 and 2021, the percentage of Major League Baseball (MLB) players (from 40-man rosters) with TUEs for stimulant medications ranged from 7.5% to 8.6%. From 2022 to 2024, the percentage remained consistent at 5.1%. While the reason for the decrease in TUEs in 2022–2024 compared with 2017–2021 is unclear, these numbers likely underestimate the true prevalence in MLB players as these data reflect only those players who have received TUE approval for treatment with a stimulant medication.[331–334] The decrease in TUEs for stimulant medication among MLB players stands in contrast to global general population data that show increases in ADHD diagnosis and pharmacological treatments from 1979 to 2020.[335]

Diagnosis

Diagnosis of ADHD is based on a multifaceted approach that includes clinical interview, collateral information from multiple settings (including home, school and potentially work or sports) and a rigorous assessment completed by a licensed professional.

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The assessment should include self-administered screening questionnaires completed by the individual (if an adult) as well as from sources associated with the athlete, in addition to clinician- or psychometrist-administered objective diagnostic interview instruments. Individuals meet diagnostic criteria for the inattentive or hyperactive/impulsive subtypes with demonstration of at least 6 months of at least 6 symptoms (at least 5 symptoms for age 17 and older) from the 'inattention' or 'hyperactivity and impulsivity' category, respectively, while combined type ADHD includes at least 6 symptoms (at least 5 symptoms for age 17 and older) from each of these categories.[176]

ADHD is a childhood-onset disorder but may be first diagnosed in adulthood for several reasons, including athletes leaving more structured environments (eg, homes, secondary schools) or leaving cultures or environments in which there is lack of support for ADHD being diagnosed. Additional testing may be needed to support the diagnosis and rule out other conditions.[336] Differential diagnosis and comorbidities require careful consideration, particularly in elite athletes. Common comorbidities that feature symptoms (eg, poor concentration, subjective or objective cognitive concerns) that overlap with ADHD symptoms include depression and other mood disorders; anxiety and related disorders; other neurodevelopmental disorders such as autism spectrum disorder, intellectual developmental disorder and specific learning disorders; and substance use disorders.[336] Conditions such as insufficient sleep or sleep apnoea can also create symptoms that mimic ADHD, which may result in misdiagnosis.

While ADHD is recognised globally, it may not be diagnosed as often in some regions due to different diagnostic thresholds, cultural stigma and/or less public discourse about the disorder. In addition, cultural interpretation of behaviours associated with ADHD can differ, leading to a different framework for understanding and addressing them.[337]

Impact

ADHD can have positive and negative impacts on sport performance. Behavioural deficits that can affect athletes with ADHD include inattention, motor incoordination, impulsivity, hyperactivity, psychological factors and sensory processing differences.[338] While impulsivity can confer quick reaction times and decision-making, it is also thought to increase the risk of substance misuse or substance use disorders.[330 339] Hyperfocus can filter distractions, and affected individuals can experience exhilaration and excitement in response to novel stimuli.[340] However, the impaired focus and concentration, oppositional behaviour, argumentativeness, frustration, low self-esteem and mood dysregulation found in ADHD may impair athletic performance.[330]

Management

ADHD management considerations typically include psychosocial interventions and medication management.[327 336 341] Psychosocial interventions include behavioural therapy, cognitive behavioural therapy, individual education plans, parent/caregiver teaching, training and support, and mental skills training and education for athletes, families and coaches.[328] Potential benefits of pharmacological treatment include core symptom reduction, as well as reduction in the risks of suicidal behaviours, substance misuse, transportation accidents and criminality.[342] Pharmacological management of ADHD is typically divided into stimulant and non-stimulant medications. Stimulants (methylphenidate and amphetamine compounds) are standard pharmacological treatments for ADHD in the general population and in elite athletes.[327 343 344] In 2024, sports psychiatrists reported that their top three medication choices for ADHD in athletes were all long-acting stimulant formulations (methylphenidate extended release osmotic-controlled release, lisdexamfetamine and mixed amphetamine salts extended release).[63] Non-stimulant medications that are sometimes used for ADHD include atomoxetine, viloxazine, guanfacine, clonidine and, especially if depression is comorbid, bupropion.[344]

Potential side effects of stimulants that can have a negative impact on safety and tolerability include increased heart rate and blood pressure, abdominal pain, headache, anorexia and weight loss, sleep impairment, jitteriness/anxiety and increased risk of heat illness.[345 346] Stimulants may be performance-enhancing and are prohibited by WADA *in competition*, and a TUE should be applied for and approved if stimulants are prescribed for medical treatment in most cohorts of elite athletes.[64] Stimulants are controlled substances that are regulated differently by nations across the globe, including being prohibited or illegal in some Asian countries. It is important for elite athletes to check regulations before travel and ensure the proper requirements are met, which may include travelling with a medical letter, prescription bottle and other documentation. Finally, treatment of comorbidities is important in the management plan for ADHD.

Bipolar and psychotic disorders

Bipolar and psychotic disorders are potentially serious conditions with a peak age of onset coincident with the peak age of sporting performance.[347] Bipolar disorder is characterised by mood episodes. These must include an episode of hypomania or mania where the central features are elevated mood, increased activity and energy and associated symptoms such as grandiosity, reduced need for sleep, distractibility and over-talkativeness. Depressive episodes are also typically present though not necessary to establish the diagnosis.[176] Psychotic disorders such as schizophrenia have symptoms of hallucinations and/or delusions as their central features. Additional symptoms of psychotic disorders may include disorganised speech or behaviour; negative symptoms (eg, lack of motivation); inappropriate (incongruous) affect; cognitive deficits; and problems with social cognition. There is often significant functional impairment in both groups of disorders.[176]

Prevalence

The unknown prevalence of both bipolar disorder and psychotic disorders in elite sport constitutes one of the most important gaps in the current literature,[178] and recent athlete surveys have not included measures to detect either.[348] The IOC SMHAT2 includes optional screening for both,[29] while the IOC mental health surveillance tool could aid identification.[40] The significant and enduring functional impairments of schizophrenia may mean that it is one of the few mental health disorders in elite sport with a lower prevalence than in the general population.[349]

Diagnosis

There are potential diagnostic difficulties in high-performance sport where bipolar- and psychotic disorder-type symptoms may result from another medical condition, or medication or substance use.[176] For example, medication or substance use may manifest with symptoms of mania, hypomania or psychosis. Examples include anabolic androgenic steroids,[350–353] cannabinoids and glucocorticoids[354] and mephenteremine (a sympathomimetic amine and vasopressor), which has recently attracted attention in the world of sport because of the potential adverse

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effect of psychosis.[355–357] Additionally, sport-related behaviour may mask emerging mania—that is, both mania and sport can be expressed by high levels of activity and energy.[358]

Impact

Bipolar disorder mood episodes towards either pole (mania/hypomania or depression) may negatively impact sport,[349] although the condition is episodic and can be compatible with a sustained career in high-performance sport.[349] However, residual symptoms between episodes may persist,[359 360] emphasising the importance of comprehensive ongoing treatment.[361] In many cases, schizophrenia is associated with functional impairments that may eventually prove incompatible with continued sport participation at an elite level.[349] Importantly, many athletes are frequent travellers, and a majority of people with bipolar disorder are vulnerable to mood destabilisation when travelling across time zones,[361] especially via eastbound travel.[362]

Management

For bipolar disorder, evidence-based treatment guidance exists for both manic and depressive episodes, as well as for ongoing maintenance. Long-term pharmacotherapy is often needed to reduce the risk of relapse.[363–365] Sport-specific psychological and pharmacological treatments have not been evaluated, and guidance is based largely on expert opinion.[358 366 367] For example, sports psychiatrists from an international sample have reported that their top medication choices for bipolar disorder are as follows: aripiprazole for the manic/hypomanic and depressive phases and lamotrigine for the maintenance/prophylaxis phase.[63] That said, in practice, clinicians do not necessarily change medications across the course of the disorder once stability is achieved. These top choices are relatively less sedating and cause less weight gain than many other mood stabilising medications. Appropriate psychotherapy should be considered alongside medication.[364] The strongest evidence supports social rhythm therapy.[368]

For psychotic disorders, early identification and treatment are promoted, reflecting the importance of early interventions for improving the prognosis and long-term trajectory of the disorders.[369] Long-term medication is usually advised, given the chronic nature of the disorders and associated impairments.[370 371] There are no sport-specific guidelines,[349] but sports psychiatrists reported that their top medication choice is aripirazole.[63] For both bipolar and psychotic disorders, the benefits for physical health, mental health symptoms, functioning and social connections[372–379] mean that athletes should be encouraged to maintain regular exercise, which may include sports participation even if no longer competing at an elite level.[349 380] Finally, safety, stability and function may be significantly impaired in the acute phase of mania or when psychotic symptoms are present. These conditions can include loss of insight, which can sometimes necessitate involuntary exclusion of the athlete from training and/or competition.

Personality disorders

Personality disorders are enduring patterns of inner experiences and behaviours that deviate markedly from cultural norms, are pervasive and inflexible, have an onset in adolescence or early adulthood, and lead to distress or impairment. Conversely, personality traits are enduring patterns of relating to and thinking about the environment and oneself, can be harmful or adaptive, and do not cause the significant distress or impairment necessary for a personality disorder diagnosis.[176]

Prevalence

Personality disorders have received little study among elite athletes such that the prevalence is unknown. However, 'Cluster B' personality disorders and related traits are disproportionately represented within the existing publications on personality disorders in elite athletes.[381] This cluster is characterised by appearing dramatic, emotional or erratic, and three of its personality disorders have been studied in athletes: antisocial (a pattern of violation of the rights of others and impulsivity); borderline (a pattern of instability in relationships, self-image and affect and marked impulsivity, which often includes non-suicidal self-injury); and narcissistic (a pattern of grandiose need for admiration and lack of empathy).[176]

Diagnosis

No specific personality profile has been found to distinguish athletes from non-athletes.[381 382] Clinical interview—sometimes augmented with validated instruments—is the typical mode of diagnosis.[381 383] Importantly, there are cultural differences in personality styles that must be taken into account when considering personality disorder diagnoses in elite athletes.[176]

Many risk factors (eg, genetics, childhood trauma) for personality disorders and dysfunctional traits are not sport-specific. However, one sport-specific risk factor that has been described is that high degrees of success in elite sport, with resultant praise and attention, may lead to 'situational narcissism'.[384] The push for elite athletes to cultivate a social media presence may exacerbate this risk.[385 386] If 'situational' narcissistic traits become inflexible, persistent and dysfunctional, they constitute narcissistic personality disorder.[176] Pervasiveness across a broad range of settings makes narcissistic personality disorder distinctive from the public image, brand or persona that is sometimes created by an athlete in the context of sport and marketing (although these may represent narcissistic traits). An additional sport-specific risk factor for dysfunctional personality traits is anabolic androgenic steroid use, which has been associated with narcissistic personality traits.[387 388]

Impact

Personality disorders and traits may negatively impact sports performance through both individual and team effects. At the individual level, athletes with Cluster B personality disorders/traits may incur sanctions or legal penalties that affect participation.[389] There is an increased likelihood of doping/cheating in sport among athletes with antisocial and narcissistic personality traits.[390 391] Additionally, there may be an impact of personality traits on injury risk, as elite athletes with narcissistic traits[392] and higher sensation-seeking and boredom susceptibility traits[393] incur more injuries (possibly because of more risk-taking behaviours). Maladaptive perfectionism—the setting of high expectations for oneself and extreme self-criticism when expectations are not met—may be a trait of obsessive-compulsive personality disorder (a Cluster C personality disorder, which is characterised by a pattern of preoccupation with orderliness and control) and is a risk factor for eating disorders,[394–396] performance anxiety and depression in athletes.[381]

At the team level, athletes with narcissistic traits may engage in distracting, manipulative and selfish behaviours and contribute to dysfunctional team conflict, which may decrease group cohesion and performance and lead to drop out of teammates from sport.[397 398] Coaches' personality traits can also impact the team. For example, coaches with narcissistic traits are more likely to

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exhibit toxic controlling coaching styles, which can have a detrimental mental health impact on athletes.[399 400]

Management

Environmental supports may help athletes with personality disorders and dysfunctional traits. For example, coaches may play an important role, within appropriate boundaries,[381] in supporting athletes in regulation of negative emotions and related behavioural responses in the sport environment.[401] Management considerations typically include a focus on psychotherapy. Specifically, dialectical behavior therapy (DBT) is a first-line treatment for borderline personality disorder in general populations,[402] and the components of DBT have demonstrated efficacy in athletes.[403] Psychotherapy with athletes with personality disorders can be challenging and requires empathy, patience and persistence.[389 404] Comorbid mental health disorders are common and should be managed.[402] While primarily described in the setting of athlete eating disorders,[72 73] treatment contracts may be helpful for athletes with personality disorders in order to outline the criteria necessary for participation clearance and to ensure a shared understanding of how the clinical status of the athlete will be monitored by each member of the multidisciplinary team.

Substance misuse and use disorders

Substance misuse is the use of one or more substances in high dosages/potencies and/or in inappropriate situations that causes health or social problems.[405] A substance use disorder is a pattern of use of one or more substances that causes significant impairment and/or distress and is manifested by excessive or physically hazardous use, cravings or urges, use despite adverse consequences, failure to meet important obligations, reduced time spent on important activities and tolerance and/or withdrawal.[176] Substance misuse and use disorders pose significant challenges at elite sporting levels where the pressures to enhance performance, recover more quickly from overtraining and injuries or manage stress can entice both recreational substance misuse and use of performance-enhancing drugs (PEDs). Athletes may turn to both legal and illicit substances to gain a competitive edge, as a coping mechanism, or both, thereby potentially placing their physical and mental health at risk.

Prevalence

The most commonly used recreational substances among athletes include alcohol, tobacco/nicotine, cannabis, stimulants and prescription opioids.[227 406–417] Although the overall consumption rates of these and most other recreational substances are lower among athletes compared with the general population, certain substances such as alcohol (as binge drinking), oral tobacco/nicotine products and prescription opioids show higher prevalence in specific sports and athlete groups.[227 406–408 412–421] Specifically, rates of binge drinking (ie, ≥5 drinks per occasion for men and >4 for women) among collegiate and professional athletes from different sports and countries vary from 8% to 68%, with higher rates among men as well as across sexes in certain sports (eg, ice hockey, lacrosse, field hockey, rugby).[406–408 412 418–420 422 423] In a large sample of US collegiate athletes, 36% of men reported consuming >5 drinks while 33% of women reported >4 in typical drinking situations.[407]

Tobacco/nicotine product use (eg, oral tobacco/nicotine products, nicotine vaping) is also common among collegiate athletes and in certain professional sports (eg, skiing, ice hockey, soccer, baseball).[406 407 412 415 421] Annual use rates of different tobacco/nicotine products range from 4% to 22% among US collegiate athletes,[407] while 18% of male and 22% of female English professional footballers were current users of oral tobacco pouches or nicotine pouches.[424] Of elite international competitors from various sports, 23–29% tested positive for nicotine prior to competition.[406 407 415 421] Although research on substance use among elite Para athletes remains limited, recent evidence indicates comparatively low prevalence rates: alcohol (41.5%), nicotine (7.3%) and cannabis (8.5%).[425] Furthermore, another study reported that elite Para athletes exhibited lower rates of alcohol use than their non-Para athlete counterparts.[426]

Cannabis is typically still used less by elite athletes than non-athletes, but may be growing in popularity in some sports due to the changing legal landscapes and perceived norms that cannabis use is safe and may aid in managing anxiety and sleep difficulties.[406–412] For example, a large study of US collegiate athletes showed that annual use rates rose from 21.8% in 2013 to 25.9% in 2023.[407] A 2020 systematic review of youth, collegiate and professional athletes (n=46 202) from three continents revealed an overall annual prevalence rate of 23%, and a cross-sectional study of mixed competitive levels of endurance athletes (n=1193) reported current (past 2 weeks) use rates of 26%.[409 413] Cannabis use disorder in athletes has become increasingly common, especially among athletes who begin cannabis use at a younger age, who use daily and/or who consume high-potency cannabis.[410 411 414 418–420]

Beyond recreational substance use, PEDs such as anabolic agents, stimulants and selective androgen receptor modulators are misused by athletes aiming to improve muscle mass, endurance, recovery, appearance and overall performance.[418 420 427–431] These substances are among the most widely detected PEDs, with 2023 WADA testing data showing 0.57% positive test rates for Olympic sports and 1.88% for non-Olympic sports; 42% of positives were for anabolic agents, 16% for diuretics/masking agents and 15% for stimulants in 2022.[432 433] Carefully designed anonymous self-report surveys with validity checks have identified relatively high rates of self-reported PED use among elite international athletes (6.5–9.2%).[434] In contrast, one study of ultra-endurance athletes found positive results on blinded urine testing (eg, opioids 6.6%, diuretics 4.9%, beta-2 agonists 2.2%) that were not disclosed by any athletes on concurrent questionnaires.[435] Hormonal doping, including the use of growth hormone and erythropoiesis-stimulating agents, remains prevalent in sports that demand high physical output and endurance.[427] PED use is more common in recreational athletes than elite athletes.[430]

Risk factors for substance misuse and use disorders in athletes vary widely and include the type of sport (higher in team and collision sports), cultural norms (eg, partying lifestyle) within the sport, sex (males more than females), early age of first use and/or heavy use at an early age, mental health comorbidities (eg, anxiety, ADHD, body and muscle dysmorphia), behavioural addictions, interpersonal violence/adverse life events and the availability and legality of substances within a given country.[418–420 422 436] Substance misuse is generally more commonly encountered in elite athletes than are substance use disorders.[418–420 422] There is limited research on the prevalence rates of most substance use disorders in elite international athletes.[406 410 418 419 422 423 437]

Diagnosis

The routine use of validated recreational substance screening instruments (eg, Alcohol/Cannabis Use Disorders Identification Tests; AUDIT and CUDIT), negative consequences questionnaires

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(eg, Brief Marijuana Consequences Questionnaire, Brief Adult Alcohol Consequences Questionnaire) and urine testing can lead to early detection and intervention and prevent progression to substance use disorders.[419] The evolution of methods of PED use has led to the development of sophisticated detection methods, such as the Athlete Biological Passport, aimed at monitoring changes in athletes' biomarkers to detect substances used for performance enhancement.[427 429 430]

Impact

Substance misuse and use disorders among athletes can lead to detrimental physical, mental and performance effects.[406 410 414 416–419 423–425 427–431 438 439] For example, athletes who binge drink, use cannabis or tobacco/nicotine products daily and/or who use alcohol and cannabis simultaneously have more adverse physical (eg, injuries, accidents, poor recovery) and mental (eg, sleep concerns, anxiety, depression, irritability, aggression) consequences than athletes who do not.[406 418–421]

Regarding performance, alcohol misuse can impair cognitive and motor function, reduce reaction time and negatively affect coordination and endurance.[420] Regular oral tobacco/nicotine use causes toxic physical (eg, gum irritation, nausea, dizziness, loss of appetite) and mental (eg, insomnia, mood instability, anxiety) effects that can impair quality of life and performance.[415 418–421 424] Continued use can lead to dependence/withdrawal that can produce irritability, cravings, low energy, restlessness and impaired concentration, all of which can impair performance.[415 418–421 424] The evidence on the impact of cannabis on performance is mixed.[406 408–411] Some studies have found a negative impact on physical performance, while others have found no effect.[406 408–411] Despite the perception that cannabis may aid in relaxation, sleep or recovery, there is little evidence to support its efficacy in either enhancing recovery after strenuous activity or improving sleep patterns.[406 409–411] Cannabis misuse can lower motivation, impair memory and learning, diminish socialisation and reduce academic potential.[418–420 439]

PEDs, especially anabolic agents and stimulants, increase strength, endurance, power and muscle recovery, but their use tarnishes the integrity of sport.[420 428–431] Anabolic agents and their analogues are associated with low sperm count, irregular menses and increased blood pressure/cholesterol and in higher dosages can cause cardiovascular disease, hepatotoxicity, psychosis and hormonal dysfunction.[420 429 430] Erythropoiesis-enhancing agents may lead to cardiovascular disease, polycythaemia and stroke.[420 427]

Management

Substance misuse and use disorders among athletes require specific prevention and treatment approaches. Given the unique pressures faced by this population, interventions must address not only the physical aspects of substance misuse but also the psychosocial factors contributing to substance use. The development of targeted prevention strategies such as routine screening, alongside comprehensive education on the risks associated with substance use, is crucial for protecting the health and careers of athletes.[28 406 418 419 440] Athlete education is particularly warranted regarding the use of dietary supplements, as studies indicate that up to 28% may contain undeclared prohibited ingredients, thereby posing a significant risk for unintentional doping.[441] Stigma and threats of sanctions deter self-referrals, and comorbid mental health symptoms and disorders complicate diagnosis and treatment.[418 419 440]

For substance misuse, brief motivational interventions that are individualised, use contingency management strategies and involve collaterals such as coaches or family members can shift elite athletes' attitudes and beliefs about substance misuse, reduce frequency of use and prevent progression to substance use disorders.[419] For substance use disorders, withdrawal symptoms and cravings should be addressed with both medication and behavioural strategies.[419 440 442] Higher levels of care (eg, intensive outpatient, residential) may be needed for athletes who cannot stop using with brief office-based interventions.[440 442] Addressing PED use in elite athletes requires a multifaceted approach that combines strict regulatory enforcement, biological passports, urine/blood testing, effective education and targeted intervention strategies tailored to the unique environment of elite sports.[420 430 440]

Gambling disorder and other behavioural addictions

Gambling disorder

Prevalence

The international landscape of gambling has substantially changed in the last decade. There are more land-based casinos, and online gambling via smartphone or laptop has emerged as a primary way to gamble. Recent meta-analyses have examined problem gambling among elite athletes.[443–445] These reviews suggest that, while most studies show a positive relationship between gambling/problem gambling and athletic involvement, there are some (although limited) studies that suggest no increased risk of gambling and problem gambling among athletes. Temporal differences may have resulted in prevalence variations among studies. Specifically, legalised sports gambling has only recently become readily available in the USA and, since then, prop bets (wagers on specific events within a sporting event that do not necessarily depend on the final outcome) have become commonplace.[446 447] The most recent study among NCAA collegiate athletes shows that almost 11% of male collegiate athletes reported gambling on sports at least monthly, with wagering via online sports betting showing the greatest increases. Overall, NCAA data suggest that 52% of male collegiate athletes and 36% of female collegiate athletes report gambling (of any type) in the previous 12 months,[446] with approximately 2% of male collegiate athletes and a smaller percentage of female collegiate athletes reporting some level of problem gambling.[446] This compares with global estimates for the general population of 0.12–5.8%.[448] Recent Swedish[449] and Spanish[450] studies have similarly reported a higher prevalence of gambling disorders among young male athletes relative to men in the general population.

Elite athletes may be at particular risk for a gambling disorder given their over-representation of young men, desire for competition and challenges, high levels of sensation seeking and impulsivity and risk-taking behaviours.[1 21 451–453] Their pressures to perform, travel commitments and being away from family are all factors impacting their gambling. Further, their overall sports exposure, perceived knowledge of sports, availability of prop bets and ability to make wagers in the privacy of their home may also make them prone to sports wagering.[446]

Diagnosis

Gambling disorder has been regarded as a 'hidden disorder' and thus can be difficult to detect unless athletes are specifically asked about its presence.[454] The diagnosis shares features with substance use disorders and requires at least 12 months

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of persistent and recurrent problematic gambling with resultant negative consequences, including gambling with increasing amounts of money, preoccupation with gambling, 'chasing' one's losses and jeopardising of relationships, career or education.[176 455]

Impact

The consequences for elite athletes who develop problematic gambling include mental health disorders, financial difficulties, poor school and athletic performance and sometimes criminal behaviours.[451 456] Additionally, athletes and their coaches and family members have increasingly been harassed and threatened with bodily harm by gamblers via social media for not performing at a certain level.[446 457]

Other behavioural addictions

Other behavioural addictions may be of relevance to elite athletes, although they are not official DSM-5-TR diagnoses. Like gambling disorder, these may be hidden disorders that share features with substance use disorders and include exercise addiction and internet gaming disorder.[1]

Prevalence rates of exercise addiction in athletes have been reported as 3–14.2%,[458] with reports of higher risk at higher competitive levels.[459 460] While the prevalence may be higher among male athletes, the difference in risk between male and female athletes diminishes at higher competition levels.[460] It can be difficult to distinguish exercise addiction from normative elite athlete behaviour.[1 461] The diagnosis should be suspected in the presence of symptoms such as increased exercise volume over time for the purpose of avoiding negative feelings or because more is needed to satisfy 'cravings' for it; inability to reduce exercise volume even in the face of the desire to do so or negative consequences such as injury; and jeopardising of previously valued life activities and relationships because of excessive exercise.[462 463] The clinician should differentiate primary exercise addiction, where exercise is the main objective, from secondary exercise addiction, where the excessive exercise is a symptom of an eating disorder.[464] Impacts of exercise addiction may include injury,[199] worse sports performance,[465] depression[199 466] and REDs.[467]

Internet gaming disorder in elite athletes has been minimally studied, but prevalence rates in Swedish elite athletes have been reported to be 4% in males and 1% in females, approximating the general population prevalence rates.[468] Problem gaming and problem gambling may co-occur in elite athletes,[468] and time-consuming travel in this population may stimulate excessive engagement in both types of online behaviour.[468] Proposed research criteria for internet gaming disorder include at least 12 months of preoccupation with gaming and several associated symptoms.[176]

Management of gambling disorder and other behavioural addictions

Treatment for gambling disorder and other behavioural addictions is rooted in psychosocial approaches,[469] especially CBT and motivational interviewing.[199 470–472] Unlike most other addictive disorders, abstinence may not be the goal, especially for exercise addiction.[473] Currently, no medications are approved to treat behavioural addictions. Antidepressants (especially SSRIs) and opioid antagonists (nalmefene and naltrexone) have been studied, but evidence for efficacy is limited.[474]

For problem gambling specifically, prevention efforts are a major strategy.[446 454 472] At a systemic level, organisations such as universities can offer programmes to educate athletes and their entourage about the potential mental health harms associated with a gambling disorder.[475] Such programmes can enhance communication between athletes, coaches and athletic directors, increase knowledge about gambling statutes and regulations for athletes, and raise awareness about signs of problem/disordered gambling. With the growing number of athletes being threatened by gamblers, athletes should be encouraged to report threats, attempts at bribery or physical harm to their respective authorities.[446]

Neuropsychiatric aspects of sport-related concussion

Prevalence

The sport-related concussion literature commonly notes that 42 million individuals worldwide sustain concussions every year and that up to one-third of concussions are related to sports or recreational activities, especially in adolescents and young adults.[476] However, the incidence and prevalence of sport-related concussion are difficult to estimate because of differing definitions of concussion, differing methodologies in injury surveillance systems and under-reporting.[477] Concussion is especially common in contact-collision sports and likely accounts for 9–13% of high school sport injuries.[477] The concussion rate in collegiate athletes is 4.13 per 10 000 athlete-exposures (AEs), with highest rates observed in men's ice hockey (7.35 per 10 000 AEs) and women's soccer (7.15 per 10 000 AEs).[478]

Diagnosis

The sixth International Conference on Concussion in Sport[479] defines sport-related concussion as a traumatic brain injury caused by a direct blow to the head, neck or body resulting in an impulsive force being transmitted to the brain that occurs in sports and exercise-related activities. This initiates a neurotransmitter and metabolic cascade, with possible axonal injury, blood flow change and inflammation affecting the brain. Symptoms and signs may present immediately or evolve over minutes or hours, and commonly resolve within days but may be prolonged. Standard imaging studies are normal. Sport-related concussion results in a range of clinical symptoms and signs that may or may not involve loss of consciousness, and that cannot be explained solely by (but may occur concomitantly with) drug, alcohol or medication use, other injuries (eg, cervical injuries, peripheral vestibular dysfunction) or other comorbidities (such as psychological factors or coexisting medical conditions).

The Sport Concussion Assessment Tool (SCAT6)[480] is useful for assessing and diagnosing suspected concussion up to 3 days following injury. Of 22 symptoms in the Symptom Evaluation of SCAT6, 13 are related to neurobehavioural dysfunction. However, such immediate post-concussion symptoms do not predict mental health symptoms and disorders following sport-related concussion. Concussion recovery within 4 weeks of injury is common,[479 481] although 10% of athletes have ongoing symptoms that preclude RTS 6 months post injury.[482] The term 'persisting symptoms' is used to characterise symptoms that remain >4 weeks following the initial injury; such symptoms may be pre-existing, concussion-related, or both. Importantly, persisting symptoms do not necessarily reflect ongoing brain injury but rather are related to maladaptive recovery.[479 481] Common persisting symptoms include headache and pain, dizziness and imbalance, poor concentration and cognition, oculomotor dysfunction, sleep dysfunction and fatigue, anxiety and depression and dysautonomia symptoms.[479 483 484]

Pre-concussion psychological factors such as meanness, aggression and psychoticism as well as depression and anxiety

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are associated with an increased risk of developing sport-related concussion.[485 486] Repetitive head impact exposure may increase the risk for developing sport-related concussion.[487] Pre-existing mental health symptoms or disorders, family history of mental health disorders and significant life stressors are associated with an increased risk of developing persisting symptoms following concussion, although studies have varying methodological approaches, and mental health disorders are not studied as a primary outcome.[488] Pre-existing depressive symptoms are associated with a higher number of depressive symptoms/persisting symptoms following concussion.[489] A 12-month observational prospective cohort study of professional rugby players found an increased association of both feeling distressed and adverse alcohol use (independent of feeling distressed) following concussion, although all findings were from self-reports.[490] Sleep dysfunction following concussion correlates with worsened neurocognitive performance, persisting symptoms and impaired attention/processing speed.[491–493] Pre-injury sleep dysfunction may kindle persisting symptoms.[494]

Impact

There are emerging high-quality studies that address long-term mental health outcomes in athletes who have been exposed to frequent contact-collision activities. These studies presume that athletes who train and compete in contact-collision sports have suffered from concussion and have been exposed to repetitive head impacts, but none provide specific measurements for concussion or repetitive head impact. American youth football players have no increased risk for depression or premature death from suicide during early and late adulthood,[495–499] and former American professional football players who played five or more seasons have a decreased risk of suicide compared with the general population.[500] Former professional soccer players are not at increased risk of death from suicide[501 502] or other mental health disorders.[501]

Management

Sub-symptom threshold aerobic exercise treatment within 2–10 days after sport-related concussion is effective for reducing the incidence of persisting symptoms after concussion and is also effective for the management of persisting symptoms, including persisting mental health symptoms.[479 503–507] Cognitive rehabilitation and neurocognitive training are effective interventions for mental health and well-being and persisting symptom impairments post-concussion.[508] Targeted sleep intervention strategies should be used for sleep dysfunction,[492] although there are no systematic studies for post-concussion sleep disorders. There are no approved pharmacological interventions for mental health symptoms and disorders following concussion, and treatment should be guided by clinical indications.

Considerations for the elite Para athlete

The concussion experience is likely to vary for the elite Para athlete due to the interaction of their primary impairment combined with the pathophysiology of concussion,[509] although there is a paucity of literature on sport-related concussion in this population.[510] Commonly used tools (eg, SCAT6) are not validated for Para athletes, although a Para SCAT-WC (for wheelchair athletes) is forthcoming. Other important considerations for the elite Para athlete include[509]:

- Elite Para athletes have a history of under-reporting concussion.
- Baseline testing may have greater value for the elite Para athlete. A medical professional who knows the athlete well should be involved in their pre- and post-concussion assessment.
- The mechanism for testing sub-symptom threshold aerobic exercise may require modification.
- When considering return-to-learn, previously existing disability accommodations should remain in place.

Stressors and environmental factors that impact elite athlete mental health

Creating an environment that supports mental well-being and resilience in elite athletes

Core elements of a supportive environment

Elite athletes function within an ecosystem that includes the athlete; the microsystem of interpersonal relationships; the exosystem of the athlete's sport; and the macrosystem of larger sport and societal influences.[18] A supportive ecosystem allows for mental health symptoms and disorders to be proactively managed and for athletes to flourish (ie, to experience positive self-regard, personal and professional growth and meaningful social connections).[14 511] On the other hand, an unsupportive ecosystem or inappropriate practices or procedures within the ecosystem (eg, an environment with low psychological safety, low social support, inappropriate body composition assessment practices, etc) may lead athletes to languish, even if they have no history of mental health symptoms or disorders.[14 426 511 512] Toxic leadership—arising from coaches, sports directors, managers, executives or anyone else acting in a leadership capacity within sport—is abusive and potentially destructive. It can generate serious and enduring effects on individuals, families, organisations, communities and societies[513] and can have a negative impact on athletes' perception of team culture, autonomy, coaches' leadership skills and coaches' concern for athletes' well-being.[514] Conversely, a supportive ecosystem can support athlete thriving, which includes a trusting sense of belonging coupled with high athlete motivation and self-belief.[515] Organisational practices including the allocation of adequate resources, leadership prioritisation and a commitment to ongoing quality improvement are important components of creating a climate that is supportive of mental health.[516 517] Finally, the media also has a responsibility to report in ways that promote mental health awareness and reduce stigma in society.[518]

Primary role of coaches and parents/caregivers

As key members of the athlete ecosystem, coaches and parents/caregivers merit particular mention. Coaches are often the primary point of contact with athletes and thus can considerably influence an athlete's attitude to mental health care seeking while also providing a supportive environment that promotes and supports well-being.[514 519] Mental health care seeking should be normalised in a manner similar to health care seeking for injuries and other medical illnesses.[519 520] Coaches should attend to stressors that may predispose athletes to mental health symptoms and disorders, including training overload and insufficient recovery,[521] injury,[521 522] burnout,[523] developmentally inappropriate activities[516 524] and REDs.[293] Coaches can identify warning signals for mental health symptoms or disorders,[28] facilitate appropriate referrals[519] and help ensure and support athlete engagement with mental health management.[519]

Whenever possible, coaches and parents/caregivers should align on mental health care seeking and fostering wellness. Parents and caregivers can positively influence athlete development by

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investing time, financial resources and emotional support that fosters a holistic pathway. Such support can promote intrinsic motivation, self-efficacy and adaptive skills.[525 526] Negative influences from parents and caregivers can include an overemphasis on winning and setting inappropriately high expectations, which can contribute to anxiety, decreased perceptions of competence and a decrease in sport enjoyment.[527] As with all other members of the sport ecosystem, coaches and parents/caregivers should have contextually relevant knowledge and beliefs about mental health that aid in the recognition, management and prevention of mental health symptoms and disorders.[528–530] Encouraging the involvement of coaches, parents/caregivers and other community resources as appropriate in mental health initiatives can help create a supportive sport ecosystem.

Interpersonal violence

Interpersonal violence (IV) represents an aspect of some unsupportive sport ecosystems. Also known as harassment and abuse, it is defined by the WHO as 'the intentional use of physical force or power against other persons by an individual or small group of individuals. It can occur online, be perpetrated by different actors and take different forms'.[531] IV in the sporting context can be expressed through four forms: psychological violence, physical violence, sexual violence and neglect.[532] Other forms of abuse towards athletes include hazing, bullying and grooming. IV can be manifested on or off the field of play.[532] Perpetrators of IV can be peer athletes or other members of the athlete entourage, often based on interpersonal power differentials.[533] The potential outcomes of IV in sport can be psychological, behavioural, physical and/or material damage. The specific mental health outcomes that have been described include depression,[534 535] anxiety,[535 536] PTSD,[537 538] suicidality,[283] body dissatisfaction,[250] EDs/DE[539] and risk-taking behaviours such as substance misuse and risky sexual behaviour.[540]

Members of the elite athlete health and performance team should have competence in trauma- and violence-informed care to facilitate IV prevention, identification, assessment and recovery.[541] Clinicians should screen for a history of IV within and outside the sport context. It is the responsibility of all within the sport ecosystem to work synergistically to strive for a safe sport environment to protect athletes from IV and its negative mental health impacts. To strive for a safe sport environment, sport organisations should implement safeguarding practices (eg, safeguarding policies and procedures, reporting mechanisms and athlete support) and improve awareness of IV and its impacts through educational initiatives. Additionally, members of the athlete entourage should be equipped with trauma- and violence-informed skills to build trust and prevent re-traumatisation. A healthy sport culture is grounded in mutual respect and values-based principles, with athletes meaningfully empowered and involved at all levels.[541]

Cultural considerations

All factors within the ecological systems model can impact the mental health needs of elite athletes and should be recognised and considered when working to address their mental health needs.[542 543] As one of these factors, culture can be understood as a set of shared beliefs, feelings, knowledge, norms and objects that influence people to give meaning to things, experiences and behaviours.[544] Cultures are intersectional, and all athletes are impacted by multiple cultures, including the culture of their sport, cultures related to their identity characteristics (eg, gender, race and ethnicity, sexual orientation) and the cultures of communities where they reside or with which they engage. These cultures shape the conditions that contribute to mental health symptoms and disorders, how mental health symptoms may be understood and experienced, and health care utilisation by elite athletes.[545 546] For example, gendered beliefs and norms may shape help-seeking behaviours.[547 548]

It is essential that mental health care be patient-centred, with cultural responsiveness constituting a critical component of such care. This means recognising that an athlete's culture and cultural exposures influence how distress is experienced, expressed and managed. Patient-centred culturally responsive care should be grounded in cultural humility.[549] Practising with cultural humility means that clinicians try to understand the lived experiences and cultural perspective of their patients, and dedicate themselves to lifelong learning in order to provide culturally responsive care. Such a framework demonstrates clinicians are willing to reflect on their values, beliefs and various biases, and adapt their practices accordingly. Understanding, respecting and integrating an athlete's cultural background into care helps build trust and is essential for both accurate assessment and effective management.

Central to cultural humility is an awareness of structural inequalities that shape social determinants of mental health.[550] Structural inequalities are systemic disadvantages that are experienced by various social groups, be it on grounds of race, gender, gender expression, sexual orientation, class, religion, immigration/migration status or geography.[551] Social determinants of mental health are the conditions within which people live and work and the circumstances that affect their mental health in daily living.[550–553] Social determinants can include education, income security, employment conditions, housing, food security, transportation services, social environment, conflict/war and access to health care services.[552–554]

Structural inequalities and social determinants of mental health are experienced unevenly across populations; consequently, some groups of elite athletes may experience a higher prevalence of mental health symptoms and disorders than their peers. For example, research has shown that athletes who are women, non-white or do not identify as heterosexual experience higher levels of psychological distress, often due to greater challenges with core social determinants such as housing, income and food insecurity.[553] Further, transgender athletes face higher rates of structural inequalities and discrimination compared with their cisgender peers, contributing to chronic stress and attendant higher rates of mental health symptoms and disorders.[555–557] Athletes who experience immigration challenges or live as refugees experience disparities in structural and social conditions and have high levels of mental health symptoms and disorders, which can negatively impact functioning across domains.[558 559]

The potential impact of structural inequalities and social determinants of mental health should be considered when addressing mental health needs in elite athletes. Although considerable attention has been paid to the cultural training of individual clinicians and staff within sport,[550] there is also a growing recognition of the importance of organisational practices in addressing these issues.[553] This could include organisational practices that aim to provide all mental health services in an equitable and inclusive manner.[551 553 560 561] For example, the NCAA sets out provisions for universal screening in which all athletes must be screened for mental health symptoms and disorders and offered referral pathways as needed to qualified mental health providers.[561] Organisational practices could also include taking a collaborative inter-organisation approach to addressing structural inequalities.[562] An example would be encouraging collaboration between

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health care providers and individuals who can support an athlete in connection to community-based resources to address stressors such as housing insecurity or relationship violence.

Barriers to mental health care seeking

Elite athletes may face significant barriers while seeking and sustaining mental health care, frequently rooted in the perceived norms of athletes not revealing their vulnerability, especially regarding mental health. Cultural perceptions that equate mental health symptoms and disorders with weakness further this stigma.[563] For example, members of certain racial and ethnic groups may prefer not to seek mental health support because of stigma that has been augmented through historical discrimination and mistreatment within medical settings.[563] In some sports, hypermasculinity and the cultural expectancy to 'tough it out' discourage athletes, particularly men, from pursuing help.[564] Moreover, elite athletes may fear that seeking help will result in undesirable judgments from peers, coaches or the public, as well as potential exclusion from future competitions.[563] Finally, elite athletes may have concerns about privacy that may lead to fear that disclosing one's problems could affect professional opportunities (eg, via deselection or loss of sponsorship contracts).[565]

In addition to stigma and cultural expectations, logistical challenges can hinder athletes' access to mental health care.[566 567] Elite athletes have rigorous training and competition schedules that often do not prioritise self-care and management of mental health symptoms.[566] This pressure to adhere to a particular periodisation schedule does not take into account mental well-being and recovery.[567] Furthermore, financial constrictions, geographic isolation of sports facilities and other logistical problems can prevent athletes from accessing mental health services.[568 569] Additional regulatory barriers, such as restrictions that prevent clinicians from practising across state, provincial or national lines, also hinder access to care; this is an important issue given the frequency of athlete travel. Moreover, much of the evidence base on which mental health recommendations are made comes from high-income countries and may not translate well to lower-income settings. For example, in some locations, psychiatric hospitals may lack basic infrastructure and resources, thereby limiting opportunities for help-seeking even when services are theoretically available.[570] Some countries have implemented systems to overcome logistical barriers. For instance, Australia has developed a free mental health network for elite athletes, and Sweden operates a no-cost specialised clinic for elite athletes.[571 572]

Improving mental health literacy and prioritising wellness and mental health care within the sport ecosystem and periodisation schedule could help to mitigate these barriers.[7 573] Mental health literacy efforts should address how individuals: (1) understand and recognise mental health symptoms and disorders, risk factors and causes, and treatment options; (2) work through personal and social stigma associated with mental health symptoms and disorders; and (3) find and use mental health services to address mental health symptoms and disorders.[542 574] Mental health literacy strategies must be constructed with knowledge of a given athlete population and their specific sociocultural and sporting contexts that may impact availability, accessibility, quality and fit of mental health services and help-seeking behaviours of athletes.[542 543] Different groups of elite athletes may have differing needs and assets when it comes to mental health literacy. For example, within elite sport, research has shown that women and LGBTQIA+ individuals have higher levels of knowledge of mental health symptoms, hold fewer stigmatising views and are more willing to seek support.[575] Within youth sport, it is recommended to design mental health literacy strategies where learning is consistent with social, psychological, mental and physical developmental readiness.[542 576] Organizational health literacy strategies, where organisations help ensure that information is accessible and understandable and that services are available, help ensure that individually-oriented mental health literacy strategies are effective.[542] Careful attention must be paid to ensure that mental health literacy strategies are designed to improve mental health knowledge, attitudes and help-seeking behaviours in an equitable, culturally responsive and effective manner.[542 575 577–580]

Social media and mental health

Social media use

Social media use has rapidly escalated in recent years, with up to 95% of 13–27-year-olds in the USA using these digital platforms.[581] The preferred social media platforms among young adults can evolve quickly. Concerns have been raised regarding the use of social media by elite athletes and their interactions with traditional media,[582 583] although the scientific evidence in this area remains limited.

Mental health impacts of social media use

Several cross-sectional studies have examined social media use (including overall screen time, social media engagement during daily activities and perceived interference from social media use) and mental health outcomes in collegiate athlete cohorts. Findings demonstrate associations between social media use and poorer general mental health and self-esteem,[584 585] heightened anxiety and diminished subjective well-being,[585 586] reduced sleep quality[587 588] and increased body image concerns.[589] Higher levels of social media use, particularly during daily activities, have been associated with poorer mental health outcomes.[584 585 587] One study found that females have both greater social media use (specifically TikTok) and associated higher levels of anxiety.[584] In adolescent athletes, a statistically significant relationship was found between time spent on social media and symptoms of addiction to digital media, as well as increased negative emotions, disordered eating symptoms and decreased quality of sleep.[590] In a study involving elite male and female athletes, cyberbullying via social media and other online mechanisms was correlated with increased eating disorder pathology (low self-esteem, negative emotions, body dissatisfaction and unhealthy eating behaviours).[591]

There are reports of athletes being targeted by cyberbullying[582] and 'cyberstalking'.[592 593] Two studies from World Athletics reported a significant number of abusive posts regarding elite track and field athletes on social media, with 20% being racially motivated and 60% directed towards female athletes.[594] Sexist and sexualised abuse comprised over 40% of all posts, with a majority targeting females.[594]

Other impacts of social media use

Qualitative studies involving elite female athletes' experiences of social media use—particularly Instagram—have highlighted risks such as sexualisation of appearance, abuse and misogyny,[595 596] all of which may result in self-censorship (ie, refraining from expressing thoughts, points of view, or beliefs that others might find objectionable).[595] Furthermore, one study demonstrated an association between increased social media use (Facebook time) and worse competitive performance.[587]

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Conversely, positive impacts of social media use include building connections worldwide, communicating with family and friends, gaining support, emotional connection and sponsorship opportunities.[590 596–600] Among elite Para athletes, social media can counter negative disability stereotypes[601] and, for individuals who feel isolated or stressed, including LGBTQIA+ adolescents or those experiencing mental health symptoms,[581 602 603] social media can be supportive. One study found that the overwhelming majority of Twitter responses to the disclosure of mental health experiences by prominent athletes was positive (94%), with most responses applauding the inspiring message or providing encouragement or respondent self-disclosures of mental health symptoms.[603] Comparing oneself favourably to others may mediate anxiety and well-being in athletes who otherwise report low psychological capital or positivity.[586]

Other contextual factors

Geographical differences may influence whether Instagram posts related to a specific athlete's sporting success or failure impact athletic motivation and self-efficacy.[604] Specifically, the salience or impact of Instagram posts may vary according to user identification with social comparison groups. Additionally, the type, modality and timing of social media platforms used by athletes may have a differential impact on mental health.[605] For example, Facebook was used by 68–72% of athletes during the time frame extending from 2 hours prior to competition to 2 hours after competition, and by 32% during competition; having push notifications enabled on this platform during this time frame was significantly associated with sport anxiety.[606]

Social media safety

Efforts to protect athletes from the negative effects of social media are important, and evidence-based approaches are needed. A recent study evaluating a brief behavioural intervention in collegiate athletes found no meaningful reduction in the negative mental health effects associated with social media use.[585] The Mindful Social Media e-learning course by the IOC provides elite athletes with guidance for the strategic use of social media and how to mitigate risks.[599] As of 2024, the IOC also implemented a service to detect and respond to cyber abuse during the Olympic Games.[607] Harmful posts were detected immediately and removed, often before being viewed by the athlete.[599 607]

At the individual athlete level, clinicians should discuss social media use with elite athletes within ongoing clinical care. This information can be used to help the clinician and athlete understand how it is functioning to enhance (eg, via social connection) or impair (eg, via abuse, cyberbullying, negative body image or compromised sleep) mental health and performance, and to determine whether changes in social media use would be clinically beneficial. Clinicians should provide elite athletes with guidance on the potential mental health impacts of social media use, while recognising that this is a rapidly evolving area in terms of both technology and emerging evidence.

How injury, performance and mental health intersect

The relationship between injury, performance and mental health in elite athletes is complex.[77 561 608–611] Psychosocial factors may increase the likelihood of injury.[612–617] Injury can unmask or precipitate mental health symptoms or disorders,[616 618] and if injury leads to chronic pain, the athlete may develop mental health symptoms and disorders independent of the original injury.[95 619 620] Finally, mental health symptoms or disorders can increase the likelihood of prolonged injury recovery.[612 614 615 621–623]

Psychological and sociocultural risk factors for injury

Psychological and *sociocultural* factors are potential injury risk factors in sport.[77 610 624 625] Psychological risk factors include anxiety/worry, hypervigilance, anger/hostility, lack of attention, indecision, poor body image, low self-esteem, perfectionism, limited coping resources, risk-taking behaviours and low mood state.[610 611 626 627] Sociocultural risk factors include life event stress (eg, death of a family member, new school), limited social resources, prior experiences of sexual or physical abuse,[422 628] social pressures, organisational stress,[629] stress related to negative self-appraisal of athletic and academic performance, coaching quality (eg, poor athlete–coach relationship and communication) and the culture of sport and teams (eg, 'win at all costs' vs growth/improvement mindset).[77 616 630 631]

Limited prospective studies on the association between specific mental health symptoms or disorders and injury risk exist, with conflicting results. In professional soccer players, no relationship was found between symptoms of common mental health disorders and the onset of severe musculoskeletal time-loss injuries. However, those athletes who sustained severe musculoskeletal time-loss injuries were more likely to develop subsequent symptoms of common mental health disorders.[618] In contrast, in male and female collegiate athletes from different sports, those with pre-season anxiety symptoms and males with co-occurring depressive and anxiety symptoms had a significantly higher injury incidence rate compared with athletes without pre-season anxiety or co-occurring depression and anxiety.[626]

A meta-analysis found that a high stress response (ie, negative emotional response after sport injury or other stressful events) and history of life event stressors had the strongest associations with injury rates.[614] A high stress response and life event stress can cause inattention, distraction and increased self-consciousness while increasing muscle tension and impairing coordination, all of which can impede performance and increase the risk for injury.[614 625 630–636] When teammates and coaches are sources of stress (defined using the Life Event Survey for Collegiate Athletes), there is an associated increased risk of both acute and overuse injuries.[631] Emotional reactivity (ie, involuntary and overly intense emotional reactions) is also associated with injury.[612 637 638]

Psychological response to injury

The psychological response to injury should be assessed and managed to improve the health and well-being of elite athletes. This requires ongoing contact between the injured athlete and their health and performance team. The psychological response to injury includes any combination of cognitive, emotional and behavioural responses and is different for each individual.[1] *Cognitive* responses to injury may include concerns about re-injury, doubts about competency, low self-efficacy, loss of identity and concerns about medical staff competency.[620 639 640] For example, a fear avoidance model (FAM) that includes preoperative fear of movement/reinjury, low self-efficacy and pain catastrophising found that those with a 'moderate to high FAM risk' were less likely to RTS at 12 months and had poorer patient-reported outcomes including knee function and quality of life up to 12 months after anterior cruciate ligament (ACL) reconstruction surgery.[640] The mode of ACL injury may also have an impact on psychological readiness to RTS, with lower readiness

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if the injury occurs during versus outside the athlete's primary sport.[641]

Emotional responses to injury may include sadness/crying, depression, suicidal ideation, anxiety, lack of motivation, irritability/anger, changes in appetite and sleep, low vigour, disengagement and burnout.[77 221 618 642 643] Injured athletes report more symptoms of depression and generalised anxiety disorder than non-injured athletes.[221] Whereas emotional responses to injury vary, problematic emotional responses are those that do not resolve, worsen over time or in which the symptoms seem disproportionate to injury severity.[77]

Finally, injury may trigger or unmask *behavioural* responses including increased aggression, social withdrawal, problem gambling, DE or EDs and substance use disorders.[626 644–656]

Psychological factors affecting injury rehabilitation

Persisting mental health symptoms following injury can prolong injury recovery.[610 611] In contrast, athletes with more positive cognitive, emotional and behavioural responses to injury may have improved injury recovery.[182 615 620 657–666] Higher levels of optimism, motivation, resilience and self-efficacy and lower levels of depression and stress following injury are associated with improved recovery.[182 610 615 657–665] Scoring higher on psychological readiness and pain self-efficacy and lower on kinesiophobia and pain catastrophising has been associated with enhanced recovery.[667 668]

Psychological interventions to enhance injury recovery and return to sport

Screening for psychological readiness after injury is an important component of the RTS decision, and several tools are available (table 6).[28 29 77 659 668–681] Additionally, psychological interventions aiming to provide support and enhance RTS might be considered, including: (1) reducing re-injury anxieties using modelling techniques (eg, mindfulness, imagery, graded exposure therapy, videos of athletes who have been successful in RTS)[668]; (2) fostering athlete autonomy (eg, providing athletes with choices, encouraging athlete-driven goal setting, collaborating rather than directing and respecting athletes' perceived sense of control); (3) building confidence and self-efficacy through functional tests and goal setting; (4) providing social support; (5) keeping athletes involved in their sport but avoiding premature RTS; (6) stress inoculation training (a cognitive behavioural approach to manage stress-related anxiety) when surgery is required[621 665 682]; and (7) screening for psychosocial barriers and mental health symptoms.[668]

Mental health emergencies

A mental health emergency exists when an acute disturbance of mental state is associated with a high level of risk and requires an immediate response.[683–685] The disturbance may involve agitation, aggression and/or impaired insight and judgment.[685] Delayed presentation of mental health symptoms—whether due to stigma, limited resources or reluctance to seek help among elite athletes—may contribute to emergency presentations.

A broad range of mental health symptoms or disorders may be associated with an emergency presentation. Any disorder could in certain circumstances present an emergency scenario.[685–687] EDs are a particular concern in sport.[72] Specifically, suicide attempts are seen in roughly one in five bulimia nervosa sufferers and one in eight anorexia nervosa sufferers,[688] and over-exercise in individuals with DE shows a significant association with suicidality.[689] Athletes may use or misuse substances, which increase the risk of an emergency presentation linked to mental health. For example, anabolic androgenic steroids can be associated with hypomanic and psychotic symptoms, aggression and suicide.[350 352 690] Stimulants can be associated with acute anxiety, mood disturbance, aggression, impaired judgment, disorientation and psychosis.[354 691 692] The sympathomimetic agent mephentermine has also been associated with psychosis, especially among chronic users.[356 357] Cannabis now contains much higher tetrahydrocannabinol levels than in the past, conferring a greater risk for psychosis.[693] Stressors such as injury[694] may evoke emergency presentations in part due to use of substances such as alcohol for coping.[695]

Athletes may have acute emotional reactions to difficult sport circumstances such as deselection,[696] which can be experienced as a form of rejection. Those with coexisting personality traits or disorders such as borderline personality disorder may rapidly develop emotional and/or behavioural instability in such situations because of the combination of impulsivity, highly reactive mood, sensitivity to perceived rejection, anger and recurrent suicidal behaviours.[176]

Data on the prevalence of mental health emergencies among elite athletes is sparse.[686] It may be that acute symptoms resolve quickly and/or are not recorded, with injury or performance concerns taking priority for recording and reporting at major events.[685] Additionally, there has historically been a lack of reporting systems for the purposes of systematically recording mental health presentations among populations of elite athletes.[40] Efforts have been made to improve recording during large sporting events and thus to achieve parity with the quality of data that is collected in relation to general medical concerns.[40]

Table 6 Examples of screening tools for psychological readiness to return to sport (RTS) after injury

Screening tool	Description of what the tool measures
Sport Mental Health Assessment Tool 2 (SMHAT2)[29]	Mental health symptoms and disorders in elite athletes
Tampa Scale-11 for Kinesiophobia[670 671]	Pain-related fear of movement
Re-Injury Anxiety Inventory (RIAI)[672]	Re-injury anxiety
Injury-Psychological Readiness to Return to Sport Questionnaire (I-PRRS)[659]	Psychological readiness of injured athletes to return to sport participation
Fear-Avoidance Beliefs Questionnaire (FABQ)[673]	Fear avoidance beliefs about physical activity and how they contribute to low back pain and disability
ACL-Return to Sport After Injury Inventory (ACL-RSI)[674]	Psychological readiness to return to sport participation after anterior cruciate ligament reconstruction
Pain Self-Efficacy Questionnaire[675]	Confidence to complete tasks despite pain
Pain Catastrophising Scale[676]	Negative or exaggerated response to actual or perceived pain

Modified from Herring *et al*.[77]

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The assessment of a mental health emergency in an athlete should include an exploration of the influence of any sport-specific factors that are relevant to the athlete presentation or likely to influence their treatment and recovery plan (eg, perceived or actual performance 'failure', career-altering events or interpersonal conflict between athlete and sport personnel).[697]

The management principles of emergency situations in sport have been described as 'Predict; Prevent; Prepare'.[698] All staff who work in the sport environment should receive appropriate education and practice related to procedures, roles and skills involved with the response to emergency situations.[687] Guidelines for mental health emergencies in elite athletes elaborate on this by defining what scenarios could arise and advising written procedures for how these will be addressed. [561 685 686 699] This includes consideration of the impact of travel on existing procedures, which may need to be adapted accordingly,[700] and where familiarity with local mental health services is advised.[686] Guidelines also describe the importance of rehearsing procedures in advance[701] and reviewing procedures once emergencies have resolved.[686 699] However, many sporting institutions still lack clear guidelines on procedures for mental health emergencies.[702] To encourage and support sporting institutions to prepare for mental health emergencies, an IOC guideline document outlining recommendations for the planning of mental health services at major sporting events was published in 2025. This document outlines details for the pre-event planning of mental health services, implementation during sporting events and post-event evaluation. The publication provides sport organisations with detailed recommendations for the development of a mental health emergency action plan.[701] Regarding specific strategies for emergencies, verbal de-escalation techniques can be extremely useful in the immediate management of acute behavioural disturbance and may obviate the need for pharmacological interventions or physical restraint.[686 703] If de-escalation is not successful, pharmacological intervention may be required. Depending on the underlying cause, this may include sedative, anxiolytic or antipsychotic medication.[686]

Transitions in elite sport

Transitions in elite sport can be temporary or permanent and can include promotions or demotions from one competitive level to another, transfer to another team (which could involve a move to another country and/or a different culture), return from a major competition (eg, Olympics/Paralympics), absences for short- or long-term illness, injury or pregnancy, temporary transitions related to other life circumstances (eg, family crisis or death), the off season, deselection or retirement.[511 704–708] Retirement has been the best studied of these transitions.[709–712]

During the transition from elite sport into retirement, a variety of general and sport-specific factors interact to potentially induce mental health symptoms or impact an athlete's quality of life. Several reviews identified common barriers (eg, involuntary retirement, low social support, career dissatisfaction) associated with difficult transitions and facilitators (eg, sport-life balance, retirement planning, educational attainment) of successful ones (table 7).[709–713] Especially when barriers dominate, mental health symptoms or disorders including anxiety, depression, body dissatisfaction, EDs/DE, grief, identity confusion, problem gambling, sleep disorders and sleep concerns, social isolation and/or substance misuse may develop or worsen.[511 707–712] According to two systematic reviews, these negative consequences may occur in 15–20% of transitioning athletes, especially those who leave because of injury, deselection or with extreme career dissatisfaction.[710 711]

Table 7 Barriers to and facilitators of elite athlete transition into retirement[511 707–712]

Barriers	Facilitators
High athletic identity	Good sport/life balance
High perfectionism	Positive self-perception
Sport career dissatisfaction	Sport career satisfaction
Involuntary retirement (injury, deselection)	Voluntary retirement (eg, new life direction)
Adverse life events/stressors	Social support network
Despair about future career	Longer length of time since retirement
Lack of coping strategies	Psychological resilience
Low social support/social isolation	Transition support programme involvement
Lack of retirement career planning	Planned post-retirement occupation
Education and resource dissatisfaction	Educational attainment
Financial distress/bankruptcy	Financial planning and support
Coach/athlete conflicts	Ongoing connections with supportive coaches
Loss of structure/daily schedule	Strong organisational and coping strategies
General health problems	Good general physical health
Osteoarthritis and chronic pain	Healthy bones and joints
Multiple prior concussions	Healthy neurological/cognitive functioning
Increasing body mass index	Maintaining healthy nutrition, physical activity and fitness
Chronic pain	Absence of serious injuries or chronic pain
Harassment and abuse while competing	Safe sporting environments
Sports-centred lifestyle	Developing interests/skills outside of sports
Absence of transition mental health resources	Accessed transition mental health support (eg, psychotherapy)
Perceived lack of control over retirement	Perceived control over life and transition
No organised retirement planning	Accessed pre-transition/retirement planning
Intense training/competition until retirement	Gradual reduction of training/competition
Poorly developed transferable skills	Transferable skills (eg, communication or planning skills from leadership positions held within sport)

The leadership of sports organisations and teams as well as members of an athlete's family and entourage can ease the transition into retirement, especially for those who leave involuntarily or who are already struggling with mental health symptoms or disorders. During an athlete's career, individuals in the athlete ecosystem can advocate for a balanced emphasis on mental well-being, physical health, personal growth, identity diversification and dual career development by supporting on-site or regional networks of cost-free mental health and wellness services and player development/career assistance programmes.[15 714–728] Existing mental health and career assistance positions and programmes can facilitate sports excellence, continuing education, financial literacy, coping/life skills development, mental well-being and transition planning both before and after transitions out of sport.[729–733]

Other strategies to facilitate positive transitions from sport include: (1) creating individualised 'retirement support frameworks' (ie, establishing interests and identities outside of sport, longitudinal pre-retirement planning, building adaptive coping strategies and post-sport mentorship and support)

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and designating specific individuals to monitor their effectiveness[725]; (2) strengthening the 'exit health examination' by conducting mental health screening and providing linkages to mental health services[186]; (3) providing a comprehensive longitudinal 'After Career Consultation' that promotes a healthy lifestyle, develops future employment opportunities and seeks to prevent/manage osteoarthritis and mental health/cognitive problems[733]; (4) connecting athletes with support and resources from their International Federations and National Governing Bodies, sports organisations, corporate sponsors or foundations[45 734 735]; and (5) expanding access to the IOC's or each National Olympic Committee's (NOC's) Career/Professional Development Programmes that include life skills/dual career development and psychological counselling services.[731 736 737] Since elite athletes who continue to train and compete may find it difficult or distracting to focus on life after sports, their organisations should commit to creating environments that facilitate support for all types of transitions, but especially transition into the early retirement years.[511 724 738 739] Elite female athletes, who tend to retire earlier than elite male athletes—in part because of inadequate financial support and work-family conflict—may merit special attention and support.[739]

Elite Para athletes

Although athletes with disabilities may experience the same stressors of elite sport as discussed in earlier sections of this paper, participation in elite Para sport is uniquely associated with additional risk factors for mental health symptoms and disorders that are distinct from those observed in athletes with no disability. The classification process may be a significant stressor that many elite Para athletes feel unprepared to navigate.[740 741] Athletes may also struggle with the 'superhuman' media narrative that fails to acknowledge authentic identities both in and out of sport.[740] Additional athlete stressors may include disability stigma and bias, inaccessible venues and accommodations, lack of Para sport-specific coaching, poor audience attendance at Para sport events and cost of Para sport equipment.[741] Transition out of Para sport is often a particularly challenging time for athletes due to uncertainty regarding post-sport employment and loss of athletic identity, particularly if the transition is sudden such as with an unexpected injury or unanticipated issues related to classification.[742] Para athletes are also at higher risk for psychological, physical and sexual interpersonal violence compared with non-disabled peers.[278] Importantly, elite Para athletes report a higher rate of unmet health care needs compared with athletes without disability.[743] While mental health research in Para sport has primarily focused on athletes with physical disabilities or those who are blind or have low vision, non-apparent disabilities such as learning disabilities can also have a significant impact on mental health.[744]

The prevalence of mental health symptoms and disorders in elite Para athletes varies by disability type and sport classification and is further influenced by the use of different assessment tools, many of which are not validated for this population.[745] Sleep disturbance,[92 94 95] anxiety[95 217 218] and depression[95 217 218] are the most frequently reported psychological outcomes reported in the elite Para athlete literature. Among elite Australian Olympic and Paralympic athletes, no significant differences were observed between athletes from Para and non-Para sports for most mental health symptoms, although elite Para athletes reported lower alcohol consumption and self-esteem.[438]

Routine mental health assessment is important for elite Para athletes, and targeted screening and support may be particularly important during the time of transition out of sport. There is a paucity of mental health intervention research in this population. In one pilot randomised controlled trial, athletes undergoing a 'mindfulness-acceptance-commitment' programme with a motivational interviewing framework demonstrated improvements in life satisfaction, personal growth, positive relationships with others and reduced perceptions of pain in comparison to controls.[746] There may be many factors that affect access to mental health services for elite Para athletes, including transport barriers, inaccessibility of facilities and language barriers. For example, there are relatively few mental health professionals competent to offer services in sign languages. These issues need to be considered in treatment planning.[747]

Elite young (adolescent) athletes

In the general population, an estimated 50% of common mental health disorders—such as anxiety, mood, eating, substance use and neurodevelopmental disorders—emerge before the age of 18,[748] underscoring the need for appropriate screening and assessment among elite young athletes.[749] A confluence of biopsychosocial factors contributes to mental health symptoms and disorders during this developmental phase, including puberty, social disadvantage, trauma, identity formation challenges, peer conflict and harmful social media use.[750 751] Sex is a strong correlate, with adolescent girls more likely than boys to report anxiety, mood and eating disorders, and boys more likely to report problematic substance use.[751]

Elite young athletes across different cultures also encounter sport-specific challenges that impact their mental health, including heightened performance expectations (from self and/or others), adverse effects of early sport specialisation such as overuse/musculoskeletal injury[752] and high athletic identity,[753] possible exposure to interpersonal violence in sports settings, heightened susceptibility to injury and overtraining or burnout.[754 755] Such stressors are usually experienced alongside existing academic or vocational demands during this stage of life,[15] which should be considered and supported.[756]

To complement the recent IOC consensus statement on elite young athletes,[526] Gwyther and colleagues[757] conducted a scoping review examining the mental health of high-level athletes aged 12–17 years who travel and compete internationally. Data from the 33 studies that met the inclusion criteria indicated that elite young athletes report mental health symptoms at similar rates to their adult counterparts. DE is over-represented in the literature (n=16), particularly among female gymnasts. Conversely, disorders such as ADHD and autism spectrum disorder are under-represented in the literature on elite young athletes, despite growing recognition of neurodevelopmental disorders and the potential challenges they may bring in sporting contexts.[744 758] Factors commonly associated with poorer mental health outcomes in elite youth athletes were sex (female for DE and mental well-being; male for substance use), mental health comorbidities and various forms of perceived and/or objective stress.[757] Common factors associated with positive mental health outcomes included positive self-esteem, strong social support and healthy relationships with peers, family and coaches.[757]

Research has also considered the mental health of elite-striving young athletes in development or pathways programmes, including elite sporting schools. Most of this research has focused on burnout, EDs and sleep disturbance,[312 759–762] with few studies examining the prevalence of a wider range of mental health symptoms and disorders. Moderate to severe depressive symptoms have been reported to range from 9.5% to 19%.[763 764]

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There is currently no clear indication as to whether elite-striving young athletes are more or less likely than their non-athletic peers to report experiencing mental health symptoms and disorders, with research reporting mixed results in this regard.[765 766] In addition to sex[764] and younger age,[242] key risk factors for mental health symptoms and disorders in young elite-striving athletes include deselection,[696 765] experiencing performance-related shame, guilt or embarrassment,[767 768] perfectionism,[769 770] participating in individual rather than team sports[771] and negative parental style such as stigmatising attitudes towards mental health symptoms and disorders, authoritarian approach and neglect.[772]

Research conducted in low- and middle-income countries, which are less studied, indicates unique challenges for young athletes in these settings, including a shortage of mental health professionals and lack of resources.[773–775] Life satisfaction was positively correlated with mental toughness and religiosity among youth athletes from Indonesia.[776] Non-conventional approaches to addressing mental health symptoms and disorders in these locations may represent culturally acceptable pathways to healing but can also have uncertain risks versus benefits.[773–775]

Sport as a subset of physical activity to promote mental health

While this consensus statement focuses on mental health symptoms and disorders experienced by elite athletes through their sport career, it remains essential to acknowledge that sport, as a subset of physical activity, is generally beneficial for short- and long-term physical and mental health.[777] Specifically, remaining regularly physically active through sport provides benefits for mild to moderate mental health symptoms for most athletes and can lead to improved sleep, stress relief and alertness, increased energy and favourable weight management and body image.[777–779] Participation in sport is also linked to higher self-esteem and higher life satisfaction.[780] These effects might be explained by physiological reactions (eg, increased blood circulation in the brain, improvement of hypothalamus-pituitary-adrenal axis functions) as well as by distraction, self-efficacy and social interaction.[779] Mental health outcomes are likely to depend on the type and the social environment of sport, as well as the way in which it is delivered.[781]

FINAL CONSIDERATIONS

Actionable recommendations

The content of this report reflects the evidence and themes presented and discussed at the in-person meeting of the Mental Health in Elite Athletes Consensus Group. Following that meeting, a Delphi voting process was conducted. Sixty-three recommendations were rated in the first round of ratings, 12 in the second round and seven in the third and final round, with modifications occurring between rounds to statements not meeting consensus criteria for inclusion. At the end of this process, all 63 statements met the inclusion criteria. These actionable recommendations are listed in table 8.

Dissenting viewpoints

Twenty-four of the finalised recommendations had at least one score of 4 or 5; while meeting consensus criteria for inclusion, these scores nonetheless represented lower enthusiasm or questions by panel members about a recommendation for inclusion. Open-ended comments corresponding to these ratings are presented in online supplemental file 5 and clustered into six thematic categories. Ten of these recommendations had feedback related to wording clarity or specificity. These comments were closely reviewed by the working group to determine whether minor revisions could improve readability without changing the substance of the recommendation. Five recommendations had comments related to feasibility, specifically regarding the resources required for implementation across settings. Four recommendations prompted questions about alignment with the current evidence base or with experts' clinical experience. Three comments addressed the intended audience for recommendation—for example, whether the responsibility for preventing interpersonal violence should extend to athletes. Two recommendations received feedback regarding the appropriateness of the recommendation as worded, including suggestions that athlete consent may be necessary before involving coaches or parents in mental health initiatives. For two additional recommendations, respondents questioned whether the proposed screening and assessment tools are valid and reliable across contexts.

DISCUSSION

Although research on elite athlete mental health has expanded rapidly in recent years, there remains no universally accepted gold standard guidance that is applicable across populations and settings. As such, a consensus approach using Delphi methodology was undertaken to aggregate expert opinion. This paper describes the state of the literature on elite athlete mental health and summarises the clinical key points in the form of actionable recommendations for health care providers of elite athletes.

Potential benefits of this consensus statement include increased awareness of the importance of mental health in elite sport. Furthermore, it aspires to improve the quality of health care afforded to elite athletes across settings. That is, some degree of standardisation of care - aligned with the evidence base described in this statement - across countries and sports could improve care for many elite athletes. However, variations in the cultures that exist within different geographic locations, demographic groups and sports remain challenging. These variations must be acknowledged so that these recommendations are considered in contextually appropriate ways. The clear actionable nature of the recommendations and the attention to making them relevant across diverse contexts will help support effective implementation. Barriers to application include widely varying resource levels of target audiences and continued mental health stigma. More research about elite athlete mental health in low- and middle-income countries was identified as a critical area in the research agenda generation that occurred in tandem with this consensus process.[782]

This research has some important limitations. There was potential bias in findings based on the panel membership and the evidence base, both of which disproportionately came from high-income countries. Furthermore, while athlete and International Sports Federation representation was included, other members of the elite athlete entourage, including elite athlete coaches and the full spectrum of high-performance support staff, were not represented. Additionally, the wide variation in types of quantitative and qualitative research included in this statement precluded formal systematic assessment of quality of the included studies. Finally, given the rapid evolution of this field, it will be important to update this statement regularly, ensuring that recommendations remain current and reflect emerging evidence.

To address these limitations, future research should continue to involve athletes as partners, employ robust and culturally responsive methodologies and emphasise real-world implementation

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Table 8 Actionable recommendations for health care providers of elite athletes

Topic	Recommendation
General	Supporting elite athlete mental health means not only preventing or treating mental health symptoms and disorders but also promoting mental well-being.
	Elite athletes' mental health is dynamic and can change over time in response to sport-specific and everyday life demands. Elite athletes may also develop mental health symptoms and disorders. Timely support matched to individual needs can help improve mental well-being and address clinical problems.
	Treatment options to consider for mental health symptoms and disorders in elite athletes include psychotherapy, medication and other culturally or contextually appropriate modalities. The optimal approach should be individualised and person-centred, guided by the specific diagnosis, the severity of distress or dysfunction and the evidence base for particular management strategies.
Prevalence of mental health symptoms and disorders in elite athletes and their entourage members	Everyone involved in elite sport should be aware that mental health symptoms and disorders are experienced by not only athletes but also coaches, members of the elite athlete health and performance team and others in clinical and non-clinical roles.
Screening and surveillance of mental health symptoms and disorders in elite athletes	Screening and surveillance undertaken at regularly scheduled time points and at the time of significant occurrences/events can help identify elite athletes in need of further mental health evaluation and support.
	Screening and surveillance of mental health symptoms and disorders in elite athletes should be conducted using validated approaches.
	The IOC Sport Mental Health Assessment Tool 2 includes validated disorder-specific screening tools and clinical assessment and management guidance for physicians and other licensed/registered health professionals working with elite athletes.
Psychotherapy	Psychotherapy, either as monotherapy or combined with other non-pharmacological and pharmacological strategies, is a foundational component of the management of mental health symptoms and disorders in elite athletes.
	Psychotherapy for elite athletes should be culturally responsive, recognising that culture influences how distress is experienced, expressed and managed.
Pharmacological treatment	When prescribing medications for mental health symptoms and disorders in elite athletes, health care providers should understand the potential negative impacts on sports performance, safety risks, and whether the medication is prohibited by any sport governing body, such as the World Anti-Doping Agency.
Mental health considerations for removal from and return to sport	With appropriate support and treatment, many athletes experiencing mental health symptoms or disorders can continue to train and compete safely.
	If elite athletes experience mental health symptoms and disorders that compromise safety, stability or function, it may be necessary to modify sport participation. For some athletes, this may include ceasing sport training and competition until they are cleared by a licensed clinician to return to sport.
	When planning for return to sport participation, it is important to consider supports and stressors in the elite athlete's sport ecosystem, including teammates, coaches, staff, family, organisations and other aspects of their sport environment.
Sleep	Assessment for sleep disorders and sleep concerns in elite athletes typically involves self-reports of symptoms, which may be supplemented by at-home or in-laboratory tests, depending on the disorder of concern and the available resources.
	Non-pharmacological treatments are recommended for many sleep disorders in elite athletes because they are effective and because many medications for sleep disorders are associated with increased injury risk and/or performance impairment.
	Sub-clinical sleep issues (eg, insufficient sleep, daytime sleepiness) can often be ameliorated through behavioural and environmental interventions.
Major depressive disorder and depressive symptoms; suicide	Differentiating between major depressive disorder, burnout and overtraining syndrome in elite athletes is important for providing the most effective treatment.
	Prevention of suicide in elite athletes may include strategies that foster mental health literacy, suicide risk factor identification, targeted support and structured safety plans.
Anxiety disorders and obsessive-compulsive and related disorders	It is important to distinguish anxiety and obsessive-compulsive disorder (OCD) symptoms from other common experiences within elite sport. For example, distinguish elevated arousal associated with competition from symptoms of an anxiety disorder, and distinguish athlete superstitions from OCD symptoms.
	Early detection and intervention are critical to ensuring that anxiety, OCD and related disorders do not become persistent and debilitative in elite athletes.
Trauma- and stressor-related disorders	Clinicians should recognise the crucial nature of the therapeutic alliance when working with elite athletes with trauma- and stressor-related disorders, as a positive therapeutic alliance increases the likelihood of interventions being effective.
	Trauma- and stressor-related disorders in elite athletes should be treated early, as that may reduce the risk of progression to more chronic mental health disorders such as post-traumatic stress disorder.
	When managing elite athletes with trauma- and stressor-related disorders, clinicians should consider team-based and/or individual athlete-based approaches, depending on the nature of the trauma and the impact on those involved.

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Table 8 Continued

Topic	Recommendation
Eating disorders and Relative Energy Deficiency in Sport (REDs)	REDs is caused by severe and prolonged low energy availability (inadequate intake relative to energy needs) and manifests as impaired physiological and psychological functioning. Clinicians should assess athletes for REDs even in the absence of disordered eating or an eating disorder.
	When possible, a multidisciplinary team should manage most elite athletes who present with disordered eating, eating disorders or REDs. This may include a sports medicine physician, dietitian, licensed mental health professional(s) and other culturally or contextually appropriate carers.
	Screening for eating disorders in elite athletes poses challenges (under-reporting and difficulties in distinguishing between normative and pathological behaviours in an elite sport context). Validated screening instruments such as the Eating Disorder Examination Questionnaire (EDE-Q) can identify elite athletes at risk for eating disorders, but clinical interviews are needed to diagnose eating disorders.
	The 2023 International Olympic Committee's REDs Clinical Assessment Tool (IOC REDs CAT2) can help facilitate diagnosis of REDs, stratify severity, and guide treatment and sport participation decisions.
	Treatment of REDs should address presenting physiological dysfunction(s) (eg, low bone mineral density, GI dysfunction) as well as psychological outcomes from exposure to problematic low energy availability.
Attention-deficit/hyperactivity disorder (ADHD)	If stimulants are prescribed for medical treatment of elite athletes, clinicians should check if a Therapeutic Use Exemption is required.
	When evaluating individuals for ADHD, the assessment should include consideration of common comorbidities such as mood disorders, anxiety and related disorders, learning disorders, substance use disorders and sleep disorders.
Bipolar and psychotic disorders	It is important to distinguish bipolar and psychotic disorder symptoms from other common experiences within elite sport. For example, distinguish the effects of commonly misused substances in sport from primary bipolar/psychotic disorders, and distinguish high levels of activity associated with sport from mania.
	Athletes with severe and chronic mental health disorders who have transitioned out of elite competition often benefit from regular exercise, which may include continued participation in sport, for the purposes of improved physical health, mental health symptoms and functioning.
Personality disorders	Personality disorders should be considered in elite athletes who present with a pattern of disruptive behaviour, sport-related sanctions, legal difficulties and/or maladaptive perfectionism.
Substance use	Misuse of alcohol, tobacco/nicotine and cannabis is common among elite athletes. Early identification using validated screening tools, combined with brief interventions, can help prevent progression to substance use disorders.
	For some elite athletes, brief individualised motivational interventions—incorporating contingency management and involving coaching staff and/or family members—can shift attitudes and beliefs about substance misuse and reduce frequency of use.
	Clinicians need to be aware of the most commonly used performance-enhancing drugs and their mental health effects.
Gambling disorder and other behavioural addictions	Behavioural addictions are often 'hidden disorders' and thus are often difficult to detect unless elite athletes are asked targeted questions.
	Management of behavioural addictions in elite athletes primarily consists of cognitive behavioural therapy and/or motivational interviewing.
Concussion	Mental health symptoms should be monitored after concussion in elite athletes.
	Sub-symptom threshold aerobic exercise is recommended as an early intervention to manage post-concussive mental health symptoms in elite athletes.
	Cognitive rehabilitation and neurocognitive training are effective interventions for persisting mental health symptoms in elite athletes post-concussion.
Creating an environment that supports mental well-being and resilience in elite athletes	Everyone involved in elite sport should have a basic understanding of mental health, including how to recognise signs and symptoms of mental health disorders, access appropriate support and promote mental well-being. Clinicians with mental health expertise are well positioned to provide and interpret evidence-based information. Others in the sport ecosystem—such as organisational leaders, coaches and staff in non-clinical roles—can play a key role in supporting the dissemination and reinforcement of this information, helping to create environments that prioritise mental health.
	Encouraging the involvement of coaches, parents/caregivers and community resources as appropriate in mental health initiatives can help create a supportive sport ecosystem.
	Interpersonal violence in elite athletes is associated with an elevated risk of mental health symptoms and disorders as well as risk-taking behaviours. Clinicians should screen for a history of interpersonal violence both within and outside the sport context.
	Everyone in the sport ecosystem is responsible for protecting athletes from interpersonal violence.
Cultural considerations and inclusivity	Understanding, respecting and integrating an athlete's cultural background into care helps build trust and is essential for both accurate assessment and effective management.
	The potential impact of structural inequalities and social determinants of mental health should be considered when addressing mental health needs in elite athletes.
Barriers to mental health care seeking	Elite athletes may encounter numerous barriers to seeking and sustaining mental health care—including stigma, low mental health literacy, cultural perceptions, fear of negative judgment, concern about losing sport opportunities and logistical challenges. Clinicians should actively address these barriers with athletes and their support team.
	Interventions to decrease barriers to care seeking should be tailored to the unique needs and assets of a given athlete population and their context, and should consider the availability, accessibility, quality and fit of care.
Social media and mental health	Clinicians should provide elite athletes with guidance on the potential mental health impacts of social media use, while recognising that this is a rapidly evolving area in terms of both technology and emerging evidence.
	Clinicians should discuss social media use with elite athletes within ongoing clinical care. This information can be used to help the clinician and athlete understand how it is functioning to enhance (eg, via social connection) or impair (eg, via abuse, cyberbullying, negative body image or compromised sleep) mental health and performance, and to determine whether changes in social media use would be clinically beneficial.
How injury, performance and mental health intersect	The psychological response to injury should be assessed and managed to improve the health and well-being of elite athletes. This requires ongoing contact between the injured athlete and their health and performance team and provision of opportunities for support following injury.
	Screening for psychological readiness to return to sport can help with return to sport decisions following injury.

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Table 8 Continued

Topic	Recommendation
Mental health emergencies	A broad range of mental health symptoms or disorders can lead to mental health emergencies in elite athletes, requiring an immediate response from trained personnel.
	Planning ahead (eg, creating and rehearsing an emergency action plan) is important for ensuring an appropriate response if a mental health emergency occurs.
Transitions in elite sport	Athletes are at risk of mental health challenges in the transition from elite sport, with risk heightened for athletes facing involuntary retirement, career dissatisfaction, persistent illness or injury, chronic pain, inadequate post-retirement planning or limited external support. Athletes should receive targeted mental health support both before and after their transition out of sport.
	Structured support, including career assistance programmes, is helpful for many athletes in their transition from elite sport. The International Olympic Committee and some International Federations and National Governing Bodies have well-developed career assistance programmes that can be shared with elite athletes.
Elite Para athletes	Health care providers for elite Para athletes should consider that participation may be associated with unique mental health stressors including disability stigma and bias, the classification system, inaccessible venues and accommodations and cost of Para sport equipment.
	Routine mental health assessment is important for elite Para athletes, who report a higher likelihood of having unmet health care needs compared with athletes with no disability.
	The transition out of Para sport can be a particularly high-risk period for elite Para athletes due to the loss of athletic identity and uncertainty around post-sport employment. Targeted screening and support should be available during this time.
Elite young (adolescent) athletes	Mental health symptoms and disorders frequently develop before 18 years of age, underscoring the need for appropriate screening and assessment among elite young athletes.
	The demands of high-performance sport often co-occur with academic and/or vocational commitments, contributing to potential cumulative stressors during the elite young athlete phase that should be considered and supported.
How sport can be used to promote mental health	Support elite athletes to maintain a healthy, sustainable relationship with their sport in a positive environment, so as to promote the positive mental health outcomes of continued sport participation.

and evaluation across varied sport settings. Priorities include generating stronger evidence for preventive and system-level interventions, advancing measurement tools appropriate for diverse athlete groups and exploring scalable approaches in low-resource contexts. Broadly, this work will strengthen the evidence base and support ongoing refinement of consensus-driven guidance. A systematic approach to aggregating expert feedback about areas for future research, addressing these limitations to the current evidence base, was undertaken in parallel to this consensus process. The results are reported separately.[782]

CONCLUSION

Mental health is an integral and essential component of elite athlete health and overall well-being. The responsibility for prevention, recognition and management of mental health symptoms and disorders and for promoting well-being extends across the entire elite sport ecosystem. Multiple interacting biopsychosocial and ecological factors influence athlete well-being, necessitating system-level attention and coordinated strategies. Elite athletes experience mental health symptoms and disorders at rates similar to, or higher than, the general population, and their presentations and care needs may differ from those of non-athletes. Ensuring that clinicians, coaches and sport organisations are prepared to recognise, respond to and proactively support mental health is essential to safe, ethical and sustainable elite sport participation.

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Acknowledgements The authors acknowledge Dr Robin Mitchell (IOC Health, Medicine and Science Commission Chair) for his leadership and participation in the consensus meeting and Fiona Trabelsi (IOC Health, Medicine and Science Department) for her expert organisation of the consensus meeting logistics.

Contributors CLR, BH and VG were responsible for the design, development and collation of contributions. All authors were responsible for drafting the manuscript and were involved in the conception, revising and approval of the manuscript prior to submission. EK-H, MEH, CLR, BH and VG were responsible for drafting and implementing the methods. All authors agreed to be accountable for the work in ensuring that questions related to the accuracy or integrity of the work are appropriately investigated and resolved. The guarantor, CLR, accepts responsibility for the finished work and the conduct of the study and controlled the decision to publish.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Disclaimer This consensus paper provides an overview of mental health issues in elite athletes that are important to physicians and other clinicians who treat elite athletes. It is not intended as a clinical practice guideline or legal standard of care and should not be interpreted as such. This consensus paper serves as a guide and, as such, is of a general nature, consistent with the reasonable practice of the health care professional. Individual treatment will depend on the facts and circumstances specific to each individual case.

Competing interests CLR is Co-chair of the IOC Mental Health in Elite Athletes Consensus Group. VG is Co-chair of the IOC Mental Health in Elite Athletes Consensus Group and Chair of the IOC Mental Health Working Group. EK-H is a paid consultant of the National Collegiate Athletic Association. CB is an Associate Editor of the British Journal of Sports Medicine and a member of the IOC Health, Medicine and Science Commission. MG has received grants from Harmony Biosciences and has served as a consultant to Google, Vytalogy, Smartypants Vitamins, Kenvue, Haleon, Canyon Ranch and Wndr Hlth. MM is a member of the IOC Mental Health Working Group and is a Deputy Editor and member of the Injury Prevention & Health Promotion Editorial Board of the British Journal of Sports Medicine. RP was an external consultant on mental health to the IOC and is a member of the IOC Mental Health Working Group. JST is Director of Health, Medicine and Science at the International Olympic Committee and is a member of the Editorial Board of the British Journal of Sports Medicine. BH is Co-chair of the IOC Mental Health in Elite Athletes Consensus Group.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

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