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Depressive symptoms among male professional soccer players in Japan

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ABSTRACT

Objectives: The objectives of this study were to (Kuettel & Larsen, 2020) examine depressive symptoms among male professional soccer players in Japan, and (Buck et al., 2018) explore the association of these symptoms with current injuries, history of severe injuries, general anxiety, and adverse life events.
Design: Cross-sectional online survey.
Setting: The survey was conducted during the Japanese Professional Football preseason between February and April 2020 in Japan.
Participants: Sixty-four professional athletes from four teams participated in the survey. The mean age was 26 years (SD 4.5).
Main outcome measures: The outcome measures included the Patient Health Questionnaire, Generalized Anxiety Disorder-7, and select items from the Social Athletic Readjustment Rating Scale.
Results: Depressive symptoms were reported among 9.4% of participants. Two players (3.1%) were found to have generalized anxiety as well as depressive symptoms. Other risk factors were unrelated to depressive symptoms.
Conclusion: The occurrence of depressive symptoms among participating professional soccer players from four teams in Japan was lower than the previously reported prevalence estimates among Western players but higher than the general population in Japan of the same age group. The findings suggest clinicians should assess the mental health of elite athletes, and work to mitigate stigma around mental health.

Introduction

The mental health and well-being of athletes has been gaining greater attention in scientific literature and the media in recent years (Kuettel & Larsen, 2020). Although there are mental health benefits associated with participation in sports, it should be noted that many athletes experience psychological problems, such as mood disorders or addiction (Buck et al., 2018). A high prevalence of mental health disorders among professional athletes has been reported, ranging from 3.6% to 47.8% (Table 1) (3–10). Moreover, high-level players have been found to be as likely to report depressive symptoms as non-athletes (Gorczynski et al., 2017), and the prevalence of depression among athletes consistently is similar and not lower than general reference groups and age groups (Costanza et al., 2020; Gouttebarge et al., 2015a, 2018; Gulliver et al., 2015; Junge & Feddermann-Demont, 2016; Nixdorf et al., 2013). Furthermore, individual elite athletes who are defined by the International Olympic Committee (IOC) Mental Health Working Group as Olympic, Paralympic, professional or collegiate athletes (Burrows et al., 2021) including Olympic winners, have disclosed mental health issues (Mummery, 2005), and some tragically have committed suicide for sport-related reasons (Baum, 2013). Athlete-specific stress includes condition maintenance, interactions between teammates and staff in team sports, public expectations, the pressure to be selected and win, and tight traveling schedules (Arnold & Fletcher, 2012). Additionally, excessive training volume can cause depressive symptoms known as overtraining syndrome (Schwenk, 2000). In addition to sport-specific stress, athletes may experience adverse life events, such as death in the family or relationship problems. Despite such issues, athletes hesitate to seek help because of stigma concerns regarding how they would be perceived by team members, coaches, and society (Castaldelli-Maia et al., 2019; Gulliver et al., 2015). Thus, depression, anxiety or addiction among sports players may be overlooked. By elucidating data about psychological issues among elite athletes, the overarching purpose of the study was to expose the occurrence of mental health issues among elite professional athletes as an initial step, and ultimately to reduce stigma and promote interventions to ameliorate the situation.

Abbreviations: IOC, international olympic committee; DSM, diagnostic and statistical manual of mental disorders; CES-D, center for epidemiological studies depression scale; GHQ, general health questionnaire; J. League, the Japan professional football league; PHQ, the patient health questionnaire; GAD-7, generalized anxiety disorder-7; SARRS, social athletic readjustment rating scale; SD, standard deviation; IQR, interquartile range.

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Table 1
Characteristics of previous studies regarding the prevalence of depression among athletes.

Author, year	Country	Sports, player level	Gender *M* = male *F* = female	Screening method	Response rate	Prevalence
Schaal, 2011	France	Various, high-level	M/F	Diagnosed by professionals based on DSM-IV	Not applicable	3.6%
Nixdorf, 2013	Germany	Various (including soccer), elite	M/F	CES-D cut-off ≥ 22	Not reported	15%
Gulliver, 2015	Australia	Various (including soccer), elite	M/F	CES-D cut-off ≥ 16	25.1%	23.6%
Gouttebarge, 2015	5 European countries	Soccer, national team level or professional	M	GHQ-12	25–48% (varied among countries)	25.0% Spain 37.5% France 37.9% Sweden 40.0% Finland 43.3% Norway
Gouttebarge, 2015	11 countries including Japan	Soccer, professional	M	GHQ-12	37%	37.9%
Junge, 2016	Switzerland	Soccer, top-level	M/F	CES-D cut-off ≥ 16	91%	10.6%
Kilic, 2017	Denmark	Soccer, professional	M/F	GHQ-12	33%	18%
Foskett, 2018	UK	Various, elite	M/F	GHQ-12	29%	47.8%

DSM, Diagnostic and Statistical Manual of Mental Disorders; CES-D, Center for Epidemiological Studies Depression Scale; GHQ, General Health Questionnaire.

A limited number of studies have shown mental health problems such as depression, anxiety, or distress are prevalent among athletes (Foskett & Longstaff, 2018; Gouttebarge et al., 2015a, 2015b; Gulliver et al., 2015; Junge & Feddermann-Demont, 2016; Kilic et al., 2017; Nixdorf et al., 2013). However, consensus on associated risk factors has been lacking. The investigated risk factors have varied from study to study, and the results are inconsistent (Foskett & Longstaff, 2018; Gouttebarge et al., 2015a, 2015b; Gulliver et al., 2015; Junge & Feddermann-Demont, 2016; Kilic et al., 2017; Nixdorf et al., 2013; Schaal et al., 2011). The most significant association identified previously was found to be injury status, but the associations found had variations relative to current or past severe injuries (Foskett & Longstaff, 2018; Gouttebarge et al., 2015a; Gulliver et al., 2015; Junge & Feddermann-Demont, 2016; Kilic et al., 2017; Nixdorf et al., 2013). While previous research has examined the association between prevalence and total number of stressors, or each stressor item individually (Gouttebarge et al., 2015b, 2018; Ojio et al., 2021), few studies have investigated stressors beyond injury status.

Most studies on mental health issues among sports players have been conducted in Western countries (Gouttebarge et al., 2019). A limited literature illustrates that the prevalence of mental health issues differs between regions of the world (Chiu, 2004; Steel et al., 2014). One global study that targeted the general population demonstrated that at a similar economic level, English-speaking countries exhibited a higher prevalence of common mental disorders than did Asian countries (Steel et al., 2014). East Asian regions, such as Japan, China, South Korea, and Taiwan, showed a lower prevalence of depression than the other Asia Pacific countries, including Singapore, Thailand, and Australia (Chiu, 2004). Previous research demonstrating differences by cultural group implicates probable global region differences as well (Schinke et al., 2017). There is a dearth of research on mental health among Asian or Japanese athletes. Only one known study has examined mental health issues in professional athletes in Japan. Ojio et al. (2021) reported depression and anxiety may be common in Japan Rugby Top League male players.

The dearth of information about mental health issues in professional athletes in Asia, and the opportunity to intervene clinically and meaningfully implicates the need for investigation. The current survey targeted players in Japan who are less westernized compared to Japanese players playing in foreign countries. This focus could render cultural differences more clearly. This study's primary aim was to examine the occurrence of depressive symptoms among male professional soccer players in Japan. At the time of the survey, there was not yet an established professional female league in Japan. The secondary aim was to explore the association of depressive symptoms with certain risk factors, including current injuries, history of severe injuries, anxiety, and adverse life events. We hypothesized that the rate of depressive symptoms among male professional soccer players in Japan would be lower than in Western sports players (Steel et al., 2014) and similar to the general population in Japan (Gulliver et al., 2015; Junge & Feddermann-Demont, 2016; Nixdorf et al., 2013). Further, we hypothesized there would be a positive association between known risk factors and depressive symptoms for the general population (Gouttebarge et al., 2015a, 2015b; Gulliver et al., 2015; Junge & Feddermann-Demont, 2016; Kilic et al., 2017).

Methods

Study design and setting

A cross-sectional study was conducted using an anonymous online survey conducted between February and April 2020. It started prior to the countrywide lockdown in Japan for the COVID-19 pandemic. The study was approved by the University College London Research Ethics Committee [#6384/008]. Voluntary participation in the study at the team level was requested at the official doctors' meeting of the Japan Professional Football League (J. League) by presenting a project overview using slides. The presentation included (1) introduction of the project leader, (2) the background of the survey including prevalence of depression among elite athletes in a previous study, the impact of mental health problems on athletes' performance, and the lack of data in Japan, (3) the benefit for the team and players through developing preventive interventions, and 4) an overview of the study and the timeline.

Participants

Of 18 teams representing a membership of 661 players in the top division of the official J. League (J1), four teams gave our research group permission to invite their team members, all who were currently male professional soccer players, to participate. The inclusion criteria were aged 18 or older and the ability to read and answer the questionnaire in Japanese or English. The responses from 64 players were analysed. Seventy-five percent of the participants were aged 18–29, and the mean age was 26 years.

Data collection procedure

A link to the questionnaire was distributed by email to all players via the team doctors or trainers. To ensure confidentiality, the results

Table 2
Demographic characteristics of the participants.

Variable		
Age in years; mean (SD)	26.12	4.53
Nationality; n (%)		
Japanese	57	89.1
Non-Japanese	7	10.9
Education level; n (%)		
High school	35	54.7
Vocational/technical school	1	1.6
College/university or higher	28	43.8
Soccer career in Japan in years: median (IQR)	6	2 to 10
Field position; n (%)		
Midfielder	27	42.2
Defender	16	25.0
Forward	15	23.4
Goalkeeper	6	9.4
Frequency as a starter; n (%)		
Rarely/never	26	40.6
More than monthly	5	7.8
More than every other week	9	14.1
Almost always	24	37.5
Current injury; n (%)		
No	54	84.4
Yes	10	15.6
Severe injuries; n (%)		
None	19	29.7
1–2	34	53.1
3 or more	11	17.2
Illness; n (%)		
Never	61	95.3
In the past	3	4.7
Mental illness; n (%)		
Never	62	96.9
In the past	2	3.1
Stressors; n (%)[a]		
None	21	34.4
1 to 2	33	54.1
3 and more	7	11.5

[a] $n = 61$ (due to uncompleted responses).SD, Standard Deviation; IQR, interquartile range.

were only available to the lead investigator. Consent was obtained on the first page of the online questionnaire. Providing written consent enabled participants to proceed to the study items. Data were collected using the UCL Opinio 7.12 by Object Planet, during the preseason from February to April 2020. UCL Opinio is survey software that reconnects to the respondents' devices if they initially did not complete all questions. This allowed them continue from where they had stopped, a process that prevents duplication. Survey distribution started, and most participants had responded to the survey, before official game cancellations occurred due to the COVID-19 pandemic. The link to the questionnaire was distributed to the 112 players identified by their trainers or team doctors as being on the rosters of the four teams. Of these, 64 players provided responses for the analysis (effective response rate 57%).

Data collection instrument

The study questionnaire included questions concerning demographics, mental health symptoms, and stressors. The demographic information consisted of age, career duration, history of physical and mental illness, current injuries, and past severe injuries (defined as absence from training for over 28 days) (Fuller et al., 2006; Kilic et al., 2017). The Patient Health Questionnaire (PHQ), Generalized Anxiety Disorder-7 (GAD-7), and Social Athletic Readjustment Rating Scale (SARRS) were used to assess mental health symptoms and stressors. The approximate time required to complete the questionnaire was 10 min.

Depressive symptoms

The PHQ-9 was used to assess depressive symptoms because it has been validated in the Japanese language with good reliability and validity, e.g., kappa coefficient, sensitivity and specificity 0.79, 0.84 and 0.95, respectively (Muramatsu, 2014; Muramatsu et al., 2007). It is used commonly in clinical settings in Japan and found to be a good screening tool for depressive disorder in the general population (Costantini et al., 2021; Martin et al., 2006; Maurer et al., 2018). The criteria for major depression and other depressive symptoms in the PHQ-9 were adhered to in this study. Major depression was established if five or more of the nine depressive symptom criteria (2–4 for other depression) presented at least "more than half the days" in the past two weeks, and one of the symptoms was depressed mood or anhedonia (Kroenke & Spitzer, 2002). In the current study, participants with two or more depressive symptoms were considered as belonging to the depressive symptoms group. The severity was classified by scores 1 to 4, 5 to 9, 10 to 14, 15 to 19, and 20 to 27 as none, mild, moderate, moderately severe, and severe, respectively. The PHQ-2 addresses the depressed mood and anhedonia components of the PHQ-9. Total scores on the PHQ-2 can range from 0 to 6, with a score of three or more indicating the possibility of major depressive disorder with a good validity (0.77 and 0.95 of sensitivity and specificity, respectively) (Inagaki et al., 2013; Kroenke & Spitzer, 2002). Therefore, participants with a score of 3 or more were considered as belonging to the depressive symptoms group for the PHQ-2.

Clinically, depression is diagnosed with the consideration of the patients' background in addition to the self-reported questions. Therefore, the term "depressive symptom" was used instead of "depression".

Anxiety and stressors

The GAD-7 has been validated in Japanese populations as a screening tool for anxiety with 0.92 of Cronbach's alpha, 0.89 of sensitivity, and 0.82 of specificity (Muramatsu, 2014; Spitzer et al., 2006). A score of 10 or more on the GAD-7 indicates moderate to severe levels of anxiety (Junge & Feddermann-Demont, 2016; Löwe et al., 2008). Stressors were measured as the number of life events in the previous 12 months using 14 items from the 57-item Social Athletic Readjustment Rating Scale (SARRS), which has been validated in Japanese populations (Bramwell et al., 1975; Gouttebarge et al., 2015a, 2015b; Kilic et al., 2017; Yahiro et al., 1993). The 14 items were death of family member, death of close friend, divorce, marital separation, end of relationship, being fired / no contract prolongation offer, personal injury of illness, change in health of family member, change in financial state, jail term, trouble with supervisor / manager, gaining new family member, and change in residence. Additionally, athlete-specific stressors among 57 SARRS items were categorized into three groups, 1) interaction with staff or teammates (troubles with coaches/directors or general managers/trainers or physicians, and discrimination from coaches and team), 2) pressure to win or be selected (being dropped to lesser playing status, difficulties in demonstrating athletic ability, and major error in ball games), and 3) volume of training (change in level of performance/playing hours and conditions). No items addressed a tight traveling schedule.

Data analysis

All data were analysed using IBM SPSS Statistics version 26. Descriptive statistics consisted of the mean, standard deviation (SD), median, and interquartile range (IQR) for numeric variables and number and percentage for categorical variables. When the participants were divided into groups by PHQ-9 or PHQ-2 scores, all numeric data, except age, were non-parametrically distributed. To compare groups, Mann-Whitney U tests were used for numeric variables, while Fisher's exact tests were applied for categorical variables. The occurrence rate was calculated by dividing the number of participants confirmed as positive for

depressive symptoms by the number of participants who completed the PHQ (Fincham, 2008). The results were considered statistically significant if the p-value was < 0.05.

Results

The percentage of currently injured participants was 15.6%. Forty-five players (70.3%) had a severe injury history—eleven (17.2%) of whom had experienced three or more severe injuries. Two (3.1%) had recovered from a mental health issue at the time of survey and no participants reported current mental health problems. Seven players had foreign nationality (Table 2).

The prevalence of depressive symptoms in the sample was 9.4% and 6.2% based on PHQ-9 and PHQ-2 criteria, respectively. Among participants with positive results on the PHQ-9, 6.2% had mild and 3.1% had moderately severe symptoms. Based on the GAD-7, 3.1% were experiencing general anxiety.

Associations between depressive symptoms and other risk factors are shown in Table 3. Two players met criteria for general anxiety, both of whom also had depressive symptoms. There was a statistically significant association between depressive symptoms and general anxiety. No significant associations were observed between depressive symptoms and age, current injuries, past severe injury history and stressors. In the multivariate analysis of demographics and the depressive symptoms, there is no significant difference (see Appendix).

Discussion

The overarching purpose of the study was to expose the occurrence of mental health issues among elite professional athletes. Our hope is that these findings provide a preliminary step for ultimately reducing stigma and promoting interventions to ameliorate the burden of mental health among elite athletes. The key study finding is that depressive symptoms occurred among 9.4% of participants based on responses on the PHQ-9. As hypothesized, the rate was lower than the prevalence found in studies with Western populations. Previous studies using self-report have revealed a wide variation in prevalence, between 10.6% Junge & Feddermann-Demont, 2016 and 47.8% (Foskett & Longstaff, 2018), but as low as 3.6% when diagnosed by medical professionals (Schaal et al., 2011). The potential reasons for the differences between studies are the use of various criteria to identify prevalence, the different points in time the surveys were conducted, and the participants' backgrounds.

Different diagnostic methods and criteria used to classify individuals can affect the calculated prevalence rate, and there were no standardized methods and cut-off criteria used by previous researchers. Diagnostic tools such as the 12-item General Health Questionnaire and Center for Epidemiological Studies-Depression scale differ in the number of questions and recall period. Some studies using the same assessments have even employed different cut-off scores (see Table 1) (Foskett & Longstaff, 2018; Gouttebarge et al., 2015a, 2015b; Gulliver et al., 2015; Junge & Feddermann-Demont, 2016; Kilic et al., 2017; Nixdorf et al., 2013; Schaal et al., 2011).

Compared to the only previous study addressing mental health among elite athletes in Japan, the rate in the current study of four teams was lower than the prevalence rate of 43% for depression and anxiety among Japanese Rugby players (Ojio et al., 2021). Compared to that study, fewer players reported moderate or severe symptoms (3.1% vs. 10%). The potential reasons are different diagnostic tools and different sports. The Kessler-6 was used in the rugby study. It assesses psychological distress over the past 4 weeks. As distress encompasses a broader scope than depression or anxiety, direct comparison is difficult. Ethnicity may have influenced the outcomes, but no data on ethnicity were reported.

The time of year can affect players' moods. Professional athletes have different worries depending at different points in time. For example, in the preseason athletes commonly have concerns about preparation for the entire year, or fitness assessment for selection, while during the season they have to endure accumulated fatigue or negative emotions from injuries or non-selection to play (Cresswell & Eklund, 2007). Additionally, external factors such as uncertainty due to COVID-19 pandemic may have influenced their mental status. The direct impact on players from COVID-19 infection at the time of data collection is thought to be low because few players contracted COVID-19 and the national lockdown hadn't started yet.

Demographic differences of different cultures may affect mental health problems as has been mentioned in the IOC's consensus statement (Reardon et al., 2019). Among the general population between regions with similar economic statuses, a higher lifetime prevalence of common mental disorders has been reported in Western cultures (35.2–39.3%) than in Asian cultures (21.4%) (Steel et al., 2014). However, no known studies have investigated differences in mental health issues among athletes across multiple global regions. This study provides a vantage point for considering the rate of depressive symptoms among elite athletes in Japan of the Asia region.

Exposing the prevalence of mental health issues among elite athletes in Japan will likely raise the awareness of the problem among athletes, staff, and fans. In terms of interventions, qualitative research on perception of mental health symptoms, barriers, and facilitators among athletes could provide clues needed for culturally-specific interventions (Culture Counts: The Influence of Culture & Society on Mental Health, 2001). Effective educational intervention should focus on stigma reduction and be suited to the cultural or regional background (Burrows et al., 2021; Kawakami et al., 2016).

Higher prevalence in athletes than in the Japanese general population

Contrary to the second study hypothesis that the prevalence rate would be comparable to the general population, the rate of depressive symptoms among the athletes in the present study was higher than the rate of 5.7% reported for common mental disorders among the Japanese general population of the same age group over a 12-month period (Kessler et al., 1997). While the timing of data collection at the onset of the COVID-19 pandemic cannot be ignored, taking into consideration comparison with the reference group and duration of the survey in the present study, these findings indicate that elite athletes seem to be at least, and maybe even more susceptible than the general population to psychological issues. These findings are partially consistent with a previous meta-analysis showing elite athletes to be no less vulnerable than the general population (Gorczynski et al., 2017). However, it is difficult to generalize because due to differences among uncontrollable factors such as the duration and timing of the survey and psychological effects from the Covid pandemic.

Association between depressive symptoms and risk factors

The rate of generalized anxiety in the study (3.1%) was lower than previous studies that used the GAD-7 (Gulliver et al., 2015; Junge & Feddermann-Demont, 2016). These results revealed a positive association between anxiety and depressive symptoms among the athletes. However, only two players had scores suggesting possible clinical levels of depressive symptoms and anxiety. Regardless, the significant correlation found in the present study is consistent with previous research showing prior anxiety disorders were a risk factor for developing depressive symptoms (Costanza et al., 2021). This reinforces that mental health problems are often linked to each other and should be viewed broadly and as co-existing rather than independently with a separate focus on each problem. The current study found no association between depressive symptoms and other risk factors identified in previous studies such as current injuries, past severe injuries, and life event stressors. The results were consistent with the studies of Nixdorf and Forskett showing no significant associations with current injuries and past severe injuries,

Table 3
Association between depressive symptoms and risk factors.

Variable PHQ-9	Non-depressive group	Depressive group	*P*-value
Age in years; mean (SD)	25.9 (4.5)	27.6 (4.0)	0.33
Soccer career in Japan in years: median (IQR)	5.5 (2–10)	8.0 (4–12)	0.41
Field position; n (%)			
Midfielder	26	1	0.14
Defender	14	2	
Forward	14	1	
Goalkeeper	4	2	
Current injury (n)			
No	49	5	1.00
Yes	9	1	
History of severe injuries (n)			
None	18	1	0.66
Yes	40	5	
GAD-7 score (n)			
0 to 9	58	4	0.007*
10 or more	0	2	
Stressors[α] (n)			
0	19	2	0.84
1 to 2	30	3	
3 and more	6	1	
Athlete-specific stressors[α] (n)			
Interaction with staff or teammates			
0	4	52	0.071
1	1	1	
2	1	1	
3	0	1	
Pressure to win or be selected			1.00
0	4	34	
1	1	14	
2	1	6	
3	0	1	
Volume of training			
0	3	33	0.81
1	2	17	
2	1	5	
3	0	0	
PHQ-2			
Age in years; mean (SD)	26.2 (±4.5)	24.7 (±4.5)	0.53
Soccer career in Japan in years; median (IQR)	6.0 (2–10)	6.0 (2.75–10)	0.92
Current injury (n)			
No	51	3	0.50
Yes	9	1	
History of severe injuries (n)			
None	18	1	1.00
Yes	42	3	
GAD-7 score (n)			
0 to 9	60	2	0.003*
10 or more	0	2	
Stressors[α]: median (IQR)	1.0 (0–2)	0.5 (0–1)	0.24

[α] $n = 61$ (due to uncompleted responses).
* significant difference.SD, Standard Deviation; IQR, interquartile range; PHQ, Patient Health Questionnaire; GAD, General Anxiety Disorder.

Appendix
Multivariate analysis of demographics.

	Odds Ratio	95%CI lower limit	95%CI upper limit	P Value
Age	1.10	0.894	1.35	0.365
Education*	2.75	0.453	16.7	0.272

CI, Confidence Interval.
* For the accuracy of the multivariate analysis, vocational/ technical school was included in college/university or higher.

respectively (Foskett & Longstaff, 2018; Nixdorf et al., 2013). The location of injuries, especially head trauma may have an association with mood disorders (Costanza et al., 2021), an issue that needs further examination in future research.

PHQ-9 and PHQ-2

PHQ-2 was employed in the study as well as PHQ-9 because the two-question PHQ-2 is much easier to use as a screening tool in clinical practice than the nine-question PHQ-9. Hence, understanding a comparison of their use is important. The rate of depressive symptoms based on PHQ-2 (6.2%) was lower than that on PHQ-9. This finding contrasts with usual trends where the PHQ-2 results in more positives than the PHQ-9. Potential causes were the different cut-off and a small sample.

Limitations and strengths

Caution needs to be exercised in generalizing the current results to all professional soccer players in Japan due to risk of selection bias, self-report survey, and relatively small sample size. While all J1 league

teams were invited to participate in the current study, only four opted in. The rankings of the four teams were varied, and further the city populations varied as well. In the multivariate analysis between depressive symptoms and demographic factors, there is no significant difference (Appendix). This may be due to the small sample. Thus, a larger sample is warranted for future study. Trainers of teams who perceived mental health to be a problem among their team members may have been more willing to agree to participate.

The reality that only four of the 18 top Division teams chose to offer participation to their team highlights the difficulty of recruiting clubs and professional players. Reluctance at the management level may be due to stigma associated with mental illness (Gouttebarge et al., 2015b), and the lack of knowledge of mental health issues among players and staff. Given these study findings, the hope is for more clubs to opt into participation in the future. In the current study, a committee member of J. League gave us the opportunity to introduce our project to team doctors. Based on the committee member's trusting relationship with the coaches, some teams agreed to participate in the project.

Our response rate was higher than many similar types of web surveys (Shih & Xitao, 2008). Most previous studies about mental health issues in elite athletes achieved lower response rates (Table 1). Despite a response rate of 76%, an additional 20 players did not complete the PHQ section of the survey instrument. This suggests that players experiencing depressive symptoms may have been reluctant to report symptoms given the competitive nature of professional athletics and fear of any repercussions, or the creation of self-doubt about their ability to compete mentally. Consequently, the results may underestimate the rate of depressive symptoms in professional soccer players in Japan. The fear players have of ruining their chances of team selection could have resulted in response bias. We have no information about the non-respondent group. Even if all 48 non-respondents from the four teams were assumed to not have depressive symptoms, a situation that is possible but unlikely, and they were included in the denominator, the lower limit of the estimated prevalence would still be 5.4% or about 1 in 20 players on the participating teams.

While feasibility issues would need to be overcome, an independent non-threatening, third-party assessment of mental health status as opposed to self-report might reduce response bias. Additionally, a more supportive environment towards mental health problems might encourage more openness and disclosure by athletes. Although many risk factors were assessed in the study, potential risk factors were not fully investigated including marital or residential status.

Implications

Despite these potential limitations, this is the first known study to estimate the rate of mental health problems among professional soccer players in Japan, and only the second among professional sports teams in Japan following publication of a study of professional rugby players (Ojio et al., 2021). The finding that professional athletes are susceptible to depressive symptoms to at least the same extent and possibly more than the general population indicates that athletes require similar attention to depression risk as the general population. As psychological factors influence player's performances or recovery from injuries (Forsdyke et al., 2016; Woodman & Hardy, 2003), players, coaches, and managers could reap benefit from early intervention or prevention.

These findings may apply to players at different levels, sport, and player gender because they have factors in common such as pressure to win, stigma and physical stress. Most players consult with team physicians, physiotherapists, or athletic trainers instead of certified sports psychologists or psychiatrists due to access or financial reasons. Sport medicine professionals can play an important role not only by recognizing athletes as suffering from mental health issues but also by improving general awareness. Future qualitative study could explore missing risk factors and how and why these elements have an impact athletes' mental health.

The current study documents the need for awareness and understanding of athletes' mental health among players, coaches, and the public to reduce stigma and facilitate openness towards psychological issues (Arnold & Fletcher, 2012; Gulliver et al., 2012). In order to obtain more precise estimates of mental health problems among athletes in Japan and improve the situation, more participation among professional teams and their athletes will be necessary in future research. A particular gap remains research on mental health of female elite athletes in Japan and Asia. Awareness, openness, and better literacy about mental health among athletes is critical.

Conclusion

This pioneering study draws attention to elite athletes' mental health in Japan and suggests that they experience depressive symptoms, and are about as likely as other members of the general population. This study represents an early step toward improving understanding of mental health issues in sports players in non-Western countries. The findings may apply to other sports, different play levels, and gender. Awareness of the issues among the public as well as sports societies is needed to create a supportive environment.

Sport medicine professionals can play a significant role in improving people's mental health literacy and helping athletes. Given the paucity of literature in the East Asia region, there is a dire need for research about the mental health especially within other Asian countries. Future research could benefit from larger sample sizes with further attention to effective screening and diagnostic methods, survey timing, and assessment of participants' backgrounds, all factors that could be explored with a qualitative or mixed methods approach.

Keypoints

Question

Ø What is the estimated rate and associated risk factors of depressive symptoms among male professional soccer players in Japan?

Findings

Ø We identified the presence of depressive symptoms among male professional soccer players in Japan. The rate among four participating teams was lower than in previous studies with Western samples but higher than in the general population of Japan. Depressive symptoms were associated with general anxiety. No significant associations were observed between depressive symptoms and age, current injuries, or past severe injury history.

Meaning

Ø The findings demonstrate evidence of depressive symptoms among professional soccer players in Japan. The depressive symptoms rates are substantial and warrant systematic clinical consideration including mitigating stigma that may hinder recognition and athletes from seeking help.

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Declaration of Competing Interest

There are no conflicts of interest to declare.

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References

Arnold, R., & Fletcher, D. (2012). A research synthesis and taxonomic classification of the organizational stressors encountered by sport performers. *Journal of Sport and Exercise Psychology, 34*, 397–429. doi:10.1123/jsep.34.3.397.

Baum, A. L. (2013). Suicide in athletes. In DA Baron, CL Reardon, & SH Baron (Eds.), *Clinical sports psychiatry: An international perspective* (pp. 79–88). Hoboken, NJ: Wile.

Bramwell, S. T., Masuda, M., Wagner, N. N., et al., (1975). Psychosocial factors in athletic injuries: Development and application of the Social and Athletic Readjustment Rating Scale (SARRS). *Journal of Human Stress, 1*, 6–20. doi:10.1080/0097840X.1975.9940404.

Buck, K., Spittler, J., Reed, A., et al., (2018). Psychological attributes of ultramarathoners. *Wilderness & Environmental Medicine, 29*, 66–71. doi:10.1016/j.wem.2017.09.003.

Burrows, K., Cunningham, L., & Raukar-Herman, C. (2021).IOC mental health in elite athletes toolkit IOC mental health working group Available from: https://stillmed.olympics.com/media/Document%20Library/IOC/Athletes/Safe-Sport-Initiatives/IOC-Mental-Health-In-Elite-Athletes-Toolkit-2021.pdf [Accessed 18th August 2021].

Castaldelli-Maia, J. M., Gallinaro, J. G. d. M. E., Falcão, R. S., et al., (2019). Mental health symptoms and disorders in elite athletes: A systematic review on cultural influencers and barriers to athletes seeking treatment. *British Journal of Sports Medicine, 53*, 707–721. doi:10.1136/bjsports-2019-100710.

Chiu, E. (2004). Epidemiology of depression in the Asia Pacific region. *Australasian Psychiatry, 12*, S4–10. doi:10.1111/j.1039-8562.2004.02099.x.

Costantini, L., Pasquarella, C., Odone, A., Colucci, M. E., Costanza, A., Serafini, G., et al., (2021). Screening for depression in primary care with Patient Health Questionnaire-9 (PHQ-9): A systematic review. *Journal of Affective Disorders, 279*, 473–483. doi:10.1016/j.jad.2020.09.131.

Costanza, A., Amerio, A., Radomska, M., Ambrosetti, J., Di Marco, S., Prelati, M., et al., (2020). Suicidality assessment of the elderly with physical illness in the emergency department. *Frontiers in Psychiatry, 11*, Article 558974. doi:10.3389/fpsyt.2020.558974.

Costanza, A., Radomska, M., Zenga, F., Amerio, A., Aguglia, A., Serafini, G., et al., (2021). Severe suicidality in athletes with chronic traumatic encephalopathy: A case series and overview on putative ethiopathogenetic mechanisms. *International Journal of Environmental Research and Public Health, 18*(3). doi:10.3390/ijerph18030876.

Cresswell, S., & Eklund, R. (2007). Athlete burnout: A longitudinal qualitative study. *Sport Psychology, 21*, 1–20. doi:10.1123/tsp.21.1.1.

(2001). *Mental health: Culture, race and ethnicity* (pp. 23–49). Rockville, MD: U.S. Dept. of Health and Human Services, Public Health Service, Office of the Surgeon General.

Fincham, J. E. (2008). Response rates and responsiveness for surveys, standards, and the journal. *American Journal of Pharmaceutical Education, 72*, 43. doi:10.5688/aj720243.

Forsdyke, D., Smith, A., Jones, M., & Gledhill, A. (2016). Psychosocial factors associated with outcomes of sports injury rehabilitation in competitive athletes: A mixed studies systematic review. *British Journal of Sports Medicine, 50*(9), 537–544. doi:10.1136/bjsports-2015-094850.

Foskett, R. L., & Longstaff, F. (2018). The mental health of elite athletes in the United Kingdom. *Journal of Science and Medicine in Sport, 21*, 765–770. doi:10.1016/j.jsams.2017.11.016.

Fuller, C. W., Ekstrand, J., Junge, A., et al., (2006). Consensus statement on injury definitions and data collection procedures in studies of football (soccer) injuries. *British Journal of Sports Medicine, 40*, 193–201. doi:10.1136/bjsm.2005.025270.

Gorczynski, P. F., Coyle, M., & Gibson, K. (2017). Depressive symptoms in high-performance athletes and non-athletes: A comparative meta-analysis. *British Journal of Sports Medicine, 51*, 1348–1354. doi:10.1136/bjsports-2016-096455.

Gouttebarge, V., Aoki, H., & Kerkhoffs, G. (2015a). Symptoms of common mental disorders and adverse health behaviours in male professional soccer players. *Journal of Human Kinetics, 49*, 277–286. doi:10.1515/hukin-2015-0130.

Gouttebarge, V., Backx, F. J., Aoki, H., et al., (2015b). Symptoms of common mental disorders in professional football (soccer) across five European countries. *Journal of Sports Science and Medicine, 14*, 811–818 PMID26664278.

Gouttebarge, V., Hopley, P., Kerkhoffs, G., et al., (2018). A 12-month prospective cohort study of symptoms of common mental disorders among professional rugby players. *European Journal of Sport Sciences, 18*, 1004–1012. doi:10.1080/17461391.2018.1466914.

Gouttebarge, V., Castaldelli-Maia, J. M., Gorczynski, P., et al., (2019). Occurrence of mental health symptoms and disorders in current and former elite athletes: A systematic review and meta-analysis. *British Journal of Sports Medicine, 53*(11), 700–706. doi:10.1136/bjsports-2019-100671.

Gulliver, A., Griffiths, K. M., & Christensen, H. (2012). Barriers and facilitators to mental health help-seeking for young elite athletes: A qualitative study. *BMC Psychiatry, 12*, 157. doi:10.1186/1471-244X-12-157.

Gulliver, A., Griffiths, K. M., Mackinnon, A., et al., (2015). The mental health of Australian elite athletes. *Journal of Science and Medicine in Sport, 18*, 255–261. doi:10.1016/j.jsams.2014.04.006.

Inagaki, M., Ohtsuki, T., Yonemoto, N., Kawashima, Y., Saitoh, A., Oikawa, Y., et al., (2013). Validity of the Patient Health Questionnaire (PHQ)-9 and PHQ-2 in general internal medicine primary care at a Japanese rural hospital: A cross-sectional study. *General Hospital Psychiatry, 35*(6), 592–597. doi:10.1016/j.genhosppsych.2013.08.001.

Junge, A., & Feddermann-Demont, N. (2016). Prevalence of depression and anxiety in top-level male and female football players. *BMJ Open Sport and Exercise Medicine, 2*, Article 000087. doi:10.1136/bmjsem-2015-000087.

Kawakami, N., Tachimori, H., & Takeshima, T. et al. (2016). The prevalence of mental health disorders and help-seeking behaviours Available: http://wmhj2.jp/WMHJ2-2016R.pdf [Accessed 14 June 2020].

Kessler, R. C., Zhao, S., Blazer, D. G., et al., (1997). Prevalence, correlates, and course of minor depression and major depression in the national comorbidity survey. *Journal of Affective Disorders, 45*, 19–30. doi:10.1016/s0165-0327(97)00056-6.

Kilic, O., Aoki, H., Haagensen, R., et al., (2017). Symptoms of common mental disorders and related stressors in Danish professional football and handball. *European Journal of Sport Sciences, 17*, 1328–1334. doi:10.1080/17461391.2017.1381768.

Kroenke, K., & Spitzer, R. (2002). The PHQ-9: A new depression diagnostic and severity measure. *Psychiatric Annals, 32*, 509–515. doi:10.3928/0048-5713-20020901-06.

Kuettel, A., & Larsen, C. H. (2020). Risk and protective factors for mental health in elite athletes: A scoping review. *International Journal of Sport and Exercise Psychology, 13*, 231–265. doi:10.1080/1750984X.2019.1689574.

Löwe, Y. B., Decker, Y. O., Müller, Y. S., et al., (2008). Validation and standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the general population. *Medical Care, 46*, 266–274. doi:10.1097/MLR.0b013e318160d093.

Martin, A., Rief, W., Klaiberg, A., et al., (2006). Validity of the Brief Patient Health Questionnaire Mood Scale (PHQ-9) in the general population. *General Hospital Psychiatry, 28*, 71–77. doi:10.1016/j.genhosppsych.2005.07.003.

Maurer, D. M., Raymond, T. J., & Davis, B. N. (2018). Depression: Screening and diagnosis. *Am Fam Physicia, 98*, 508–515 PMID30277728.

Mummery, K. (2005). Essay: Depression in sport. *Lancet (London, England), 366*, S36–S37. doi:10.1016/S0140-6736(05)67840-3.

Muramatsu, K., Kamijima, K., Yoshida, M., Otsubo, T., Miyaoka, H., Muramatsu, Y., et al., (2007). The patient health questionnaire, Japanese version: Validity according to the mini-international neuropsychiatric interview–plus. *Psychological Report, 101*(3), 952–960. doi:10.2466/pr0.101.3.952-960.

Muramatsu, K. (2014). An up-to-date letter in the Japanese version of PHQ, PHQ-9, PHQ-15. *Niigata Seiryo Daigakudaigakuin Rinshosinrigakukenkyu (Grad School Niigata Seiryo Uni Clin Psychol Res, 7*, 35–39. doi:10.32147/00001605.

Nixdorf, I., Hautzinger, M., & Beckmann, J. (2013). Prevalence of depressive symptoms and correlating variables among German elite athletes. *Journal of Clinical Sport Psychology, 7*, 313–326. doi:10.1123/jcsp.7.4.313.

Ojio, Y., Matsunaga, A., Hatakeyama, K., et al., (2021). Anxiety and depression symptoms and suicidal ideation in Japan Rugby Top League players. *International Journal of Environmental Research and Public Health, 18*, 1205. doi:10.3390/ijerph18031205.

Reardon, C. L., Hainline, B., Aron, C. M., et al., (2019). Mental health in elite athletes: International Olympic Committee consensus statement (2019). *British Journal of Sports Medicine, 53*, 667–699. doi:10.1136/bjsports-2019-100715.

Schaal, K., Tafflet, M., Nassif, H., et al., (2011). Psychological balance in high level athletes: Gender-based differences and sport-specific patterns. *PLoS One, 6*, 19007. doi:10.1371/journal.pone.0019007.

Schinke, R. J., Stambulova, N. B., Si, G., & Moore, Z. (2017). International society of sport psychology position stand: Athletes' mental health, performance, and development. *International Journal of Sport and Exercise Psychology, 16*(6), 622–639. doi:10.1080/1612197X.2017.1295557.

Schwenk, T. L. (2000). The stigmatisation and denial of mental illness in athletes. *British Journal of Sports Medicine, 34*, 4–5. doi:10.1136/bjsm.34.1.4.

Shih, T.-. H., & Xitao, F. (2008). Comparing response rates from web and mail surveys: A meta-analysis. *Field Method, 20*(3), 249–271. doi:10.1177/1525822X08317085.

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine, 166*(10), 1092–1097. doi:10.1001/archinte.166.10.1092.

Steel, Z., Marnane, C., Iranpour, C., et al., (2014). The global prevalence of common mental disorders: A systematic review and meta-analysis 1980–2013. *International Journal of Epidemiology, 43*, 476–493. doi:10.1093/ije/dyu038.

Woodman, T. I. M., & Hardy, L. E. W. (2003). The relative impact of cognitive anxiety and self-confidence upon sport performance: A meta-analysis. *Journal of Sports Science, 21*(6), 443–457. doi:10.1080/0264041031000101809.

Yahiro, K., Inoue, M., & Nozawa, Y. (1993). An examination on the Social Readjustment Rating Scale (Holmes et al.) by Japanese subjects. *The Japanese Journal of Health Psychology, 6*, 18–32. doi:10.1016/0022-3999(67)90012-8.