



# Mental health difficulties among professional footballers

## A narrative review

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**Abstract:** *Introduction:* In parallel with several current and former players' high-profile disclosures of psychological difficulties, academic studies published during the past decade have begun to examine the mental health of professional footballers. To date, a comprehensive review and critical analysis of these studies has yet to be conducted. *Design:* A narrative review of the literature was conducted following a Medline database search. *Results:* Thirteen studies were included in the review. A variety of mental health difficulties were explored, including depression, anxiety, distress, disordered eating, sleep disturbance and alcohol and substance use. Female players reported symptoms of common mental disorders more frequently than their male counterparts. Retired footballers reported increased rates of all mental health difficulties compared to active players. It is difficult to compare prevalence rates with both the general population and groups of other athletes due to the use of a variety of screening measures. *Conclusion:* The prevalence of symptoms of common mental disorders appears to be largely consistent with general population levels and in keeping with studies of other elite athlete groups, but further research is required to clarify this definitively. Injury and being retired were frequently associated with symptoms of common mental disorders, indicating that the screening and support of players during these vulnerable transitional periods may be of particular importance.

**Keywords:** mental illness, sport psychiatry, athletes, injury

## Introduction

Unidentified or untreated mental disorder may lead to sub-optimal performance and reduced quality of life among professional football players yet, as recently as a decade ago, the medical examinations of footballers rarely, if ever, included a psychiatric or psychological component [1, 2]. More recently, soccer organisations have aimed to address mental illness and minimise its deleterious impact via the dissemination of information in well-publicised campaigns and the formulation of pathways to medical expertise [3, 4, 5]. Thus far, various interventions within elite level soccer have lacked the support of a firm research base from which to expand.

Participation in professional football is associated with beneficial long-term health outcomes compared to the general population, chiefly superior cardiovascular health [6, 7]. Conversely and somewhat alarmingly, the findings of research examining the neurocognitive sequelae of being a professional football player have not been as positive [8, 9]. This has in part led to adaption of training schedules and rule changes in some jurisdictions [10, 11]. The mental health of elite athletes has received greater attention in recent years, leading to the development of consensus

statements from governing bodies and the launch of sport-specific screening tools aimed at the early recognition of mental illness [12, 13]. These publications have, however, highlighted the limitations of the current research exploring mental health in sport. Following the publication of a number of studies examining this in football during the past 5–10 years, a comprehensive review and critical analysis may aid future strategy and research development within the sport.

## Objectives

The review aimed to both:

- (i) evaluate the existing literature examining the prevalence of mental health symptoms and disorders among professional footballers.
- (ii) provide suggestions for clinical practice and future research in this area.

## Methods

A literature search of the Medline database was conducted by one author (GW), combining the keywords “soccer” OR “football” with (AND) any of the following keywords:

“psychiatry”; “psychology, clinical”; “psychology, sports”; “psychology, medical”; “psychology”; “mental health”; “mental disorders”; “stress, psychological”; “depression”; “affective symptoms”; “mood disorders”; “anxiety”; “anxiety disorders”; “psychotic disorders”; “schizophrenia”; “alcoholism”; “alcohol drinking”; “substance-related disorders”; “drug misuse”; “prescription drug misuse”; “gambling”; “feeding and eating disorders”; “suicide”; “suicide, attempted”; “personality disorders”; “attention deficit disorder with hyperactivity”; “sleep wake disorders”. The results were screened independently by all three authors according to the inclusion and exclusion criteria listed below. Studies examining head injury and cognitive deficits were deemed to be beyond the remit of the review for two reasons: the growing number of recent publications examining this area in the context of repeated heading and the greater impact among retired versus current players.

A manual search of reference lists was also undertaken and one author (GW) additionally searched the *BMJ Open Sport and Exercise Medicine* journal (not searched via Medline) for the keywords “soccer” and “football”.

#### Inclusion criteria:

1. Professional/elite level footballers.
2. Quantitative or qualitative data on mental health disorders or their symptoms.
3. English language.

#### Exclusion criteria:

1. Non-professional/non-elite status (e.g. amateur players).
2. Review articles.
3. Case reports.
4. Book chapters.
5. Conference abstracts.
6. Full text article unavailable.

## Results

A total of 13 studies met the inclusion criteria. The Medline database search yielded 75 results, from which 9 publications were retained after initial screening of study titles. A total of 4 studies were ultimately included after abstracts or, where necessary, full publications were reviewed. A search of the *BMJ Open Sport and Exercise Medicine* for the keywords “football” and “soccer” yielded 287 and 210 results respectively, although many publications appeared in both lists. From these results, 9 studies were retained after the screening of study titles, with a final total of 5 studies included after abstracts or full publications were reviewed. A further 4 studies were identified via a manual search of the reference lists of both the included studies and recently published book chapters.

The publication dates for the 13 included studies ranged from 2015 to 2021 and sample populations included professional footballers based in Europe (Belgium, Finland, France, Germany, Ireland, Netherlands, Norway, Scotland, Spain, Sweden, and Switzerland), South America (Brazil, Chile, Paraguay, and Peru), the United States, Australia, New Zealand and Qatar. The majority of studies were cross-sectional in design (n=9), but two case-control studies, an observational prospective cohort study and a retrospective cohort study were also reviewed. The studies sampled male (n=7), female (n=4) and mixed-sex (n=2) populations, examining mood (11 studies) [14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24], anxiety (10 studies) [14, 15, 16, 17, 18, 19, 21, 22, 23, 25], distress/burnout (6 studies) [14, 15, 16, 17, 18, 23], disordered eating (5 studies) [14, 15, 16, 17, 23], sleep disturbance (6 studies) [15, 16, 17, 18, 23, 26], alcohol use (6 studies) [14, 15, 17, 18, 23, 24], substance misuse (1 study) [23] and gambling (1 study) [23]. Full details of the studies are reported in Table 1.

## Depression

Five studies utilised the General Health Questionnaire-12 (GHQ-12) [27] screening tool, unfortunately with the result that depression and anxiety symptoms were not separately assessed (see anxiety summary below also). A global six country 2015 study of 253 male current and former footballers found a 26% prevalence of depression/anxiety symptoms among current players and a 39% prevalence among former players [14]. Although the authors noted that the prevalence of common mental disorders was higher than that observed in other studies of both the general public (prevalence of common mental disorders ranging from 5 to 25%) [28, 29, 30] and French Olympic athletes (17% encountering previous mental health problems) [31], they did not report specific comparative figures for depression/anxiety. Major life events in the preceding 12 months were associated with depression/anxiety in both current (OR 1.4;  $p < 0.01$ ) and former (OR 1.4;  $p < 0.05$ ) players. Low social support from teammates was also associated with depression/anxiety in current players (OR 1.1;  $p < 0.01$ ).

A further 2015 study of 540 male footballers within five European countries demonstrated a range of depression/anxiety from 25.0% in Spain to 43.3% in Norway [15]. The authors noted typically lower reported rates of depression/anxiety (ranging from 13% to 25%) in Australian and European general population studies [28, 32, 33]. Life events and career dissatisfaction were associated with depression/anxiety. A global study of 607 male footballers [16] published the same year reported a prevalence of depression/anxiety of 37.9%, again comparing the rate with the rates of depression/anxiety reported in the three

**Table 1.** Summary of included studies

Study; year; country	Study type	Participant characteristics, n (male:female)	Mental health questionnaire	Summary of key findings
Foster <i>et al.</i> ; 2017; Brazil [25]	Longitudinal case-control	52 (0:52)	BAI	Premenstrual syndrome (PMS) associated with higher levels of anxiety (p=0.002).
Gouttebarga <i>et al.</i> ; 2015; Australia, Ireland, Netherlands, New Zealand, Scotland, USA [14]	Cross-sectional	253 (253:0) 149 current players (149:0) 104 former players (104:0)	GHQ-12 Utrecht Burn-Out Scale Distress Screener (adapted 4DSQ) 4 questions on nutritional habits AUDIT-C Rosenberg's Self-Esteem Scale SARRS	The prevalence of mental health complaints ranged from 5% (burnout) to 26% (anxiety/depression) in 149 current players and from 16% (burnout) to 39% (anxiety/depression) in 104 former footballers. In both current and former players, mental health problems were significantly associated with low social support (odds ratio [OR]=1.1) and recent life events (OR=1.4–1.6).
Gouttebarga <i>et al.</i> ; 2015; Finland, France, Norway, Spain and Sweden [15]	Cross-sectional	540 (540:0)  Current players	GHQ-12 Distress Screener (adapted 4DSQ) 4 questions on nutritional habits PROMIS (short form) AUDIT-C SARRS	The greatest prevalence of symptoms related to common mental disorders were 18% for distress (Sweden), 43% for anxiety/depression (Norway), 33% for sleep disturbance (Spain), 17% for adverse alcohol behaviour (Finland), and 74% for adverse nutrition behaviour (Norway). In Finland, France and Sweden, both life events and career dissatisfaction were associated with distress, anxiety/depression, adverse alcohol behaviour, and adverse nutrition behaviour.
Gouttebarga <i>et al.</i> ; 2015; Belgium, Chile, Finland, France, Japan, Norway, Paraguay, Peru, Spain, Sweden and Switzerland [16]	Cross-sectional	607 (607:0)  Current players	GHQ-12 Distress Screener (adapted 4DSQ) 4 questions on nutritional habits PROMIS (short form) AUDIT-C SARRS	The prevalence of symptoms of common mental disorders and adverse health behaviours ranged from 4% for smoking and 9% for adverse alcohol behaviour to 38% for anxiety/depression and 58% for adverse nutrition behaviour. Significant associations were found for a higher number of severe injuries with distress, anxiety/depression, sleeping disturbance and adverse alcohol behaviour; an increased number of life events with distress, sleeping disturbance, adverse alcohol behaviour and smoking; as well as an elevated level of career dissatisfaction with distress, anxiety/depression and adverse nutrition behaviour. Statistically significant correlations (p<0.01) were found for severe injuries and career dissatisfaction with most symptoms of common mental disorders.
Gouttebarga <i>et al.</i> ; 2016; Finland, France, Norway, Spain, Sweden [17]	Cross-sectional	540 (540:0)  Current players	GHQ-12 Distress Screener (adapted 4DSQ) PROMIS (short form) AUDIT-C 4 questions on nutritional habits	The prevalence of symptoms of common mental disorders (CMDs) ranged from 3% for smoking to 37 % for anxiety/depression and 58% for adverse nutrition behaviour. The number of severe musculoskeletal injuries during a football career was positively correlated with distress, anxiety and sleeping disturbance, while the number of surgeries was correlated with adverse alcohol behaviour. Footballers who had sustained $\geq 1$ severe musculoskeletal injuries during their career were two to nearly four times more likely to report symptoms of common mental disorders than professional footballers who had not suffered from severe musculoskeletal injuries.

**Table 1.** Summary of included studies (Continued)

Study; year; country	Study type	Participant characteristics, n (male:female)	Mental health questionnaire	Summary of key findings
Gouttebarga <i>et al.</i> ; 2017; Finland, France, Norway, Spain, Sweden [18]	Observational prospective cohort	262 (262:0)  Current players	GHQ-12 Distress Screener (adapted 4DSQ) PROMIS (short form) AUDIT-C SARRS	The incidences of symptoms of CMD were 12% for distress, 37% for anxiety/depression, 19% for sleep disturbance and 14% for adverse alcohol use. Footballers reporting recent adverse life events, a conflict with trainer/coach, or career dissatisfaction were more likely to report symptoms of CMD, but statistically significant associations were not observed. A typical professional football team's squad of 25 players can expect symptoms of CMD to occur among at least 3 players per season.
Junge and Feddermann-Demont; 2016; Switzerland [19]	Cross-sectional	471 (289:182)  Current first league (FL) male and female players and male U-21 players	CES-D GAD-7	Mild to moderate depression in 33 (7.6%) players and major depression in 13 (3.0%) players. At least a moderate anxiety disorder in 6 (1.4%) players. Depression prevalence similar to the general population and prevalence of anxiety disorders significantly ( $\chi^2=16.7$ ; $p<0.001$ ) lower in footballers. Significant differences observed with regard to player characteristics, such as age, gender, player position, level of play and current injury. One severe depression per female FL and male U-21 team and per every two male FL teams. Only one player reported current antidepressant use.
Junge and Prinz; 2019; Germany [21]	Cross-sectional	290 (0:290) Current players (184 first league [Bundesliga] and 106 lower league)	CES-D GAD-7	Mild to moderate depressive symptoms in 48 (16.6%) and severe symptoms in 41 (14.1%) players. At least a moderate generalised anxiety disorder in 24 (8.3%) players. The prevalence of depression and generalised anxiety disorder symptoms was similar to the female general population of similar age. Significantly more second league players, however, reported symptoms of depression than first league players, with the prevalence of depression symptoms in second league players therefore higher than in the general population. Only a third of the 45 (15.7%) players who stated that they currently wanted or needed psychotherapeutic support received it.
Khalladi <i>et al.</i> ; 2019; Qatar [26]	Cross-sectional	111 (111:0)	PSQI ISI ESS	The prevalence of poor sleep quality (PSQI $\geq$ 5) was 68.5%, with subthreshold insomnia (ISI $\geq$ 11) 27.0% and daytime sleepiness (ESS $\geq$ 8) 22.5%. Sleep quality was positively associated with insomnia ( $r=0.42$ ; $p<0.001$ ) and daytime sleepiness ( $r=0.23$ ; $p=0.018$ ). Age, anthropometry, body composition and ethnicity were not associated with any of the reported sleep quality parameters. Approximately 10% ( $n=11$ ) of players reported the use of sleep medications within the preceding month.

**Table 1.** Summary of included studies (Continued)

Study; year; country	Study type	Participant characteristics, n (male:female)	Mental health questionnaire	Summary of key findings
Kilic <i>et al.</i> ; 2021; Australia [23]	Cross-sectional	362 (230:132) 281 current (149:132) 81 (81:0) former footballers	PHQ-9 GAD-7 APSQ K10 ASSQ AUDIT-C BEDA-Q CD-RISC NORC Diagnostic Screen for Gambling Disorders	The most prevalent mental health symptoms (MHS) among active and former footballers were sport-related psychological distress (63%) and alcohol misuse (69%) respectively. Global psychological distress, sleep disturbance, alcohol misuse and substance misuse were significantly lower among active male footballers than among former players. Increased psychological resilience among active male footballers was associated with a decrease in symptoms of sport-related and global psychological distress, anxiety and depression. Increased psychological resilience among female players was associated with decreased symptoms of depression. Problem gambling and sleep disturbance were associated with injury in the previous 6 months among active male and female footballers respectively.
Prien <i>et al.</i> ; 2020; Germany, Netherlands [22]	Case-control	66 (0:66) 66 retired footballers and 45 retired non-contact sport athletes	HADS Mental health subscale of the SF-36 CNSVS CPT FTT CPT FTT SDC ST VBM VMT	No significant between-group differences for anxiety or global mental health. Depression score was significantly higher in football players and significantly associated with frequent heading but not concussion. Clinical relevance of findings is questionable, as average depression scores in both study populations (football: 2.7; control: 1.7) lower than normative values reported in the general German population (3.9–4.5) and far lower than the published clinical cut-off values ( $\geq 8/11$ ).
Prinz <i>et al.</i> ; 2016; Germany [20]	Cross-sectional	157 (0:157) German First League players	CES-D PHQ-2	Fifty players (32.3%) had symptoms of a major depression, and 39 (25.2%) of a mild or moderate depression at least once during their football career. Significant differences in the average depression score were observed for playing positions ( $F=2.75$ ; $p<0.05$ ) [attackers and goalkeepers higher depression scores] and level of play ( $F=3.53$ ; $p<0.01$ ). Almost half of players (49.7%) reported conflicts with coach/ management as an important reason for depressed mood, followed by reduced performance/injury (48.4%) and lack of support/ acknowledgement from their coach (40.0%). During their career, almost 40% of players wanted or needed psychological support, but only 10% received it. After retirement, the percentage of players wanting or needing psychological support decreased to 24%, of whom 90% received it.

**Table 1.** Summary of included studies (Continued)

Study; year; country	Study type	Participant characteristics, n (male:female)	Mental health questionnaire	Summary of key findings
Russell et al.; 2020; UK [24]	Retrospective cohort	7676 (7676:0) Former players and 23028 matched population controls		Former footballers had lower rates of psychiatric hospitalisation for anxiety and stress, depression, drug use disorders, alcohol use disorders, and bipolar and affective disorders. No significant difference in suicide risk or age at suicide.

Notes. APSQ, Athlete Psychological Strain Questionnaire; ASSQ, Athlete Sleep Screening Questionnaire; AUDIT-C, Alcohol Use Disorders Identification Test-Concise; BAI, Beck Anxiety Inventory; BEDA-Q, Brief Eating Disorder in Athletes Questionnaire; CD-RISC, Connor-Davidson Resilience Scale; CES-D, Center for Epidemiologic Studies Depression Scale; CNSVS, CNS vital signs; CPT, Continuous Performance Test; ESS, Epworth Sleepiness Scale; 4DSQ, Four-Dimensional Symptom Questionnaire; FTT, Finger Tapping Test; GAD-7, Generalized Anxiety Disorder-7; GHQ-12, General Health Questionnaire-12; HADS, Hospital Anxiety and Depression Scale; ISI, Insomnia Severity Index; K10, Kessler Psychological Distress Scale; NORC, National Organisation for Research, University of Chicago; PHQ-2, Patient Health Questionnaire-2; PHQ-9, Patient Health Questionnaire-9; PROMIS, Patient-Reported Outcomes Measurement Information System; PSQI, Pittsburgh Sleep Quality Index; SARRS, Social Athletic Readjustment Rating Scale; SAT, Shifting Attention Test; SDC, Symbol Digit Coding Test; SF-36, SF-36v2 Health Survey; ST, Stroop Test; VBM, Verbal Memory Test; VMT, Visual Memory Test.

population studies above [28, 32, 33], but with the acknowledgement that it is difficult to compare data due to the use of different screening instruments. Career dissatisfaction and severe injuries were associated with depression/anxiety.

A subsequent five country European prospective cohort study of 135 male current footballers reported a 12-month incidence of depression/anxiety of 37% [18]. A 2016 study [17] examining the impact of injury observed a 37.3% prevalence of depression/anxiety among 540 male footballers. Depression/anxiety was not, however, associated with total number of severe musculoskeletal injuries or number of surgeries.

Three studies used the Center for Epidemiologic Studies Depression Scale (CES-D) [34], or a modified version of this tool. A 2016 study of 432 male and female Swiss first league and male U-21 footballers reported a 7.6% prevalence of mild-moderate depression and a 3.0% prevalence of severe depression [19]. Among first league players, depression rates were consistent with the general population of the same gender, but the male U-21 players demonstrated an increased prevalence. Higher CES-D scores were significantly associated with lower age, lower number of matches played, attacking playing position and current injury, but not with the total number of injuries during the preceding 12 months. The study authors noted that, despite 13 players returning scores indicative of major depression, only one antidepressant prescription was reported (0.2% of all players), consistent with a previous reported prescription rate of 0.14% among footballers deduced via a 10-year analysis of urine doping samples [35].

Within a 2016 study [20] of 157 current and retired female German First League footballers, 50 players (32.3%) reported symptoms of a major depression and 39 players (25.2%) symptoms of a mild or moderate depression at least once during their career. Footballers reported symptoms of major depression more frequently than the lifetime prevalence observed in general population studies involv-

ing diagnostic interviews, although these prevalence rates were acknowledged to vary widely between studies [36, 37]. Depression scores were not significantly associated with age, number of injuries, career duration or time since career ended but significant differences were observed for playing position (increased among goalkeepers and attackers) and level of play (increased in second highest and second lowest groups). Almost 40% of players wanted or needed psychotherapeutic support (counselling or treatment by a psychologist or psychotherapist) during their careers, with only a quarter of those (10% of players overall) receiving it. In retirement, 24% of players wanted or needed psychotherapeutic support, with almost 90% of those (20% of players overall) successfully obtaining it.

A 2019 study [21] of 290 female German footballers observed mild to moderate depressive symptoms in 48 players (16.6%) and severe symptoms in 41 players (14.1%), which were reported to be in keeping with a similarly-aged female German general population. Significantly more second league players reported depressive symptoms, with one in five (20.6%) of them reporting symptoms of a severe depression. Only a third of the 45 (15.7%) players who stated that they currently wanted or needed psychotherapeutic support received it. Compared with similarly-aged general population females, no difference was observed for all players or first league (Bundesliga) players, but significantly more ( $\chi^2=5.85$ ;  $p<0.05$ ) second league players reported symptoms of depression. Lower match experience and the subjective need for psychotherapy were significant predictors of depressive symptoms. No associations were observed for playing position or current injury, albeit the authors advised that severely injured players would not have been present at the training session during which players were asked to complete the study questionnaire. The authors noted that the overall depression prevalence (31%) was much higher than that previously observed in Swiss first league players (13%) [19] and suggested that

this may be the result of greater psychological pressures associated with competing at a higher standard.

A 2020 study [22] chiefly examining neurocognitive performance observed that 66 retired female footballers scored worse than 45 female retired non-contact athletes on the depression subset of the Hospital Anxiety and Depression Scale (HADS) [38]. Depression scores were associated with heading frequency but not with concussion history. The authors, however, questioned the clinical significance of the findings, as both study populations demonstrated depression scores lower than the national average and much lower than the utilised measure's depression threshold.

A recent Australian study [23] of 281 current (male and female) and 81 former footballers (all male) utilised the Patient Health Questionnaire (PHQ-9) [39], which requires a minimum symptom duration of two weeks, in keeping with the International Classification of Diseases-10's [40] diagnostic criteria for depression. The study reported prevalence rates of depressive symptoms of 6.8%, 10.6% and 12.5% among male players, female players and retired male players respectively. Increased psychological resilience was associated with lower depression scores in both male and female active players. Depression scores did not demonstrate an association with injury during the preceding six months.

A large 2020 United Kingdom (UK) retrospective cohort study [24] with a median follow up period of 18 years observed that retired male Scottish footballers with known high neurodegenerative disease mortality had a lower rate of hospitalisation for depression (0.50%) than the general population (0.73%) ( $p=0.02$ ), with an older age at first admission for depression in footballers.

## Anxiety

The most commonly employed screening tools for anxiety were the General Health Questionnaire-12 (GHQ-12) [27] and the Generalized Anxiety Disorder-7 (GAD-7) [41], with the Beck Anxiety Inventory (BAI) [42] and the Hospital Anxiety and Depression Scale (HADS) [38] also utilised. As previously outlined, the use of the GHQ-12 made it impossible to distinguish anxiety from depression and the five studies employing this tool have therefore already been summarised above.

One study of female footballers showed a correlation between premenstrual syndrome (PMS) and increased BAI scores [25]. Using the GAD-7, a cross-sectional observational study of 290 female current footballers playing in Germany reported at least moderate generalised anxiety disorder (GAD) among 8.3% of participants [21].

The study examining male and female current Swiss first league (FL) footballers along with male U-21 players

observed that anxiety disorders were significantly less prevalent (1.4% of players) than among the general population ( $\chi^2=16.7$ ;  $p<0.001$ ) [19]. GAD-7 anxiety scores correlated with CES-D depression scores ( $r=0.584$ ;  $p<0.001$ ), age ( $r=-0.120$ ;  $p<0.05$ ) and the number of matches played ( $r=-0.204$ ;  $p<0.001$ ), but not with injury frequency within the previous 12 months. Male FL players possessed significantly lower anxiety scores than male U-21 ( $t=2.26$ ;  $p<0.05$ ), female FL players ( $t=5.00$ ;  $p<0.001$ ) and the general population ( $t=4.96$ ;  $p<0.001$ ). The average anxiety scores of FL female players and of male U-21 players were similar to gender-matched population norms. Average anxiety scores differed significantly between playing positions (with attackers and defenders exhibiting larger scores) ( $F=2.46$ ;  $p<0.05$ ) and the three levels of play ( $F=5.17$ ;  $p=0.01$ ) for the entire group.

Using the GAD-7, the Australian study of current and former footballers reported the presence of anxiety symptoms in 4.7% of current male players, 8.3% of current female players and 11.3% of male former players [23]. Among male players, increased psychological resilience was associated with reduced anxiety levels (OR 0.77; 95% CI 0.65 to 0.90).

The case-control study of 66 female retired footballers and 45 female former non-contact athletes did not observe a significant between-group difference in anxiety levels (on the HADS anxiety subscale) [22]. Among the footballers, however, significantly greater anxiety scores were noted in frequent headers of a football compared to those that rarely headed a football (MD=2.179; CI 0.29 to 3.83;  $p=0.030$ ).

The Scottish retrospective cohort study comparing 7676 male former professional soccer players to 23028 matched population controls found that former professional footballers had a lower rate of psychiatric admission for anxiety and stress (HR 0.37; 95% CI 0.25 to 0.55;  $p<0.001$ ) [24].

## Distress/burnout

Distress was measured in several publications via a "Distress Screener" based on the Four-Dimensional Symptom Questionnaire (4DSQ) [43]. The Athlete Psychological Strain Questionnaire (APSQ) [44] and the Kessler Psychological Distress Scale (K10) [45] were used in one study. Burnout was assessed by the Utrecht Burn-Out Scale (UBOS) [46].

One cross-sectional study found that both distress (via the Distress Screener) and burnout rates (via the UBOS) were higher in 104 male former professionals than in 149 male current players (18% vs. 10% and 16% vs. 5% respectively) [14]. In current players, major life events in the previous 12 months were associated with both distress ( $p<0.01$ ) and burnout ( $p<0.05$ ). In former players, low social support was associated with both distress ( $p<0.05$ ) and burnout ( $p<0.01$ ).

Three international prevalence studies of active male players found that distress (via the Distress Screener) ranged from 11.4 to 18.2% [15, 16, 17]. Distress displayed small to moderate correlations with life events [15, 16], career dissatisfaction [15, 16] and severe injuries [16, 17]. Those players who had sustained more than three severe musculoskeletal injuries during their career were more than twice as likely to report distress (OR 2.69; 95% CI 1.23 to 5.87;  $p < 0.01$ ) as those with three or fewer such injuries [17].

Another 12-month observational prospective cohort study involving 135 male current footballers from five European Countries (Finland, France, Norway, Spain and Sweden) reported an 11.9% (95% CI 7.3 to 18.5) incidence rate for distress (via the Distress Screener), with non-significant associations observed for recent adverse life events, conflict with trainer/coach and career dissatisfaction [18].

In the Australian cross-sectional mixed-sex study of current and former players, sport-related psychological distress (via the APSQ) was reported by 52.0% of active male players and 62.9% of female players [23]. Global psychological distress (via the K10) was highest in former male players (26.3%), followed by active female (18.9%) and male footballers (9.5%). Increased psychological resilience among active male footballers was associated with reduced reporting of sport-related (OR 0.91; 95% CI 0.85 to 0.97) and global psychological distress (OR 0.86; 95% CI 0.77 to 0.96).

## Disordered eating

Adverse nutrition behaviours (assessed via answering four yes/no statements) were higher in former male players than current footballers with reported prevalence rates of 42% and 26% respectively [14]. Surprisingly, within the male current footballers, the total number of previous severe injuries was negatively associated with adverse nutrition behaviour ( $p < 0.01$ ). In contrast, a subsequent European cross-sectional study of male footballers did find that adverse nutrition behaviour was significantly associated with having one or more severe joint injuries (OR 0.49; 95% CI 0.31 to 0.79;  $p < 0.01$ ) and three or more surgeries (OR 0.42; 95% CI 0.25 to 0.73;  $p < 0.01$ ) [17].

Two additional international cross-sectional studies using the same assessment method identified adverse nutritional behaviours in 47.4–74.3% of male players [15, 16]. Within the recent Australian cross-sectional study [23], 35.1% of current male players, 43.8% of current female players and 40.0% of former male players reported disordered eating behaviours via the Brief Eating Disorder in Athletes Questionnaire (BEDA-Q) [47].

## Sleep disturbance

Sleep disturbance was assessed using self-report screening tools, typically the Patient-Reported Outcomes Measure-

ment Information System (PROMIS) questionnaire [48], but also the Athlete Sleep Screening Questionnaire (ASSQ) [49], the Pittsburgh Sleep Quality Index (PSQI) [50], the Insomnia Severity Index (ISI) [51] and the Epworth Sleepiness Scale (ESS) [52].

Using the PROMIS, a 12-month prospective cohort study of 135 male European footballers reported a sleep disturbance incidence rate of 18.5% [18]. Among male footballers in Australia, higher rates of sleep disturbance (assessed by the ASSQ) were seen in former versus current players, with prevalence rates of 32.5% and 12.2% respectively ( $p < 0.01$ ) [23]. The rate of sleep disturbance observed among current female players (32.6%) was similar to that in retired male players. Female footballers injured within the last six months had higher rates of sleep disturbance (OR 2.65; 95% CI 1.20 to 5.85).

A cross-sectional Qatari study of 111 male players used three sleep screening tools (PSQI, ISI and ESS) to assess sleep quality, excessive daytime sleepiness and subclinical insomnia respectively [26]. The results showed that 68.5% reported poor sleep quality ( $PSQI \geq 5$ ), 27.0% had subclinical insomnia ( $ISI \geq 11$ ) and 22.5% reported excessive daytime sleepiness ( $ESS > 8$ ). Approximately 10% of players had used hypnotic medication within the preceding month. Factors such as age, body composition and ethnicity did not impact on any of the sleep quality parameter results. The authors recognised that the prevalence of sleep disorders in this sample was much higher than that observed in previous Australian and European footballers [53, 54]. It was suggested that specific cultural and environmental factors including late night training to avoid extreme daytime temperatures, consequent late dining, and early rising for morning prayer may have affected the findings, therefore rendering them of interest mainly to professionals in the Middle East.

Within the trio of international prevalence studies examining active male players, sleep disturbance rates ranged between 18.8% and 32.9% via the PROMIS [16, 15, 17]. Players with three or more previous severe injuries (OR 2.32; 95% CI 1.22 to 4.42;  $p < 0.01$ ) reported greater rates of sleep disturbance than those who had not suffered from injuries during their career [17].

## Alcohol use

All studies examining footballers' alcohol consumption used the Alcohol Use Disorders Identification Test-Concise (AUDIT-C) questionnaire [55] to identify either "adverse alcohol use/behaviour" (a score of  $\geq 5$ ) or "alcohol misuse" (score of  $\geq 4$  in males and  $\geq 3$  in females).

In one six nation global study of male footballers, adverse alcohol behaviour was identified in 19% of current players and 32% of former players [14]. A similarly designed



worldwide study reported a prevalence of adverse alcohol behaviour of 9.4% (95% CI 7.0 to 11.9) among 530 male footballers [16]. Statistically significant correlations were found between adverse alcohol behaviour and higher numbers of severe injuries, surgeries and life events, and higher levels of career dissatisfaction. One study reported the prevalence of adverse alcohol behaviour among male footballers within each of five European countries, with rates ranging from 6.9% (95% CI 3.2 to 13.9) in Norway to 17.0% (95% CI 10.5 to 26.5) in Finland [15].

A study of active male footballers examining the effects of severe musculoskeletal injuries reported a 10.3% prevalence (95% CI 7.5 to 13.0) of adverse alcohol behaviour, with significant associations between adverse alcohol behaviour and a history of two severe injuries (OR 3.4; 95% CI 1.3 to 8.9;  $p < 0.01$ ) or, specifically, a history of one (OR 3.4; 95% CI 1.4 to 8.2;  $p < 0.01$ ) or two (OR 3.0; 95% CI 1.1 to 7.8;  $p < 0.01$ ) severe joint injuries [17].

A 12-month prospective cohort study of male European footballers reported a 14.1% incidence of adverse alcohol use, which displayed non-significant associations with recent adverse life events, conflict with trainer/coach and career dissatisfaction [18].

The Australian study reported alcohol misuse (requiring a lower AUDIT-C score of  $\geq 4$ ) in 50.7% (95% CI 42.7 to 58.6) of active male players, 43.8% (95% CI 35.6 to 52.4) of active female players and 68.8% (95% CI 60.2 to 79.0) of retired male players [23]. The authors did, however, advise caution when comparing these high rates to those reported in other studies, many of which assessed for harmful use of alcohol using the higher ( $\geq 5$ ) AUDIT-C score, but the authors maintained that the rates indicated footballers' need for alcohol education. It is noted that an earlier Australian study had observed even higher rates of alcohol misuse (AUDIT-C score of  $\geq 4$ ) among elite rugby league players, during both preseason (68.6%) and in-season (62.8%) [56].

Male former Scottish professional footballers were hospitalised for treatment of a primary alcohol disorder at a lower rate than their matched population controls (HR 0.62; 95% CI 0.51 to 0.76) [24].

## Substance misuse

Substance misuse was examined in only one publication, the Australian cross-sectional study of 281 male and female current players and 81 male former players [23]. The CAGE Adapted to Include Drugs (CAGE-AID) Questionnaire [57] was used, with a score of  $\geq 2$  (from a maximum possible score of 4) deemed indicative of the presence of substance misuse. The questionnaire did not collect details of the specific substances being misused. Prevalence rates were reported as 2.0% (95% CI 0.4 to 6.1) among current male

players, 1.5% (95% CI 0.1 to 5.8) among current female players and 10.0% (95% CI 6.1 to 19.9) among male ex-players. The prevalence of substance misuse was significantly lower in the group of active male players than in their retired counterparts ( $\chi^2 = 7.189$ ;  $df = 1$ ;  $p < 0.01$ ).

## Gambling

The Australian study was also the sole publication to examine footballers' gambling behaviours [23]. The NORC (National Organisation for Research, University of Chicago) Diagnostic Screen for Gambling Problems [58] was used to identify problem gambling, with a reported prevalence of 23.6% (95% CI 17.5 to 31.1) in male current players, 2.3% (95% CI 0.5 to 6.9) in female current players and 32.5% (95% CI 23.0 to 42.2) in male former players. Injury in the previous six months was associated with problem gambling (OR 2.28; 95% CI 1.03 to 5.02) among the active male players. Further studies of footballers in other jurisdictions are required to determine if the levels of problem gambling among footballers in Australia are elevated by the fact that the country has for some time been the largest spending nation per capita on gambling products [59].

## Discussion

In summary, among active footballers, female players reported symptoms of common mental disorders more frequently than males, while retired footballers reported symptoms more frequently than current players. The combined depression/anxiety data yielded via the GHQ-12 suggest a higher burden among footballers than previously seen in general populations and among other athletes, but caution is required when attempting to compare studies using different screening measures. Major life events, low social support, career dissatisfaction and severe injuries were associated with depression/anxiety among current footballers, with life events also demonstrating an association among retired players.

Within the studies that examined depression individually, prevalence rates among current players were largely in keeping with the reported general population norms. Factors including lower age, lower total number of appearances and current injury demonstrated associations with low mood.

The results for anxiety varied, with one study [19] showing significantly reduced GAD-7 scores compared to the general population (with the difference wholly accounted for by the study's male players), another describing a frequency of anxiety symptoms consistent with the general female population [21] and another reporting slightly

increased GAD-7 scores among male and female footballers [23]. Interestingly, one study described a correlation between premenstrual syndrome (PMS) and anxiety levels in female footballers, highlighting the need to understand female hormonal health and its potential impact on athlete mental health and performance [25].

Although prevalence rates were not routinely compared to general populations or other athlete groups, footballers reported high levels of distress, disordered eating, and sleep disturbance. The screening tool most commonly used to investigate disordered eating was particularly brief and future studies of this area would benefit from the implementation of more comprehensive questionnaires, such as the Eating Attitudes Test (EAT-26) [60]. The rates of both adverse alcohol use and substance misuse reported were perhaps higher than expected given the importance of peak athletic fitness in the modern game, the frequency of drug testing and the lengthy suspensions typically associated with positive test results.

Two studies reported associations between footballers' playing positions and symptoms of either depression or anxiety. Increased CES-D scores were observed in attackers in one study [19] and in both goalkeepers and attackers in another [20], while both defenders and attackers demonstrated increased GAD-7 scores in the first study [19]. It was suggested that the results could be explained by the additional pressure experienced by players more likely to be the focus of public and coach scrutiny [20]. Goalkeepers and forwards typically fall into this category, due to a general perception that their performances are more likely to decisively influence games. It was therefore intriguing to note that midfielders, often the furthest removed from the expectation to score or prevent goals, were the only main playing position not to demonstrate an association with increased mental health symptoms, indeed they reported the lowest depression scores in one study [19].

Disappointingly, footballers described a lack of availability of psychotherapeutic support, particularly during their playing careers. In one study, nearly 40% of players wanted or needed psychotherapeutic support during their careers, with only a quarter of those (10% of all players) receiving it [20]. In retirement, 24% of players wanted or needed psychological support, with almost 90% of those (20% of all players) successfully obtaining it. In another study, only a third of 45 players (15.7% of all players) who currently wanted or needed psychotherapeutic support received it [21]. The figures compare poorly to those reported in a recent study of elite athletes in Australia, where 62.7% of active female athletes attended a psychologist and 5.9% a psychiatrist [61]. With only 10% of those footballers needing psychological support successfully receiving this while still playing (compared to 90% of those post-retirement), one must consider the possibility that stigma within the

footballing environment may have prevented players actively seeking help during their careers [20]. Another potential explanation may be that, within football teams, the roles of psychiatrists and psychologists are perceived as less important than in other sports.

Reviews of previous studies of athlete groups have identified key transition points, chiefly injury and retirement, as vulnerable periods for the development of psychological morbidity [61, 62]. The observation of increased depressive symptoms among the second highest and second lowest ranked groups of players [20], female second league [21] and male U-21 players [19], is reflective of this, with these players acutely pursuing promotion to a higher level of competition (or battling relegation to the converse). The studies reviewed suggest that injury may be associated with an increased risk of footballers reporting depression and anxiety symptoms, but the data is somewhat equivocal, with some studies failing to show any correlation. A number of studies did, however, demonstrate associations between injury and distress, disordered eating, sleep, alcohol and gambling. Retired footballers reported higher prevalence rates than their active counterparts for all the common mental disorders studied. Future research should therefore aim to determine how best to deliver educational sessions and preventive strategies to footballers approaching the end of their careers [23].

## Strengths and limitations

The review's main strength is that it is the first review article to comprehensively examine the prevalence of (and potential risk factors for) common mental disorders among professional footballers while simultaneously critically analysing the included studies. A thorough literature search was conducted and the inclusion and exclusion criteria were independently applied by all authors in order to minimise selection bias. It is, however, possible that some studies may have evaded inclusion due to the non-systematic nature of the literature search, particularly the manual searching of reference lists. With relation to the study data reviewed, the universal use of self-report questionnaires risked the effect of responder bias on any findings. The majority of studies were cross-sectional and therefore unable to demonstrate causality for any observed associations. The self-report questionnaires provided data relating only to the presence of mental health symptoms, rather than clinical diagnoses of psychiatric illnesses or disorders. The use of different screening tools makes it difficult to compare findings between many of the studies, while the distinct ethnography of some study populations casts some doubt on the generalisability of findings to the wider population of professional footballers as a whole. The GHQ-12's inability to discriminate between depression and anxiety has

already been noted, while several of the screening tools used were not validated for the particular study populations, for example the use of translated (non-English) versions of the eating disorder screening questions [15] and the use of the BEDA-Q among male players [23]. Although the literature search included schizophrenia, bipolar disorder, obsessive-compulsive disorder and personality disorders, unfortunately none of these were examined in the publications identified for review.

## Conclusion

All the studies identified for review were published within the past decade, illustrating that the mental health of professional footballers has only recently become the focus of academic research. Further longitudinal epidemiological studies are undoubtedly required in order to more accurately determine the prevalence of common mental disorders within the professional footballer population and to identify the disorders' potential predictors. Ideally, studies would employ diagnostic clinical interviews, but these may prove impractical in terms of their logistical scheduling and the time required for assessments, while potential participants may also fear a loss of privacy compared to the completion of anonymous questionnaires. Future studies might consider examining the effect of the time of year during which data is collected, with the suggestion that the close season may be a particularly stressful period within which players may find themselves out of contract and without a club to employ them [16]. Researchers may also wish to explore footballers in countries that have thus far been under-represented, most notably England and the rest of the UK. In keeping with other sports, there remains a dearth of information relating to psychotropic prescribing in professional football and a thorough examination of this would be of great value to sports physicians and psychiatrists.

In line with examinations of other elite athletes, which identified stigma and a lack of information about mental illness as barriers to help-seeking [63], several studies indicated the need for raised awareness of common mental disorders among both footballers and their coaches. It is suggested that players experiencing stressors such as life events, injury or surgery should be closely monitored, in the expectation that these may predict the subsequent development of psychological morbidity [14, 15, 16]. The recent development of the International Olympic Committee's Sport Mental Health Assessment Tool 1 (SMHAT-1) [64] may provide within elite sport a timely uniform screening tool to enable the early detection of mental health symptoms and, where required, referral to specialist services. As recognised in several studies, it is vital that psychological

therapy and psychiatric treatment are readily accessible when it is identified that these are indicated.

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