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1   Running head: Player welfare provision

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3   **"SOMEONE TO TALK TO": INFLUENCE OF PLAYER WELFARE PROVISION**
4   **ON MENTAL HEALTH IN PROFESSIONAL RUGBY LEAGUE PLAYERS**

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31
32 **Abstract**

33 Player welfare is an important development in supporting elite athletes during their

34 professional careers. Little is known about how player engagement with player welfare

35 provision impact on mental health. Over two consecutive years, professional rugby football

36 league (RFL) players were invited to complete an anonymous online survey assessing

37 psychological stress, athletic identity, and attitudes to player welfare provision. Findings

38 indicate that nearly half of respondents experienced symptoms of anxiety and depression.

39 Multivariate analyses suggest that higher psychological stress and athletic identity and less

40 knowledge and less positive attitudes to RFL mental health support is associated with worse

41 mental health, whereas older age is associated with better mental health. The study has

42 identified some key variables to focus on in developing player care and support management,

43 and also suggest directions for future research guiding player welfare support, especially

44 regarding increasing positive attitudes to mental health supports.

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Introduction

Common mental health disorders (CMDs) include different types of depression and anxiety disorders (Stansfeld et al., 2016). They are associated with a range of emotional, cognitive, behavioural and physical symptoms, and cause substantial emotional distress and interfere with daily function. They are a major public health problem and a major source of disability globally (Stansfeld et al., 2016). The prevalence of CMDs in the general population is around 15% (McManus, Bebbington, Jenkins, & Brugha, 2016), and although generally less debilitating than major psychiatric disorders, due to their relatively high prevalence, the consequences and cumulative cost of CMDs to society is great (Kendrick & Pilling, 2012).

In recent years, there has been an increasing focus on and interest in the mental health and wellbeing of elite athletes (Rice et al., 2016). Although studies have confirmed that physical activity confers positive effects on mental health (e.g., Harvey, Hotopf, Øverland, & Mykletun, 2010), it has also been suggested that experience of performing at an elite sporting level is associated with the potential for negative mental health outcomes. Elite sport is stressful, and athletes face many diverse demands as a consequence of the competitive and challenging environment within which they perform (Mellalieu, Neil, Hanton, & Fletcher, 2009; Nicholls, Holt, Polman, & Bloomfield, 2006). This can increase the possibility of experiencing symptoms of anxiety and depression through overtraining, injury and burnout (Rice et al., 2016). Furthermore, there is evidence of elite athletes having an increased risk of other mental health problems, including eating disorders (e.g., Joy, Kussman, & Nattiv, 2016), body image disorders (Kong & Harris, 2015), alcohol misuse (Lisha & Sussman, 2010) and suicide (Baum, 2005; Rice et al., 2016).

Despite the known demands and stressors that athletes face, research on the mental health of athletes is scarce (Hughes & Leavey, 2012; Reardon & Factor, 2010; Sebbens,

71   Hassmén, Crisp, & Wensley, 2016). One particular sport where there is a significant lack of

72   evidence on prevalence of symptoms related to CMD is professional rugby league. A recent

73   Australian study of players in the National Rugby League (NRL) and the National Youth

74   Competition (NYC) found an overall prevalence of depression of 12.6% and prevalence of

75   generalized anxiety disorder of 14.6% pre-season, and prevalence of depression of 10% and

76   generalized anxiety disorder of 10% in-season (Du Preez et al., 2017). Rugby league is a high

77   injury risk, collision sport played in over 50 countries worldwide (Gabbett, 2005). Recent

78   research suggests that there may be a greater risk of mental health problems experienced by

79   elite athletes who are injured (Rice et al., 2016). Furthermore, there is evidence that relative

80   to non-contact sport athletes, athletes engaged in contact sports are less willing to seek help

81   for mental health problems (Martin, 2005). Masculine norms associated with competition,

82   aggression, and toughness may limit the willingness to speak out about mental health

83   problems, and perpetuate the assumption that there is low prevalence of CMDs in elite

84   athletes (Reardon & Factor, 2010).

85   Recent figures suggest that rates of CMDs in elite athletes are equivalent to the

86   general population (Gulliver, Griffiths, Mackinnon, Batterham, & Stanimirovic, 2015; Rice et

87   al., 2016), although one study found higher rates of depression in male U-21 footballers than

88   in the general population (Junge & Feddermann-Demont, 2016). It has also been suggested

89   that what may be diagnosed as depression in the general population may be diagnosed as

90   overtraining in elite athletes, suggesting similarities in symptoms between overtraining and

91   depression. Whether overtraining is a symptom or cause of depression is not clear (Schwenk,

92   2000). There is further evidence suggesting sub-groups of elite athletes are at increased risk

93   of experiencing mental health problems (Gulliver et al., 2015), therefore, further research into

94   the mental health of elite athletes is warranted.

95   **Parameters of stress**

96   Participating in sport at elite level places athletes at risk for CMD, due to the immense

97   pressures of the sporting environment. Previous research has identified a range of stressors to

98   which athletes are exposed, such as injury, making a physical error, making a mental error,

99   watching other competitors, weather conditions, pressure to perform, goals and expectations,

100   fear of failure, lack of form, and difficulties balancing sport and non-sport commitments

101   (McKay, Niven, Lavallee, & White, 2008; Mellalieu et al., 2009; Nicholls et al., 2006;

102   Nicholls & Polman, 2007; Noblet & Gifford, 2002; Thelwell, Weston, & Greenlees, 2007;

103   Woodman & Hardy, 2001). However, for an event or situation to be considered stressful, it

104   must be perceived as stressful (Lazarus & Folkman, 1984). The impact of stressors depends

105   on an initial appraisal of the stressor as perceived as being threatening or demanding and a

106   perception of lack of appropriate resources to manage the stressor (Lazarus & Folkman,

107   1984). Previous research on elite rugby players has focused on acute sport-related stressors

108   during competition or training (Nicholls, Backhouse, Polman, & McKenna, 2009; Nicholls et

109   al., 2006), in an attempt to identify the types of stressors present. The current study is

110   concerned with the extent to which psychological stress influences mental health, rather than

111   exploring the influence of specific stressors.

112   Stress is a known risk factor for depression (e.g., Kessler, 1997), and excessive

113   psychological stress might influence the wellbeing (Neil, Hanton, Mellalieu, & Fletcher,

114   2011), injury risk (Ivarsson et al., 2017), and performance (Nicholls, Polman, & Levy, 2012)

115   of athletes. Thus, it is imperative that those involved in supporting athletes (e.g., coaches,

116   welfare managers, governing bodies) have an understanding of athletes' experiences of stress

117   and the potential consequences of experiencing stress, so that appropriate and effective

118   interventions can be developed to help athletes cope effectively (McKay et al., 2008).

119   **Athletic identity**

120   An athlete's identity may also have an influence on their perception of stress and

121   manifestations of CMDs. Athletic identity refers to the degree to which an individual

122   identifies with the athlete role, functioning as a sport-specific component of an individual's

123   self-concept (Brewer & Cornelius, 2001). Athletic identity can be conceptualised as the

124   combination of cognitive, affective, social and behavioural aspects of identifying with the

125   role of the athlete (Brewer, Van Raalte, & Linder, 1993; Murphy, Petitpas, & Brewer, 1996).

126   This sport-role identification is viewed as an important correlate of athlete behaviour (Grove,

127   Lavallee, & Gordon, 1997), and is associated with the development of a salient self-identity,

128   with positive effects on athletic performance and a greater likelihood of long-term

129   engagement in exercise behaviour (Sparkes, 1998). However, elite athletes with strong

130   athletic identities may not explore other aspects of the self (i.e., academic, social; Brewer &

131   Cornelius, 2001), and so become solely focused on athletic development (Horton & Mack,

132   2000). Thus, developing a strong athletic identity can have adverse consequences, including

133   risk of psychological and social distress, such as depression (e.g., Doherty, Hannigan, &

134   Campbell, 2016), anxiety and low self-esteem (Carless & Douglas, 2009; Stephan & Brewer,

135   2007), an inability to develop a healthy, multifaceted identity (Coakley, 1992), social

136   isolation and/or reduced social activity (Horton & Mack, 2000), burnout and sports

137   disengagement (Gustafsson, Kenttä, & Hassmén, 2011), as well as difficulties adjusting to

138   identity crises such as injury, unanticipated retirement or team de-selection (Samuel &

139   Tenenbaum, 2011; Sanders & Stevinson, 2017). A study of male college football players

140   found that those with higher levels of athletic identity reported higher levels of conflict with

141   societal gender role expectations, and more stigma and negative attitudes toward help-seeking

142   (Steinfeldt, Steinfeldt, England, & Speight, 2009). Therefore, in studies of athlete mental

143   health, athletic identity appears to be an important construct to consider, as it can influence

144   emotional and social adjustment throughout an athlete's career.

Help-seeking

Help-seeking tends to be highly stigmatised within sport, and there is evidence that athletes underutilise mental health services, despite a need for these services (e.g., Steinfeldt & Steinfeldt, 2012; Watson, 2006). Athletes have a tendency to minimise signs of weakness (Reardon & Factor, 2010), and the sporting culture with its emphasis on being mentally tough, showing no signs of weakness, and fighting through the pain may be partially to blame (Baum, 2005). Recent qualitative studies have found that stigma, shame, fear, difficulty in or unwillingness to express emotion, lack of problem awareness and low mental health literacy were important barriers to help-seeking in elite athletes (Gulliver, Griffiths, & Christensen, 2012; Wood, Harrison, & Kucharska, 2017).

Player welfare

Although research relating to athlete mental health and welfare has considered some of the pressures athletes are faced with, and their potential consequences (e.g., Adie, Duda, & Ntoumanis, 2008; Gorczynski, Coyle, & Gibson, 2017; Hughes & Leavey, 2012), little research has addressed other aspects of rugby players' welfare or the implications of attitudes towards or levels of engagement with player welfare policies and the impact on mental health. In 2010, the Rugby Football League (RFL) introduced new guidelines to address players' welfare, alongside their coaching and performance development. Since 2011, it has been compulsory for all clubs to employ a Player Welfare Manager (PWM), who is responsible for player welfare support through signposting players to external agencies (e.g., Sporting Chance, careers coaches) that can provide appropriate support. The term player welfare as used by the RFL is synonymous with terms used in other sports, e.g., 'player development' in Rugby Union and 'player engagement' in National Football League (NFL), where the focus is on supporting players in achieving a sport/life balance during their careers

169   and making a smooth transition out of the game following retirement. The RFL Player

170   Welfare Policy aims to ensure that players are mentally resilient, flexible and able to maintain

171   their finances whilst planning for retirement by engaging in educational opportunities and

172   having a comprehensive understanding of various addictions, substance abuse, and mental

173   health and their relevance to their profession. Thus, player welfare is multifaceted, and the

174   mental health of players needs to be considered concurrently with player engagement with

175   policies, programmes and managers to evaluate how these may impact on the mental health

176   of elite rugby league players. It would be expected that the salience of welfare and

177   individual's engagement with player welfare policies would impact on an individual's mental

178   health, although various factors may negatively influence attitudes to help-seeking.

179   The aim of the present study was to examine the direction and strength of a number of

180   correlates related to mental health; namely, psychological stress, athletic identity and

181   attitudes to player welfare managers and policies. The results from the study have the

182   potential of identifying correlates of mental health, which in turn helps develop a

183   comprehensive understanding of rugby league players' mental health and wellbeing, which

184   underpin the development of care and support management, which can in turn facilitate

185   performance gains (Rice et al., 2016).

186   **Methods**

187   **Participants**

188   For survey 1, 77 professional rugby players (mean age = 25.75, *SD* = 4.28) completed

189   the survey. For survey 2, 169 professional rugby players (mean age = 25.01, *SD* = 4.67)

190   completed the survey. For both surveys all respondents were recruited from Super League

191   rugby clubs in the United Kingdom (UK) and one club based in France.

192   **Measures**

193   **Mental health scale**. For this survey, the five-item Mental Health Index (MHI-5) of

194   the 36-item Short Form health survey (SF-36) (Ware Jr. & Sherbourne, 1992) was used to

195   assess current general mental health problems. It is a brief screening questionnaire for

196   depression and anxiety disorders, and is a simple, and valid tool, with good specificity and

197   sensitivity for detecting mood disorders in the general population (Cuijpers, Smits, Donker,

198   Ten Have, & de Graaf, 2009; Rumpf, Meyer, Hapke, & John, 2001). It requires respondents

199   to consider events in the past month (e.g., "How much of the time in the previous 4 weeks

200   have you felt so down in the dumps that nothing can cheer you up"), and responses are on a

201   six-point scale from 1 (all of the time) to 6 (none of the time). After coding, adding, and

202   transforming, MHI-5 scores range from 0 (worst) to 100 (optimal mental health).

203   Psychometric properties have been established (Rumpf et al., 2001). For the current sample,

204   Cronbach's alpha was .82 for survey 1, and .76 for survey 2. Various cut-offs have been

205   suggested to identify caseness, with a score of 72 or less indicating mental health problems,

206   while a score of 60 or less indicates severe mental health problems (Thorsen, Rugulies,

207   Hjarsbech, & Bjorner, 2013; Van Leeuwen, Van Der Woude, & Post, 2012).

208   **Psychological stress scale.** In this survey, the 10-item Perceived Stress Scale (PSS-

209   10) was used to assess the extent to which situations in life are perceived as stressful (Cohen,

210   Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988). Items tap how unpredictable,

211   uncontrollable, and overloading respondents find their lives, and respondents were asked to

212   reflect on events over the past month (e.g., "In the last month, how often have you felt that

213   you could not cope with all the things you had to do"). The responses are on a 5-point scale

214   ranging from 0 (never) to 4 (very often), and a higher score indicates greater psychological

215   stress. Validity and reliability have been established (Cohen et al., 1983; Lee, 2012). For the

216   present sample, Cronbach's alpha was .85 for survey 1, and .81 for survey 2.

217   **Athletic identity scores.** The seven-item Athletic Identity Measurement Scale

218   (AIMS; Brewer & Cornelius, 2001) was used to assess the extent to which players identify

219   with the athlete role. The scale requires respondents to indicate the extent to which they agree

220   to statements relating to aspects of identification (e.g., social identity, exclusivity, and

221   negative affectivity) with the athlete role. The responses are on a scale from 1 (strongly

222   disagree) to 7 (strongly agree), and higher scores indicate stronger identification with the

223   athlete role. Sound psychometric properties have been established (Brewer & Cornelius,

224   2001; Visek, Hurst, Maxwell, & Watson, 2008). For the current sample, Cronbach's alpha

225   was .72 for survey 1 and .76 for survey 2.

226   **Player welfare questionnaire[1].** A survey consisting of five subsections, relating to

227   knowledge of and attitudes to RFL club welfare managers and policies (six items, Cronbach's

228   alpha .95), financial advice and education (four items, Cronbach's alpha .94 for survey 1, and

229   .91 for survey 2), mental health supports (seven items, Cronbach's alpha .92 for survey 1 and

230   .87 for survey 2), life style issues (11 items, Cronbach's alpha .92), and life after rugby (three

231   items, Cronbach's alpha .85) was constructed. Respondents were asked to rate each statement

232   (e.g., "My club has a welfare manager", "I know how to access counselling, Sporting Chance

233   and other mental health services should I need to") on a 5-point Likert scale from 1 (strongly

234   disagree) to 5 (strongly agree), and a higher score indicates higher agreement.

235   In survey 2, three additional items were added to the club welfare managers and

236   policies subsection (Cronbach's alpha .93), one additional item added to the life style issues

237   subsection (Cronbach's alpha .90), and one additional item added to the life after rugby

238   subsection (Cronbach's alpha .90).

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[1] Copies can be requested from the corresponding author.

239   **Procedure**

240   Between January and March 2015 and again between January and March 2016 we

241   conducted a cross-sectional internet-based survey of Super League rugby clubs in the UK,

242   including one club based in France. Participant inclusion criteria included being a

243   professional ruby player and playing for one of the Super League rugby clubs. All procedures

244   were reviewed and approved by the host institutions' ethics panel.

245   All first team squad members of the full time Super League Rugby clubs were invited

246   to take part in the survey by the club's player welfare manager. There were no formal

247   sessions to complete the survey. Participants completed an anonymous, self-administered 20-

248   minute online survey in self-selected locations. Each survey was made available for a period

249   of six weeks, and players received regular reminders from their player welfare manager.

250   **Statistical analyses**

251   Due to the anonymous nature of the surveys, data from each survey were separately

252   analysed to ensure independence of observations. Bivariate correlation analyses were

253   conducted to assess the variables which were correlated with the MHI-5 scores, and the

254   statistically significant variables were subsequently entered into multiple regression analyses.

255   Only participant responses with full scores on the MHI-5 were included in the analyses. *A*

256   *priori* power analyses suggested a minimum sample size requirement of 84, to achieve 80%

257   power to detect a medium effect size with four predictor variables, and a minimum

258   requirement of 91 with five predictor variables.

259   **Results**

260   **Descriptive statistics**

261   For survey 1 the following descriptive statistics can be noted. Responses were

262   returned from 13 out of 14 clubs, and 106 players accessed the survey. Of these, 7 (6.6%) did

263   not consent to take part in the survey, and of the 99 respondents who consented to take part in

264   the survey, 77 players completed the full survey (72.6%). There were no statistically

265   significant differences in age or playing experience between those who did not complete the

266   survey and those who did, ps > .05.

267   The majority of players were single and nearly half had children. The average

268   professional career was 7.29 years (SD = 6.34). Although the PSS-10 is not a diagnostic

269   instruments and therefore does not have score cut-offs, the mean psychological stress scores

270   reported by players (M = 15.51, SD = 6.50) is on par with normative data from the United

271   States of America reported for adults in the same age range (M = 17.46, SD = 7.31), and

272   males (M = 15.52, SD = 7.44) (Sheldon Cohen & Janicki-Deverts, 2012). The mean mental

273   health score in survey 1 was 73.04 (SD = 18.00). Using a cut-off score of 72 or less, suggests

274   45.5% of players experience symptoms of depression and anxiety disorders, while using a

275   cut-off score of 60 or less suggests 27.3% of players experience severe symptoms of

276   depression and anxiety disorders. This compares with 13.2% of men in the general population

277   in England having common mental health disorders, comprising different types of depression

278   and anxiety (McManus et al., 2016).

279   For survey 2, responses were returned from 14 out of 16 clubs, with 206 players

280   accessing the survey. Four did not consent to take part in the survey (1.9%), and of the 202

281   respondents who started it, complete responses were returned by 169 (82%). There were no

282   statistically significant differences in age or playing experience between those who did not

283   complete the survey and those who did, ps > .05.

284   The descriptive statistics are very similar to survey 1, with over half the respondents

285   being single, and two-thirds having children. The average professional career was 6.04 years

286   (*SD* = 4.64). The mean PSS-10 score (*M* = 14.04, *SD* = 5.83) is lower than that reported by

287   respondents in 2015, while the mean mental health score (*M* = 74.41, *SD* = 15.81) is higher

288   than the score reported in survey 1, indicating better mental health. Using a cut-off score of

289   72 or less, suggests 38.5% of players experience symptoms of depression and anxiety

290   disorders, while using a cut-off score of 60 or less suggests 23.7% of players experience

291   severe symptoms of depression and anxiety disorders. See Table 1 for a summary of

292   descriptive data.

293

294   Insert Table 1and Table 2 around here

295

296   **Predicting mental health survey 1**

297   Age, psychological stress, athletic identity and attitudes towards player welfare

298   managers and policies subscale scores were entered into a multiple regression model in which

299   MHI-5 scores were the outcome variable.

300   The model was statistically significant ($F(4, 60) = 43.76$, $p < .001$) and accounted for

301   75% of variance in mental health (adjusted $R^2 = .73$). Psychological stress was the strongest

302   predictor of mental health scores ($\beta = -.73$), followed by athletic identity ($\beta = -.23$), and age

303   ($\beta = .15$). These results suggest that the higher the psychological stress, and the more players

304   identify with the athlete role, the worse the mental health, whereas older age is associated

305   with better mental health.

306

307   Insert Table 3 around here

308

309   **Predicting mental health survey 2**

310   As the results from survey 1 suggested age and athletic identity are important

311   correlates of mental health, the data for the second survey were analysed using a hierarchical

312   multiple regression. In the first step, age and athletic identity were entered, $F(2, 153) = .15$, p

313    $= .86$ and explained 1% of the variance of mental health. In the second step, psychological

314   stress scores, attitudes towards player welfare managers and policies and attitudes towards

315   mental health support were entered. The model was significant, $F(5, 150) = 31.15$, $p < .001$,

316   and explained an additional 50% of the variance of mental health (F change $(3, 150) = 51.71$,

317    $p < .001$). Overall, the model accounted for 51% of variance in mental health (adjusted $R^2 =$

318   .49)

319   Two of the five predictors were statistically independently associated with mental

320   health scores. Psychological stress was the strongest correlate of mental health ($\beta = -.73$),

321   followed by knowledge of and attitudes towards RFL mental health supports ($\beta = -.16$).

322   These results indicate that the higher the psychological stress and the less knowledge of and

323   less positive attitudes towards RFL mental health support, the worse the mental health.

324

325   Insert Table 4 around here

326

327   **Discussion**

328   The results of our two-year survey suggest that rates of CMDs may be higher in

329   professional rugby league players than in the general population of men. Our findings

330   indicate that 45.5% of respondents to survey 1 and 38.5% of respondents to survey 2

331   experienced symptoms of common mental health disorders, while 27.3% of respondents to

332   survey 1 and 23.7% of respondents to survey 2 experienced severe symptoms of common

333   mental disorders. This compares with 13.2% of CMD in the general population of men in

334   England (McManus et al., 2016), and 15.2% of CMD in the general population of men

335   globally (Steel et al., 2014). While previous studies have indicated that elite athletes

336   experience a broadly comparable risk of common mental health disorders as the general

337   population (Du Preez et al., 2017; Gorczynski et al., 2017; Reardon & Factor, 2010; Rice et

338   al., 2016), our results suggest rugby league players may constitute a sub-group of athletes at

339   increased risk for mental health problems (Gulliver et al., 2015). Why elite rugby players

340   would be at increased risk for mental health problems cannot be answered by data from the

341   current survey. Perhaps the increased risk of injury is one reason for this (Gulliver et al.,

342   2015; Mainwaring, Hutchison, Bisschop, Comper, & Richards, 2010). There is evidence that

343   injury rates are higher in rugby league than in most other collision sports (see Gabbett, 2005),

344   and higher at elite level than at amateur level; attributed to the high playing intensity at elite

345   level (Gabbett, 2005). We did not include any measure of injury or player fatigue, and further

346   research exploring the relationship between injury, player fatigue and mental health is

347   warranted.

348   Interestingly, there are also suggestions that psychosocial factors influence occurrence

349   of, reaction to, and prevention of sport injuries (Maddison & Prapavessis, 2005; Williams,

350   2001). Specifically, how athletes respond to stress depends on an interaction between

351   cognitive factors, physiological reactions (e.g., muscle tension), and attentional factors (e.g.,

352   increased distractability). The interaction of these variables can increase an athlete's

353   susceptibility to injury by influencing coordination and flexibility along with interfering with

354   the detection of important environmental stimuli (Maddison & Prapavessis, 2005). Elite

355   athletes may be at a particular risk of experiencing high levels of chronic stress (Nicholls et

356   al., 2009; Noblet, Rodwell, & McWilliams, 2003). Indeed, perceived psychological stress

357   emerged as the strongest correlate of mental health in both surveys, such that the higher the

358   psychological stress, the worse the mental health of players. While previous research among

359   professional rugby players has emphasised sport-related stressors (Nicholls et al., 2006), a

360   recent study of rugby union players identified a range of sport and non-sport stressors,

361   including friends, sport training and recreation, which differed across rest, training and match

362   days (Nicholls et al., 2009). The findings of the present study add to this literature by

363   demonstrating that perceived psychological stress has a significant negative association with

364   mental health in elite rugby league players.

365   It should be noted that we used a generic, non-specific measure of perceived stress,

366   rather than one focused exclusively on sport-related stressors or non-competitive stressors.

367   The measure of psychological stress used assesses how unpredictable, uncontrollable, and

368   overloaded players find their lives (Cohen & Williamson, 1988). In doing so, we have

369   assessed a global, broad and rigorous representation of perceived stress encountered by elite

370   rugby league players, and have not limited assessment to competitive stressors, organisation-

371   related stressors or life stressors, for which previous literature has been criticised (Nicholls et

372   al., 2009). While an understanding of the specific stressors elite athletes face is important in

373   order to develop stress prevention strategies, our findings highlight the importance of

374   assessing psychological stress as an interaction between perceived demands and perceived

375   coping ability. The results suggest that attention should be paid to perceived stress levels in

376   elite athletes, as higher stress levels are associated with reduced mental health. Thus, the

377   consequences of experiencing excessive levels of psychological stress can be significant, and

378   influence not only mental health and emotional well-being, but also sporting performance and

379   injury risk (Nicholls et al., 2009; Maddison & Prapavessis, 2005). As such, perceived

380   psychological stress is damaging not just for the individual player, but can also negatively

381   influence team success (Williams et al., 2016).

382   Athletic identity and older age emerged as independent correlates of mental health in

383   survey 1, but not in survey 2. It is likely this reflects the differences in sample size and other

384   cohort effects between the two survey times, and serves to underline the importance of

385   prospectively investigating correlates of mental health in elite athletes. Additionally, although

386   speculative, it is possible that changes made to RFL player welfare on the basis of findings

387   from the 2015 survey may have influenced responses, and can partially explain the

388   differences in significant independent correlates of mental health. That less knowledge of and

389   less positive attitudes towards RFL mental health support is associated with worse mental

390   health in survey 2, even when other correlates are controlled for, would suggest this.

391   However, we are unable to infer any changes in responses to changes in RFL policy from the

392   data collected here, as no attempt was made to track responses from players across the two

393   surveys.

394   Nevertheless, attitudes to and knowledge of RFL mental health support emerges as a

395   significant independent correlate of mental health, and is an important and novel finding.

396   While controlling for all other variables, positive attitudes to and knowledge of mental health

397   supports is associated with better mental health. This suggests that, while it can be difficult to

398   protect elite athletes from 'undue risk', increasing positive attitudes towards mental health

399   supports and mental health literacy, may serve to increase help-seeking behaviour, reduce

400   stigma and thus reduce mental health disorders (Bauman, 2016; Coyle, Gorczynski, &

401   Gibson, 2017; Gulliver et al., 2012). The extents to which attitudes to and knowledge of

402   mental health support predict help-seeking in elite athletes remain to be assessed. However, a

403   recent Australian study found that a brief mental health literacy workshop, delivered to

404   coaches and support staff working with elite athletes, was successful in increasing knowledge

405   of CMDs and confidence in ability to help someone experiencing a mental health problem

406   (Sebbens et al., 2016). The authors suggest that even a very brief intervention can aid in

407   promoting early intervention and timely referral of elite athletes with mental health concerns

408   to appropriate professionals. Future research is required to further explore this.

409   **Implications for interventions**

410   While previous research suggests that elite athletes are as likely to experience CMDs

411   as the general population, our results indicate that some elite athletes may be more likely to

412   experience CMDs than the general population. This study has identified some risk factors to

413   mental health in elite rugby league players, namely perceived psychological stress, athletic

414   identity, age, and attitudes to mental health support.

415   There is no universal solution to addressing mental health in elite sport. All sports

416   have different needs, due to different organisational structures; however, the results from the

417   present study provide additional knowledge of what factors may be important to consider in

418   designing prevention and treatment programmes. Importantly, by developing interventions

419   focused on improving attitudes towards and knowledge of mental health supports, those

420   involved in supporting elite athletes could help improve athletes' help-seeking behaviour

421   (Coyle et al., 2017). Recent studies have found that curriculum-based mental health

422   awareness programmes increased mental health knowledge and intentions to offer support in

423   coaching staff (Breslin, Haughey, Donnelly, Kearney, & Prentice, 2017) and in athletes

424   (Breslin et al., 2018). Results from other studies provide evidence for knowledge-based

425   interventions aimed at increasing mental health literacy or reducing stigma (e.g, Sebbens et

426   al., 2016; Wood et al., 2017; Gulliver et al., 2012). It is imperative that early detection and

427   prompt access to high-quality, evidence-based interventions is available for elite athletes with

428   mental health needs (see e.g., Rice et al., 2016).

429   What is clear is that sport needs to be proactive in supporting elite athletes. In the

430   UK, sporting organisations are encouraged to have a mental health action plan and to sign up

431   to a mental health charter, such as the 'Mental Health Charter for Sport and Recreation'

432   (Mind, Professional Players Federation, & Sport Recreation Alliance, 2017) to establish and

433   embed mental health within their organisations. The recent Mental Health and Elite Sport

434   Action Plan (Department for Digital, Culture, Media & Sport, 2018) is further aimed at

435   improving mental health support to elite athletes, including training for coaches and support

436   staff to identify the signs of poor mental health. Finally, further methodologically rigorous

437   intervention studies are required to provide an empirical evidence base of effective

438   interventions to increase mental health in elite athletes.

Limitations

440   The following limitations should be noted. Firstly, the survey was voluntary, so we

441   cannot rule out response bias, with players interested in player welfare choosing to respond to

442   the survey or those with perceptions of stigma choosing not to participate, thus potentially

443   reducing the generalizability of results. The survey link was distributed to all player welfare

444   managers across the 16 RFL Super League teams, who encouraged players to complete the

445   survey. While we have no way of knowing if all players were made aware of the survey,

446   there was a potential participant pool of over 400 contracted elite players. Nevertheless, the

447   samples in both studies closely match the entire population of RFL players on the basis of age

448   and playing experience. Secondly, our *a priori* power analysis suggested a minimum sample

449   of 84 to adequately power the regression analyses, but for Survey 1 our final sample fell

450   slightly short of this (N = 77), possibly inflating the variance accounted for. Finally, the study

451   employed a cross-sectional design, so no causal inferences can be made. While important

452   correlates of mental health have been identified, the predictive power of these would be

453   strengthened by longitudinal research.

Conclusion

455   In conclusion, elite rugby league players appear to be at greater risk than men in the

456   general population of experiencing CMDs. Key correlates identified include psychological

457   stress, athletic identity, age, knowledge of and attitudes towards RFL mental health supports.

458   As pointed out by Rice and colleagues (2016) it is imperative that further high-quality

459   epidemiological and intervention studies are conducted to ensure that the assessment and

460   management of the mental health needs of elite athletes' is on par with their physical needs.

461

466

467   **References**

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681

682

683 **Table 1.** Demographic information for survey 1 (n = 77)
684

Variable	N (%)	Mean (SD)	Range	Possible Range
Age		25.75 (4.28)	19-37	
Marital status				
Single	37 (48)			
Married/Living as married	35 (46)			
Divorced/Separated	5 (6)			
Children				
No children	38 (50)			
Have children	38 (50)			
Duration playing rugby		7.29 (6.34)	1-26	
Perceived Stress		15.51 (6.50)	2-35	0-40
Mental health symptoms (MHI-5)		73.04 (18.00)	20-100	0-100
Athletic Identity		37.69 (6.02)	24-49	7-49
Player WFM Policies		25.23 (4.63)	6-30	6-30
Financial Advice		14.20 (4.03)	5-20	4-20
Mental Health		27.09 (5.19)	14-35	7-35
Lifestyle		42.08 (8.52)	23-55	11-55
Rugby End		11.40 (2.56)	5-15	3-15

685

686

687 **Table 2.** Demographic information for survey 2 (n = 168)

688

Variable	N (%)	Mean (SD)	Range	Possible Range
Age		24.89 (4.62)	17-36	
Marital status				
Single	100 (60)			
Married/Living as married	63 (38)			
Divorced/Separated	2 (1)			
Children				
No children	111 (66)			
Have children	57 (34)			
Duration playing rugby		6.02 (4.64)	1-20	
Perceived Stress		14.04 (5.83)	2-29	0-40
Mental health symptoms (MHI-5)		74.41 (15.81)	24-100	0-100
Athletic Identity		37.51 (6.21)	18-49	7-49
Player WFM Policies		37.87 (7.17)	10-45	6-45
Financial Advice		13.78 (3.85)	4-20	4-20
Mental Health		26.42 (5.13)	8-35	7-35
Lifestyle		46.16 (8.50)	23-60	12-60
Rugby End		14.95 (3.43)	4-20	4-20

689

690

691   **Table 3.** Multiple regression analysis results for correlates of mental health survey 1

692

	R^2	β	B	SE	CI 95% (B)
Model	.75***				
Stress		-.73***	-2.04	.19	-2.42 / -1.66
AIMS[a]		-.23**	-.73	.23	-1.19 / -.27
WF policy		.12	.48	.28	-.08 / 1.04
Age		.15*	.64	.31	.01/1.26

693   Note. Statistical significance: * $p < .05$; ** $p < .01$; *** $p < .001$

694   [a]AIMS = Athletic identity

695

696

697   **Table 4**. Hierarchical multiple regression analysis results for correlates of mental health survey 2

698

	R^2	β	B	SE	CI 95% (B)
Step 1					
Model	.01				
Age		.04	.14	.28	-.42/.70
AIMS[a]		-.01	-.02	.22	-.44/.41
Step 2					
Model	.51***				
Age		.02	.06	.20	-.35 / .46
AIMS[a]		.06	.15	.16	-.15 / .46
Stress		-.73***	-2.00	.17	-2.33 / -1.67
WM Policies		.11	.23	.14	-.05 / .52
MH Support		-.16*	-.47	.21	-.88/-.07

699   Note. Statistical significance: * p < .05; ** p < .01; *** p < .001

700   [a]AIMS = Athletic identity