

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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Abstract

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

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

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

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

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

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

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

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

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

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

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

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regarding increasing positive attitudes to mental health supports.

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Introduction

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

56 In recent years, there has been an increasing focus on and interest in the mental health
57 and wellbeing of elite athletes (Rice et al., 2016). Although studies have confirmed that
58 physical activity confers positive effects on mental health (e.g., Harvey, Hotopf, Øverland, &
59 Mykletun, 2010), it has also been suggested that experience of performing at an elite sporting
60 level is associated with the potential for negative mental health outcomes. Elite sport is
61 stressful, and athletes face many diverse demands as a consequence of the competitive and
62 challenging environment within which they perform (Mellalieu, Neil, Hanton, & Fletcher,
63 2009; Nicholls, Holt, Polman, & Bloomfield, 2006). This can increase the possibility of
64 experiencing symptoms of anxiety and depression through overtraining, injury and burnout
65 (Rice et al., 2016). Furthermore, there is evidence of elite athletes having an increased risk of
66 other mental health problems, including eating disorders (e.g., Joy, Kussman, & Nattiv,
67 2016), body image disorders (Kong & Harris, 2015), alcohol misuse (Lisha & Sussman,
68 2010) and suicide (Baum, 2005; Rice et al., 2016).

69 Despite the known demands and stressors that athletes face, research on the mental
70 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, Lavalley, & 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.

145 Help-seeking

146 Help-seeking tends to be highly stigmatised within sport, and there is evidence that
147 athletes underutilise mental health services, despite a need for these services (e.g., Steinfeldt
148 & Steinfeldt, 2012; Watson, 2006). Athletes have a tendency to minimise signs of weakness
149 (Reardon & Factor, 2010), and the sporting culture with its emphasis on being mentally
150 tough, showing no signs of weakness, and fighting through the pain may be partially to blame
151 (Baum, 2005). Recent qualitative studies have found that stigma, shame, fear, difficulty in or
152 unwillingness to express emotion, lack of problem awareness and low mental health literacy
153 were important barriers to help-seeking in elite athletes (Gulliver, Griffiths, & Christensen,
154 2012; Wood, Harrison, & Kucharska, 2017).

155 Player welfare

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

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 questionnaire¹.** 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).

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 rugby 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 1 and 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

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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.

439 **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.

454 **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

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466

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468

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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 ^aAIMS = 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 ^aAIMS = Athletic identity