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Associations between retirement reasons, chronic pain, athletic identity, and depressive symptoms among former professional footballers

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and depressive symptoms among former professional footballers

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Abstract

Background: Retirement from professional sport has been recognised as a major psychological stressor, and there is a need to identify factors that increase the risk of mental health problems after career termination. The current study examined associations between career-ending injury, chronic pain, athletic identity and depressive symptomology in retired professional footballers. **Methods:** A cross-sectional study was performed with 307 retired male footballers who had played within a professional United Kingdom league. Participants completed measures of depressive symptoms (Short Depression-Happiness Scale), chronic pain (Pain Intensity Numerical Rating Scale), and athletic identity (Athletic Identity Measurement Scale), and reported their reasons for retirement. **Results:** A total of 48 participants (16%) met the cut-off score for possible cases of clinically-relevant depression. These participants were more recently retired, and had higher athletic identity than those without depressive symptoms. Former players with depressive symptoms were more likely to cite injury as a retirement reason, and report higher levels of ongoing injury-related pain. Multivariate logistic regression revealed that presence of depressive symptoms was independently associated with retirement through injury (OR = 3.44; 95% CI = 1.39, 8.51), higher pain levels (OR = 1.38; 95% CI = 1.02, 1.86), and increased athletic identity (OR = 1.28; 95% CI = 1.14, 1.44). **Conclusions:** Career-ending injury is strongly associated with higher odds of depressive symptomology during retirement, while experiencing chronic pain, and maintaining a high sense of athletic identity, are additional potential contributors.

[abstract word count: 233]

Key words: football; retirement; depression; injury; pain; athletic identity

1 **Introduction**

2 According to the Professional Footballers Association (2015) as many as 900 professional
3 players retire each year from leagues in England. Retirement from sport has been recognised
4 as a significant career transition that is associated with decreased psychological wellbeing
5 for some athletes (Wylleman, Alfermann, & Lavalley, 2004). This has been particularly
6 noted when retirement is perceived as involuntary, that is forced, for example due to injury,
7 rather than through personal choice (Kuettel, Boyle, & Schmid, 2017).

8 Recent studies in retired footballers have highlighted the prevalence of psychological
9 problems, and revealed the uncertainty over the role of injury as a contributor. A preliminary
10 study including an international sample of 104 retired professional footballers found that
11 symptoms of anxiety or depression were reported by 39% of respondents (Gouttebarga,
12 Frings-Dresen, & Sluiter, 2015). A subsequent study of 219 former players across 11
13 countries had similar results with 35% reporting anxious or depressed symptoms
14 (Gouttebarga, Aoki, & Kerkhoffs, 2016). However, presence of these symptoms was not
15 associated with the severity of previous injuries, or the number of surgeries undergone.
16 Another study included 220 retired European footballers as part of a sample of 602 former
17 elite athletes across five sports to examine the relationship between the presence of
18 osteoarthritis and symptoms of mental disorders (Schuring et al., 2016). Overall there was an
19 association between osteoarthritis and distress, sleep problems, and adverse alcohol use, but
20 not anxiety/depression. Among the footballers, no associations were observed between
21 osteoarthritis and any of the symptoms measured. A more pertinent factor may be the
22 experience of chronic pain rather than the history of injury or presence of musculoskeletal
23 conditions per se. A strong association has been demonstrated between depression and pain

1 symptoms in general populations (Ohayon & Schatzberg, 2003; Ohayon & Schatzberg,
2 2010). An earlier study of the long-term health of 284 former professional footballers in the
3 United Kingdom revealed that 49% had been diagnosed with osteoarthritis, and 28% took
4 pain medication for football injuries (Turner, Barlow, & Heathcote-Elliott, 2000). Pain or
5 discomfort was frequently reported across the sample, but among significantly more former
6 players with osteoarthritis (89%) than those without (60%). Similarly, symptoms of
7 anxiety/depression were reported by more participants with osteoarthritis (37%), than by
8 those without arthritis (19%), although the relationship between pain and psychological
9 symptoms was not examined. These results suggest that chronic pain may be an important
10 variable to examine in the attempt to further understanding of the factors contributing to
11 psychological health after retirement.

12 Although not investigated in footballers, research in other sports has suggested that
13 athletic identity is an important construct associated with psychological wellbeing after
14 retirement. Athletic identity represents an element of self-concept among sportspeople and
15 refers to the degree to which individuals identify with their athlete role, and includes
16 perceived values and social networks (Brewer, Van Raalte, & Linder, 1993). Longitudinal
17 research with elite athletes suggests that athletic identity generally declines towards
18 retirement, and is lower among former athletes who experienced a positive adjustment to
19 career termination (Martin, Fogarty, & Albion, 2014). However, where careers were
20 terminated involuntarily, those displaying high levels of athletic identity were more likely to
21 experience negative reactions including dissatisfaction, depression, and loneliness
22 (Alfermann, Stambulova, & Zemaityte, 2004; Lally, 2007).

1 The current study aimed to increase understanding of the determinants of depressive
2 symptoms among male retired professional footballers in the United Kingdom by
3 specifically examining the relationship with retirement reasons, chronic pain, and athletic
4 identity. Based on the existing literature in football and other sports, it was hypothesised that
5 participants reporting depressive symptoms would be more likely to have retired for injury-
6 related reasons, experience chronic pain, and have high levels of athletic identity.

8 **Methods**

9 *Design and participants*

10 Ethical approval was provided by Loughborough University Ethics Approvals (Human
11 Participants) Sub-Committee (SSEHS-28415) to perform a cross-sectional study
12 administered online of former professional male footballers. Access to participants through
13 official player organisations was not possible, making a formal sampling frame unavailable
14 for recruitment. Therefore social media sources were used to circulate links to the study
15 information to former players using purposive and snowball sampling. To be eligible for
16 inclusion, participants had to be male, 18 years old or over, and have previously competed in
17 a professional football league in the United Kingdom. Participation was voluntary with no
18 incentives provided.

20 *Measures*

21 The online questionnaire was administered via Bristol Online Survey software, with
22 participants providing informed consent online and completing measures anonymously.

Participant information collected was current age, duration of professional football career, level of play (highest league played), year of retirement, and reasons for retirement.

Depressive symptoms were assessed through the Short Depression-Happiness Scale (SDHS; Joseph, Linley, & Harwood, 2004). This measure asks participants to judge their feelings over the past seven days with reference to six items representing depression (e.g. 'I felt that life was meaningless') and happiness (e.g. 'I felt happy'), scored on a four-point (0-3) Likert scale. Total possible scores range from 0 to 18, with lower scores indicating greater depression. The SDHS has shown acceptable levels of internal consistency (Cronbach's $\alpha = 0.77$ to 0.92) and test-retest reliability ($r = 0.68$) over two weeks (Joseph et al., 2004).

Convergent validity was demonstrated with correlations of 0.68 with the Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1978), and 0.74 with the depression scale of the Crown-Crisp Experiential Index (Crown & Crisp, 1979). Based on a comparison of scores on the Beck Depression Inventory (Beck et al., 1978), a total below 10 on the SDHS is recommended as the cut-off indicating possible cases of clinically relevant depression (Joseph et al., 2004). Cronbach's alpha in the current study was 0.87 .

Pain levels were assessed with the 11-point pain intensity numerical rating scale (PI-NRS; Farrar, Young, LaMoreaux, Werth, & Poole, 2001). Respondents were asked to report the intensity of any pain attributable to past football injuries on a scale anchored by "no pain" (score of 0) and "worst imaginable pain" (score of 10). High test-retest reliability ($r = 0.96$) and construct validity ($r = 0.86$) has been reported for the PI-NRS (Hawker, Mian, Kendzerska, & French, 2011).

Athletic identity was assessed via the 10-item Athletic Identity Measurement Scale (AIMS; Brewer et al., 1993). Respondents indicate their level of agreement with ten

1 statements on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).
 2 The total score ranges from 10 to 50, with higher scores indicating stronger identification
 3 with the athletic role. Sound psychometric properties were demonstrated of the AIMS
 4 (Brewer et al., 1993), with good internal consistency (Cronbach $\alpha = 0.93$), test-retest
 5 reliability ($r = 0.89$), and convergent validity ($r = 0.83$) against a measure of perceived
 6 importance of sport competence (Fox & Corbin, 1989). Cronbach's alpha in the current
 7 study was 0.90.

8 Reasons for retirement were ascertained by asking participants to select from a list of
 9 five common reasons for retirement (shown in Table I) identified from previous research of
 10 former UK footballers (Drawer & Fuller, 2002). Multiple reasons could be selected, and
 11 there was an option to indicate other reasons via a free-text box. They were also asked to
 12 indicate one reason that they regarded as their main reason for retirement.

13 *Data analysis*

14 All data analyses were performed using IBM SPSS Statistics for Windows version 22.0
 15 (IBM Corp, Armonk, NY). Descriptive statistics (frequency, mean, standard deviation) were
 16 calculated for participant characteristics and measured variables. Participants were
 17 dichotomised on possible depression status using the recommended cut-off score for the
 18 SDHS (<10 = cases with depressive symptoms; ≥ 10 cases without depressive symptoms).
 19 Differences between the two groups and standardised effect sizes were calculated using
 20 independent samples *t*-tests and Cohen's *d* for continuous variables, and Chi-square tests
 21 (χ^2) and phi coefficients (ϕ) for categorical variables. Where significant differences were
 22 identified, these variables were included as covariates in a multivariable logistic regression

analysis. Odds ratios and confidence intervals were calculated to estimate the odds that depression status varied due to differences in explanatory variables.

Results

In total, 307 retired professional footballers provided informed consent and completed outcome measures. Participant characteristics are summarised in Table I. Mean age was 46.8 ± 15.7 years, and the mean time elapsed since retiring was 21.2 ± 14.6 years. Injury was a reason for retirement for 130 (42.3%) participants, and was the main reason for 90 (29.3%). The most common sites of chronic pain from football injuries were knee (48.2%), leg (34.2%), and groin (31.3%).

A total of 48 participants (15.6%) scored below the threshold on the SDHS indicating possible clinically-relevant depressive symptoms. Differences between participants with and without depressive symptoms for all variables are presented in Table I. Compared with the majority of the sample, those with depressive symptoms were younger (mean age of 34.2 versus 49.2 years; $t = 6.48$, $p < 0.001$; $d = 1.02$), more recently retired (mean time since retirement 10.4 versus 23.5 years; $t = 6.02$, $p < 0.001$; $d = 0.95$), and displayed higher athletic identity (mean score of 38.9 versus 28.8; $t = 9.86$, $p < 0.001$; $d = 1.55$). They were also more likely to cite injury as one reason for retiring (79.2% versus 35.5%; $\chi^2 = 31.60$, $p < 0.001$, $\phi = 0.32$), and the main reason for retirement (72.9% versus 21.2%; $\chi^2 = 52.20$, $p < 0.001$, $\phi = 0.41$). For those retiring mainly due to injury, the prevalence of depressive symptoms was 38.9%. Finally, presence of ongoing injury-related pain was reported by more participants with depression symptoms than those without (95.8% versus 63.7%; $\chi^2 = 19.45$, $p < 0.001$, $\phi = 0.25$), and pain intensity was greater among this group (mean of 5.1 versus

3.0; $t = 6.03$, $p < 0.001$; $d = 0.95$). Age at retirement and career duration were not associated with depressive symptoms.

Four significant variables from the univariate analysis (time since retirement, injury as a retirement reason, pain intensity, and athletic identity) were included as covariates in the multivariable logistic regression analysis to examine the independent associations with depressive symptoms. Since age and time since retirement were strongly correlated ($r = 0.94$; $p < 0.001$), only time since retirement was included in the multivariable analysis.

[INSERT TABLE I HERE]

Table II shows the odds ratios and 95% confidence intervals for each variable. Significant positive relationships for injury as a retirement reason, chronic pain, and athletic identity were observed. In particular, the odds of being depressed were increased by 3.44 (95% CI: 1.39, 8.51) for those retiring due to injury. Chronic pain increased the odds of depression by a factor of 1.38 (95% CI: 1.02, 1.86) for each unit increase in intensity. Similarly, each unit increase in athletic identity score was associated with a 1.28 (95% CI: 1.14, 1.44) increase in the odds of depression.

[INSERT TABLE II HERE]

Discussion

This study examined the psychological wellbeing of retired professional footballers, and some of the factors associated with experiencing depression symptomology. The results

suggested that 16% of the sample may have been experiencing clinically-relevant depressive symptoms, and this was associated with retiring through injury, experiencing chronic pain, and having higher athletic identity.

The proportion of possible cases of depression symptoms observed here is higher than the 3% prevalence rate of depressive episodes reported among the general adult male population in England in the Adult Psychiatric Morbidity Survey (McManus, Bebbington, Jenkins, & Brugha, 2016). Direct comparisons are not meaningful since the current study was not designed to ascertain prevalence, and used a different detection method (i.e. a self-reported screening tool versus structured interviews). Nonetheless, the findings are compatible with evidence suggesting that professional athletes may be at increased risk of depressive symptoms after retirement (Gouttebargue et al., 2016; Schuring et al., 2016). Notably, a previous international study by Gouttebargue et al. (2015) reported symptoms of anxiety or depression to be more prevalent among former footballers than current players (39% versus 26%).

Career-ending injury and chronic pain

In line with the findings of a previous study of retired British footballers that reported anxiety/depression symptoms in 37% of players with an osteoarthritis diagnosis (Turner et al., 2000), the current study identified depressive symptoms among 39% of those who had retired mainly due to injury. The regression analysis indicated that involuntary retirement of this nature was strongly associated with depressive symptoms, with the odds three times higher than for non-injury reasons. As well as terminating sporting careers, injuries can lead to long-term pain. In an earlier study of retired British professional footballers by Drawer and Fuller (2001), 80% reported some degree of pain during daily activities. As with the

current study, the knee was the most common pain location. Pain is a recognised correlate of depression (Bair, Robinson, Katon, & Kroenke, 2003), and in this study its presence significantly increased the odds of reporting depressive symptoms. These results are compatible with a study of 1617 retired professional American footballers, which recorded a similar proportion of possible depression cases (15%) based on a self-report screening tool (Schwenk, Gorenflo, Dopp, & Hipple, 2007). Furthermore, 29% of the study sample retired due to injury, and experiencing chronic pain was strongly associated with depression status. Studies in general population have also demonstrated the relationship between pain and depression. Among 18,980 European adults, the odds of a depression diagnosis for those reporting chronic pain was more than three times higher than for those without pain (Ohayon & Schatzberg, 2003).

Importance of athletic identity

The strength of athletic identity has been shown to predict difficulties with the emotional adjustment to career termination across a range of sports (Kuettel et al., 2017; Ronkainen, Kavoura, & Ryba, 2016; Willard & Lavalley, 2016). In the current study athletic identity was associated with depressive symptomology among retired football players. The high profile status of footballers and media constructions of them as sporting heroes can lead to strongly defined athletic identities (Lines, 2001). This was illustrated in a study of youth footballers in professional academies, where even at age 16 years, players had developed high levels of athletic identity (Mitchell et al., 2014). In another study involving interviews with young footballers who were not selected for professional contracts, having a strong athletic identity was a contributor to experiencing emotional distress when released (Brown & Potrac, 2009). The current findings provide further support for the difficulties involved for

1 some individuals in adjusting to a different lifestyle after careers are terminated when their
2 sense of identity is closely tied to their athletic status (Kuettel et al., 2017).

3 *Considerations for provision of player welfare services*

4 Previous studies have shown that key negative influences on successful transitions
5 out of sport include low educational attainment, inadequate vocational and life skill
6 development, and limited career planning (Park, Lavalley, & Tod, 2013). Young footballers
7 in particular report that the commitment required to achieve, and maintain, professional
8 status, often overrides their attention to educational or vocational development, leaving
9 players ill-equipped for life after football (Parker, 2000). A study of retired UK footballers in
10 2002, revealed high levels of dissatisfaction with the educational and welfare services
11 available during their careers to prepare for retirement (Drawer & Fuller, 2002).

12 One successful example of an intervention addressing adjustment to career
13 termination involved British professional footballers at the point of retirement (Lavalley,
14 2005). The programme involved assessment of life events and counselling to help develop
15 coping skills, and led to significant improvements in psychological adjustment outcomes,
16 compared with a control group. Other programmes have been implemented at earlier stages,
17 before retirement is reached, to ensure that the support provided is proactive (e.g. education
18 and employment opportunities), as well as reactive (e.g. coping skills, emotional support)
19 (Park, Lavalley, and Tod, 2012). Evidence-based interventions of this nature are increasingly
20 being implemented within professional sport, including football. Within the United
21 Kingdom, both the English and Scottish Professional Football Associations dedicate
22 considerable efforts to raising awareness of mental illness, and providing resources and

1 support services for current and former players (Professional Footballers Association, 2016;
2 Professional Footballers Association Scotland, 2016).

3 *Study limitations*

4 It is important to note several limitations of this research. Notably, the cross-sectional
5 design of the study ensures that the findings represent associations between depressive
6 symptoms and the other variables, rather than imply a causal relationship. Furthermore, the
7 number of cases identified was based on reaching a specific score on a screening measure to
8 indicate possible clinically-relevant symptoms, rather than an actual diagnosis of a
9 depressive disorder. Self-report screening instruments generally overestimate the likelihood
10 of depression compared with a criterion-based diagnosis based on a structured clinical
11 interview (Valenstein, Vijan, Zeber, Boehm, & Buttar, 2001).

12 An additional limitation concerns the purposeful recruitment process that prevents
13 the calculation of a precise response rate, and may limit the representativeness of the sample.
14 Nonetheless, key characteristics of participants in this study such as age, retirement age, and
15 the percent reporting career-ending injury were very similar to those in the earlier survey of
16 retired UK professional footballers recruited through a player union (Drawer & Fuller,
17 2001). Finally, it is also worth noting that only a limited range of participant characteristics
18 were collected for this study. It is possible that other variables such as family history of
19 mental disorders, marital status, employment status, or educational achievements would be
20 associated with depressive symptoms.

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1 **Conclusion**

2 This study contributes to the growing body of evidence on mental health problems following
3 retirement from professional football. Findings suggest that a notable proportion of former
4 players may be experiencing clinically-relevant depressive symptomology, and that career-
5 ending injury significantly increases this risk. Intensity of chronic pain, and athletic identity
6 are additional potential contributors, and are factors to consider in the provision of support
7 services for former players.

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1 Table I. Participant characteristics and differences between depressed and non-depressed
 2 retired footballers

	Total sample (n = 307)	Depressed (n = 48)	Non-depressed (n = 259)
Current age (years)	46.8 ± 15.7	34.2 ± 14.0	49.2 ± 14.9 ^a
Athletic identity (AIMS)	30.4 ± 7.5	38.9 ± 5.4	28.8 ± 6.7 ^a
Psychological wellbeing (SDHS)	12.8 ± 2.8	8.0 ± 1.1	13.7 ± 2.0 ^a
Duration of playing career (years)	6.7 ± 3.7	5.7 ± 3.7	6.9 ± 3.6
Highest level played*			
Premier League	59 (19.2%)	14 (29.2%)	45 (17.4%)
Football League Championship	49 (16.0%)	10 (20.8%)	39 (15.1%)
Football League One	60 (19.5%)	12 (25.0%)	48 (18.5%)
Football League Two	82 (26.7%)	9 (18.8%)	73 (28.2%)
National League	57 (18.6%)	3 (6.3%)	54 (20.8%)
Age at retirement (years)	25.3 ± 5.2	23.8 ± 5.4	25.6 ± 5.1
Time since retirement (years)	21.5 ± 14.6	10.4 ± 12.3	23.5 ± 14.1 ^a
Reasons for retirement			
Family/personal	130 (42.3%)	5 (10.4%)	125 (48.3%) ^a
Injury	130 (42.3%)	38 (79.2%)	92 (35.5%) ^a
Contract end	128 (41.7%)	20 (41.7%)	108 (41.7%)
Declining ability	121 (39.4%)	17 (35.4%)	104 (40.2%)
Age	73 (23.8%)	5 (10.4%)	68 (26.3%)
Other	5 (1.6%)	0 (0.0%)	5 (1.9%)
Total number of reasons	1.9 ± 0.9	1.8 ± 0.9	1.9 ± 1.0
1	136 (44.3%)	24 (50.0%)	112 (43.2%)
2	79 (25.7%)	12 (25.0%)	67 (25.9%)
3	76 (24.8%)	11 (22.9%)	65 (25.1%)
4	15 (4.9%)	1 (2.1%)	14 (5.4%)
5	1 (0.3%)	0 (0.0%)	1 (0.4%)
Main reason for retirement			

Family/personal	112 (36.5%)	2 (4.2%)	110 (42.5%) ^a
Injury	90 (29.2%)	35 (72.9%)	55 (21.2%) ^a
Contract end	36 (11.7%)	7 (14.6%)	29 (11.2%)
Declining ability	25 (8.1%)	2 (4.2%)	23 (8.9%)
Age	39 (12.7%)	2 (4.2%)	37 (14.3%)
Other	5 (1.6%)	0 (0.0%)	5 (1.9%)
Presence of injury-related pain	211 (68.7%)	46 (95.8%)	165 (63.7%) ^a
Intensity of injury-related pain (PI-NRS)	3.3 ± 2.4	5.1 ± 1.5	3.0 ± 2.3 ^a
Pain areas			
Knee	148 (48.2%)	23 (47.95)	125 (48.3%)
Leg	105 (34.2%)	15 (31.3%)	90 (34.7%)
Groin	96 (31.3%)	11 (22.9%)	85 (32.8%)
Hip	79 (25.7%)	13 (27.1%)	66 (25.5%)
Back	63 (20.5%)	6 (12.5%)	57 (22.0%)
Ankle	60 (19.5%)	13 (27.1%)	47 (18.1%)
Other	44 (14.3%)	7 (14.6%)	37 (14.3%)

1 Note: Data are mean ± standard deviation or number (percent); *Current league system in
2 England, or equivalent earlier league systems or Scottish leagues; AIMS: Athletic Identity
3 Measurement Scale (scored 10-50); PI-NRS: Pain intensity numerical rating scale (scored 0-
4 10); SDHS: Short Depression Happiness Scale (scored 0-18); ^a significant difference (p <
5 0.001) between depressed and non-depressed participants

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3 Table II. Odds of depression among retired professional footballers in association with
4 injury, pain, and athletic identity.

	Odds ratio (95% confidence intervals)	p
Injury as retirement reason	3.44 (1.39, 8.51)	0.007
Ongoing injury-related pain	1.38 (1.02, 1.86)	0.038
Athletic identity	1.28 (1.14, 1.44)	< 0.001
Years since retirement	1.00 (0.95, 1.05)	0.998

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