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The Mental Health of Elite Athletes in the United Kingdom

Abstract

Objectives: The purpose of this study was to investigate the prevalence of signs of anxiety/depression and distress among a sample of elite athletes in the United Kingdom (UK).

A secondary aim was to identify the variables associated with signs of anxiety/depression and

distress in the same sample. **Design:** A cross-sectional survey was distributed to a sample of

elite athletes in the UK. **Methods:** A total of 143 elite athletes completed an online survey that

consisted of demographic questions, the Greenhaus Scale assessing career satisfaction, the

12-Item General Health Questionnaire assessing signs of anxiety/depression and a distress

screening based on the Four-Dimensional Symptom Questionnaire. **Results:** 47.8% of the

overall sample met the cut-off for signs of anxiety/depression and 26.8% met the cut-off for

signs of distress. A significant association was found between gender and signs of distress (χ^2

= 8.64, df = 1, $p = 0.003$). Career dissatisfaction was a significant independent predictor of

signs of anxiety/depression (OR = 0.836, $p = 0.001$) and distress (OR = 0.849, $p = 0.003$).

Conclusions: The percentage of a sample of elite athletes in the UK showing signs of

anxiety/depression and distress indicate that further cross-sectional research is required to

understand the prevalence of mental issues in the elite athlete population in the UK. Findings

indicate that screening elite athletes for career dissatisfaction may support the early detection

of signs of anxiety/depression and/or distress. Emphasis should be placed on understanding

and improving the mental health of elite athletes in the UK.

Keywords: Mental disorders, sports, anxiety, depression, distress

26 1. Introduction

27 The World Health Organisation (WHO) estimated that in 2015, 322 million people in
28 the global population (4.4%) had depression and 264 million people (3.6%) were living with
29 some form of anxiety disorder (WHO, 2017).¹ These disorders are often referred to as
30 Common Mental Disorders (CMDs).² Recent research has suggested that the elite athlete
31 population are particularly susceptible to CMDs.³ Within male professional football, the
32 prevalence of anxiety and depression symptoms have been found to range from between 25-
33 43%, and distress symptoms between 11-18%, across Finland, France, Norway, Spain and
34 Sweden.⁴ Further research discovered that 8.6% of elite French athletes from a range of sports
35 had an anxiety disorder and 3.6% had experienced a depressive episode.⁵ Additionally, 19%
36 of elite German athletes were found to be experiencing depressive symptoms.⁶ More recently,
37 44.7% of current Dutch Olympic athletes from a range of sports (n=203, male=36%,
38 female=64%) reported signs of anxiety/depression and 26.6% reported signs of distress.⁷
39 Finally, 46.4% of Australian elite athletes (n=224, male=47.3%, female=52.7%) recruited from
40 numerous sports reported symptoms of at least one of the mental health problems assessed
41 (e.g. symptoms of depression and anxiety).⁸

42 Investigations into the prevalence of CMDs in sub-groups of elite athletes is limited.
43 However, female French elite athletes have been found to be 1.3 times more likely to be
44 diagnosed with at least one mental disorder than male French elite athletes.⁵ Additionally,
45 German elite athletes competing in individual sports displayed more depressive symptoms
46 than those competing in team sports.⁶ Although this research sheds light on the prevalence of
47 CMDs in elite athlete sub-groups, no comparable research has been conducted in the UK.

48 There are a multitude of reasons as to why elite athletes may be particularly susceptible
49 to CMDs.⁸ Firstly, elite athletes have been found to be exposed to more than 600 distinct
50 stressors (e.g. competing through injury or inadequate financial support)⁹, and must make
51 many mental and physical investments into their sport and overcome pressures to succeed.⁵
52 Furthermore, the growing media interest in elite sport has increased the pressure placed on

53 elite athletes as it has created a platform for their performance to be publicly scrutinised.¹⁰
54 Additionally, the physical demands placed upon elite athletes mean they are at greater risk of
55 injury than other populations.¹¹ Injuries have been found to be associated with CMDs in elite
56 athletes across a range of sports.^{7,8,12} It has been suggested that this is because athletes may
57 not have developed an identity outside that of the athlete.¹³ Consequently, suffering an injury
58 can threaten an elite athlete's identity which may result in the athlete experiencing a great
59 loss.¹³ Career dissatisfaction is another variable found to correlate with levels of
60 anxiety/depression and distress in elite athletes across a range of sports within Europe.^{4,7}
61 Career satisfaction may be influenced by an athletes' perceived success. Previous research
62 has indicated that elite athletes experience depressive symptoms after losing competitions¹⁴
63 or when they have failed to achieve their performance goals.¹⁵

64 A recent review of mental health and well-being among elite athletes suggested that
65 more research needs to be conducted to inform the development of appropriate mental health
66 support systems in elite sport.³ Although recent investigations have begun to shed light on the
67 prevalence of CMDs in elite athletes in numerous countries, to our knowledge there have been
68 no explorations of this nature among elite athletes in the UK. In 2013 the Office for National
69 Statistics found that 18.3% of the general population in the UK reported symptoms of anxiety
70 or depression, with a higher percentage of females (21%) reporting anxiety/depression than
71 males (16%).¹⁶ The purpose of this study was to gain an understanding of the prevalence of
72 signs of CMD's among a sample of elite athletes in the UK.

73 Accordingly, the aim of this study was to undertake a cross-sectional survey of mental
74 health among elite athletes in the UK. A secondary aim was to identify sub-groups of elite
75 athletes at risk of the development of signs of CMDs. Consequently, associations between
76 gender, age, sport-type, competitive level and signs of anxiety/depression and distress were
77 explored. The final aim of this study was to explore the associations between severe injury and
78 career satisfaction with signs of anxiety/depression and distress.

79 2. Methods

80 Participants were required to fulfil the following inclusion criteria: (1) currently
81 competing at professional, international or national level; (2) 16 + years old; (3) based within
82 the UK; (4) able to read and comprehend texts fluently in English. A total of 159 athletes
83 responded to the online survey; however, 16 athletes were excluded from the sample because
84 they did not meet the inclusion criteria (14 participants were under the age of 16, one
85 participant only completed the demographic questions in the survey, and one participant took
86 part in an activity that was not classified as a sport by the authors). Therefore, the data of 143
87 elite athletes were analysed.

88 Sample characteristics are presented in Table 1. Participants were recruited from 25
89 different sports. The total sample consisted of 81 males and 61 females (one participant did
90 not specify their gender). Athletes participating in sports requiring three or more athletes on
91 each side simultaneously were categorised as team athletes, whereas those competing in solo
92 or sports where there was an option for two players in one team (e.g., table tennis doubles)
93 were classified as individual athletes.¹⁷ Twelve participants could not be categorised due to
94 uncertainty regarding their sport-type (e.g., it was unclear if rowers competed in single sculling
95 events or crews).

96 TABLE 1 HERE

97 Although participants were not required to provide any personally identifiable
98 information, they were invited to provide some demographic information including; age, height,
99 weight, gender, sport and competitive level. Participants were assigned to one of four
100 competitive levels: professional international, professional national, amateur international and
101 amateur national. In accordance with previous research, the total number of severe injuries
102 experienced during the participants' sporting careers was examined with a single question
103 ('How many severe injuries have you had so far in your sporting career?').⁷ Participants were
104 notified that a severe injury was defined as an injury that had occurred during team activities
105 and led to either training or match absence for more than 28 days.¹⁸ The number of severe

106 injuries were categorised into four groups for analyses: 0 injuries, 1, injury, 2 injuries, and 3 or
107 more injuries.

108 Career satisfaction was assessed using the Greenhaus Scale,¹⁹ which has previously
109 been used in elite athlete populations^{7, 20}. The internal consistency of the Greenhaus Scale in
110 this study was acceptable (Cronbach $\alpha = .82$). The Greenhaus Scale consists of 5 items (such
111 as, 'I am satisfied with the success I have achieved in my sporting career'). Responses were
112 made on a 5-point scale (1 = 'strongly disagree', 2 = 'disagree to some extent', 3 = 'uncertain',
113 4 = 'agree to some extent', and 5 = 'strongly agree').¹⁹ A total score was obtained by summing
114 the responses from the five items and could range from 5-25. Higher scores are indicative of
115 higher levels of career satisfaction.

116 The 12-Item General Health Questionnaire (GHQ-12) was used to assess
117 psychological signs of anxiety and/or depression experienced by the participants in the
118 previous four weeks.²¹ The psychometric properties of the GHQ-12 have been confirmed
119 (internal consistency: 0.7-0.9; criterion-related validity: sensitivity 0.763, specificity 0.834, Area
120 Under ROC Curve ≥ 0.83).²¹ The internal consistency of the GHQ-12 in this study was
121 acceptable (Cronbach $\alpha = .79$). The GHQ-12 contains 12 items (such as, 'Have you recently
122 felt constantly under strain?'). Responses are made on a 4-point scale ('not at all,' 'no more
123 than usual,' 'rather more than usual' and 'much more than usual') and data were analysed
124 using the traditional GHQ binary scoring method (0-0-1-1). A total score between 0-12 was
125 obtained by summing up the answers on the twelve items. A score of ≥ 2 indicated signs of
126 anxiety/depression.²¹ This cut-off has previously been used with athletic and non-athletic
127 populations in comparable research.^{4, 21}

128 In accordance with previous research on elite athlete samples,^{2, 4, 7} a three-item
129 distress screener based on the Four-Dimensional Symptom Questionnaire (4DSQ)^{22, 23} was
130 used to assess the participants' psychological symptoms of distress experienced in the
131 previous four weeks. The items used included; 'Have you recently suffered from worry?', 'Have
132 you recently suffered from listlessness? (lack of interest, energy, or spirit)', and 'Have you

133 recently felt tense?'. Each item was responded to on a 4-point Likert scale and scored as
134 follows; absence of symptoms ('no': 0 points), doubtfully present ('sometimes': 1 point), or
135 present at a clinically significant level ('regularly or very often': 2 points). This method of scoring
136 has been used previously on the 4DSQ.²⁴ The internal consistency of the distress screener in
137 this study was adequate (Cronbach $\alpha = .69$). A total score between 0-6 was obtained by
138 summing up the answers on the three items. In accordance with previous research in elite
139 athlete samples score of ≥ 4 indicated signs of distress.^{7, 22, 23} This study assessed distress
140 alongside anxiety/depression as distress has previously been defined as being independent
141 from anxiety and depression.²²

142 Upon gaining ethical approval from the Departmental Ethics Committee (protocol
143 number 0365), gatekeepers at relevant organisations were contacted via email to invite them
144 to circulate the survey to athletes fitting the inclusion criteria. Consequently, 208 professional
145 or elite clubs across recognised sports, 57 national governing bodies of Olympic qualified or
146 recognised sports, and eight elite athlete schemes in the UK were contacted. A total of 15
147 clubs, nine governing bodies and three elite athlete schemes agreed to assist with the data
148 collection for this study and forwarded a standardised invitation email to their athletes along
149 with the link to the online survey. Based on the confirmation of the number of athletes that the
150 survey was sent to by seven organisations and the squad/elite athlete scheme size of the
151 remaining 20 organisations, it is estimated that the link to the online survey was forwarded to
152 approximately 548 elite athletes (response rate of 29%).

153 The link to the survey took the participants to an information page and they were
154 required to provide their informed consent before beginning the survey. The online survey took
155 approximately ten minutes to complete. Upon completion of the survey the participants were
156 provided with debrief information where the contact details of helplines for mental health
157 experts and organisations were provided for athletes requiring further information or
158 assistance. All data was collected using the Bristol Online Survey between January to April
159 2017.

160 All data was analysed using the statistical software IBM SPSS Statistics 23.0 for
161 Windows. Percentages were used to illustrate the prevalence of signs of anxiety/depression
162 and distress in the sample. Multiple chi-squared tests were performed to determine the
163 associations between gender, age, sport type, competitive level, and number of injuries with
164 signs of anxiety/depression and distress. Point biserial correlation coefficients were used to
165 explore the direction and relative strength of potential relationships between career satisfaction
166 with signs of anxiety/depression and distress. Owing to the substantial number of statistical
167 analyses undertaken and the concerns associated with making type 1 errors significance was
168 taken at the $p < 0.01$ rather than $p < 0.05$. Two logistic regressions were undertaken to identify
169 the independent predictors of signs of anxiety/depression and distress.

170 3. Results

171 The percentage of a sample of elite athletes in the UK showing signs of
172 anxiety/depression is presented in table 2. A total of 138 participants were included in the data
173 analyses for signs of anxiety/depression due to five participants providing incomplete
174 responses. Sixty-six participants (47.8%) scored ≥ 2 on the GHQ-12, indicating signs of
175 anxiety/depression. A point biserial correlation revealed that career satisfaction was
176 significantly negatively correlated with the presence of signs of anxiety/depression ($p < 0.001$, r
177 = -0.31). No significant associations were found between signs of anxiety/depression and
178 gender, age, sport-type, total number of severe injuries and competitive level.

179 Variables associated with signs of anxiety/depression at $p < 0.1$ (career satisfaction and
180 number of severe injuries) were entered into a logistic regression. Results revealed that as
181 career satisfaction increased by one, the odds of experiencing signs of anxiety/depression
182 decreased by 16.4%. (OR = 0.836, $p = 0.001$). Number of severe injuries was not a significant
183 independent predictor of signs of anxiety/depression.

184 **TABLE 2 HERE**

185 The percentage of a sample of elite athletes in the UK showing signs of distress is
186 presented in table 3. A total of 142 participants were included in the data analyses for signs of
187 distress due to one incomplete response on the distress screener. Thirty-eight participants
188 (26.8%) scored ≥ 4 on the distress screener, indicating signs of distress. A significant
189 association was found between gender and signs of distress ($\chi^2 = 8.64$, $df = 1$, $p = 0.003$), with
190 39.3% of female athletes and 17.3% of male athletes meeting the cut-off point. A point biserial
191 correlation revealed that career satisfaction was significantly negatively correlated with the
192 presence of signs of distress ($p < 0.001$, $r = -0.29$). No significant associations were found
193 between signs of distress and age, number of severe injuries, competitive level and sport-type.

194 Variables associated with distress at $p < 0.1$ (career satisfaction, competitive level and
195 gender) were entered into a logistic regression. Results found that as career satisfaction
196 increased by one, the odds of experiencing signs of distress decreased by 15.1% (OR = 0.849,
197 $p = 0.003$). Competitive level and gender were not found to be significant independent
198 predictors of signs of distress at the $p < 0.01$ level. However, it is important to note that gender
199 was verging on being a significant predictor of signs of distress (OR = 2.9, $p = 0.013$) with
200 females nearly three times more likely to show signs of distress than males.

201 **TABLE 3 HERE**

202 **4. Discussion**

203 The purpose of this study was to gain insight into the prevalence of signs of CMDs in a
204 sample of elite athletes in the UK. Results revealed that nearly half of the athletes recruited
205 showed signs of anxiety/depression (47.8%), and just over a quarter showed signs of distress
206 (26.8%). These findings are similar to those reported in a sample of competitive current Dutch
207 elite athletes from a range of sports (anxiety/depression=44.7%, distress=26.6%).⁷ However,
208 the percentage of athletes showing signs of anxiety/depression and distress in this study is
209 greater than the ranges reported (anxiety/distress = 26%-37.9%, distress = 10%-15.1%) in
210 multiple studies investigating the prevalence of CMDs in current professional footballers across
211 numerous countries.^{2, 12, 20} Additionally, the prevalence of signs of CMDs reported in this study

212 is higher than those previously reported in samples of French and German elite athletes (3.6%-
213 19%).^{5, 6} However, it is important to note that the studies on French and German athletes used
214 alternative measures of CMDs to those used in this study and the previous studies on
215 professional footballers and Dutch athletes (e.g. GHQ-12 and a distress screener based on
216 the 4DSQ). **In order for direct comparisons of the prevalence of signs of CMDs to made across**
217 **different countries and sports it is suggested that future studies should employ the use of**
218 **consistent measures.**

219 The association between gender and **signs of distress** was significant, with 17.3% of
220 male athletes and 39.3% of female athletes reporting **signs of distress**. This discovery is
221 consistent with previous research among elite athletes in Australia which found that 20.3% of
222 female athletes compared with 12.3% male athletes reported experiencing general
223 psychological distress.⁸ Similarly, women have also been revealed to perceive significantly
224 more stress than men in non-elite athlete samples.²⁵ **It has been theorised that females are**
225 **encouraged to be more socially orientated and express emotions more often than males,**
226 **consequently, they may be more likely than males to report feelings of an unpleasant manner.**²⁶
227 **Further biological hormonal and physiological explanations for the gender differences in**
228 **distress have also been proposed,²⁷ although these seem less applicable given that this study**
229 **found no gender differences in anxiety/depression. Interestingly, gender was not found to be**
230 **an independent predictor of signs of distress. Consequently, the association between gender**
231 **and signs of distress may be impacted by other confounding variables (e.g. career satisfaction**
232 **and competitive level).**

233 Career dissatisfaction was an independent predictor of **signs of anxiety/depression and**
234 **distress** within the sample of elite athletes in the UK. This finding is supportive of previous
235 research conducted with professional footballers in several countries across the world,^{4, 20}
236 retired rugby union players in France, Ireland and South Africa,²⁸ and current and retired Dutch
237 Olympic athletes.⁷ **Therefore, regularly screening elite athletes for career dissatisfaction may**
238 **help with the early detection of signs of CMDs.** Career goals and advancement are aspects

239 assessed by the Greenhaus Scale,²⁹ which were used in this study. Previously, mental health
240 issues have been found among elite swimmers that failed to meet their goals,¹⁵ therefore, this
241 may be an aspect of career satisfaction that affects an athletes' mental health. Moreover,
242 career satisfaction may also be influenced by financial income.²⁹ However, despite previous
243 research identifying lack of financial support as a stressor for athletes,³⁰ no research has
244 directly examined the impact that financial dissatisfaction has on the mental health of elite
245 athletes.

246 Although this study shed light on the mental health of elite athletes in the UK it was not
247 without its limitations. Firstly, we estimate that the survey was distributed to 548 elite athletes
248 (estimated response rate of 29%). Consequently, it is unlikely that the sample is fully
249 representative of the population of elite athletes in the UK. Secondly, the method of participant
250 recruitment used in this study means that it is possible that athletes with past or current mental
251 health problems may have been more willing to respond to the survey thus potentially biasing
252 the sample. Moreover, it may be possible that the gatekeepers of sporting clubs or governing
253 bodies who were less confident in their mental health support programmes were less inclined
254 to distribute the survey to their athletes. Finally, the self-reported measures used in this study
255 means that the athletes may not have been entirely honest with their responses due to the
256 stigma attached to mental health. However, it is hoped that the protected anonymity of the
257 participants countered this concern.

258 5. Conclusions

259 To the authors' knowledge this is the first study to investigate the mental health of a sample
260 of elite athletes within the United Kingdom. Findings revealed that nearly half of a sample of
261 elite athletes in the UK showed signs of anxiety/depression (47.8%), and just over a quarter
262 showed signs of distress (26.8%). Career dissatisfaction was found to be predictive of signs of
263 anxiety/depression and distress, therefore, screening elite athletes for career dissatisfaction
264 may support the early detection of signs of CMDs. This is particularly important given that a
265 higher percentage of signs of anxiety/depression (51.2%) and distress (32.2%) was found in

266 the 16-24 year-old age group in this sample. The association between gender and signs of
267 distress was found to be significant, however, gender was not found to be an independent
268 predictor of signs of distress. These findings underline the need for more research and
269 understanding of mental health in the elite athlete population in the UK, and suggest that more
270 importance should be placed on understanding and improving the mental health of elite
271 athletes in the UK.

272 **Practical Implications**

- 273 • Greater emphasis should be placed on understanding and improving the mental health
274 of elite athletes
- 275 • Regularly screening elite athletes for career dissatisfaction may help to detect early
276 signs of CMDs
- 277 • Further cross-sectional prevalence research on the mental health among elite athletes
278 in the UK, and assessments of mental health provisions and support systems are
279 encouraged

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