Andrew Bethell

Mental health & well-being in sport

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Supervised by Dr Ross White and Dr James Reilly
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Now, where's the wine?

WORD COUNT

Total (including appendices): 19,152

Chapter 1: 8,014

Chapter 2: 6,159

Appendices: 4,889

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Chapter 1

Chapter 2

Introductory chapter

Symptoms of psychological distress are common among sport performers (Reardon et al., 2019). Whilst physical activity has been associated with positive mental health (Penedo & Dahn, 2005; Chekroud et al., 2019), participation in competitive sport can contribute to poor mental health. Sport performers face intense physical and mental demands, and a unique array of workplace stressors which may lead to an increased prevalence of mental health difficulties (Rice et al., 2016). A recent meta-analysis commissioned by the *International Olympic Committee* reported rates of psychological distress among sport performers ranging from 19% for alcohol misuse to 34% for symptoms of anxiety and depression (Gouttebarge et al., 2019). Sport performers have been critical of the psychological support that has been made available to them during their careers (Brown & Potrac, 2009) and have spoken of the need for more proactive forms of support to be made available — 'There isn't enough in place for players and it is so reactive, there is much more we can do to be proactive and enable players to not to have to go to those depths as I did myself' (Foster, 2019, p. 9).

A recent UK Government policy document — the *Mental Health and Elite Sport Action Plan* (Department for Digital, Culture, Media & Sport, 2018) — highlighted the need to improve the psychological support that is offered to sport performers during their careers in sport. These recommendations were echoed in recent consensus statements published by the *International Society of Sport Psychology* and the *International Olympic Committee* (Schinke, Stambulova, Si, & Moore, 2018; Reardon et al., 2019), alongside acknowledgements that more research is needed to develop and evaluate therapeutic approaches and to establish a robust and empirically supported evidence-base. This thesis seeks to add to the limited evidence base in this area.

Chapter 1: Mindfulness and acceptance-based approaches for mental health and well-being in sport performers: a systematic review

Mindfulness- and acceptance-based interventions (MABIs) are increasingly used to enhance mental health and well-being among sport performers (Gardner & Moore, 2017), yet to date there has been no attempt to

synthesise this literature. The purpose of the review was to conduct a narrative synthesis and appraisal of the methodological quality of studies that have evaluated MABIs with sport performers and have included measures of mental health and well-being outcomes.

Chapter 2: Exploring subjective well-being in current and former football players: The role of psychological inflexibility.

Increasing numbers of football players are seeking support for their mental health and well-being (Professional Footballers Association, 2019). Whilst recent studies have focused on the prevalence of symptoms of mental health difficulties in this population, no study has examined subjective well-being and its predictors. The study investigated (i) the associations between subjective well-being and three key processes of change linked to Acceptance and Commitment Therapy (ACT): psychological inflexibility, cognitive fusion and valued living, and (ii) psychological predictors of subjective well-being. A better understanding of the predictors of subjective well-being among football players is an important first step in developing empirically supported interventions to enhance the health and well-being of this often-overlooked population.

Journal submission

Both the systematic review and empirical study will be submitted to the Journal of Contextual Behavioural Science. Author guidelines for this journal are presented in Appendix A.

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CHAPTER 1

Mindfulness and acceptance-based approaches for mental health and well-being in sport performers: a systematic review

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Prepared in accordance with guidelines for submission to
Journal of Contextual Behavioural Science (Appendix A)

Abstract

Background: Symptoms of psychological distress are common among sport performers. Mindfulness- and acceptance-based interventions are increasingly used to promote mental health and well-being yet to date there has been no attempt to synthesise this literature. The purpose of this review was to conduct a narrative synthesis and appraisal of the methodological quality of studies that have (i) evaluated MABIs with sport performers and (ii) included measures of mental health and well-being outcomes.

Method: Four electronic databases (SportDiscus, Ovid MEDLINE, PsycINFO and Scopus) were searched for relevant literature. Initial database searches returned a total of 1315 records. A further three records were identified through other sources. Methodological quality was assessed using the Quality Assessment Tool for Quantitative Studies (QATQS).

Results: Sixteen studies met full inclusion criteria and were included in the review. A range of MABIs were used and there was considerable heterogeneity in the outcome measures reported across the studies. Whilst each of the studies included a measure of psychological distress, only one measured domains of well-being. Methodological quality across the studies was generally poor.

Conclusion: Researchers should seek to employ more rigorous study designs and include measures of well-being alongside measures of psychological distress.

Keywords: Mental health; well-being; sport; mindfulness; acceptance; intervention; systematic review

Introduction

Symptoms of psychological distress are common among sport performers (Reardon et al., 2019). Whilst physical activity has been associated with positive mental health (Penedo & Dahn, 2005; Chekroud et al., 2019), participation in competitive sport can contribute to poor mental health. A range of factors that purportedly increase the risk of psychological distress have been identified. These include injury, overtraining, and an unrelenting pressure to perform (for a review, see Rice et al., 2016). A recent meta-analysis commissioned by the *International Olympic Committee* reported rates of psychological distress among sport performers ranging from 19% for alcohol misuse to 34% for symptoms of anxiety and depression (Gouttebarge et al., 2019).

Sport performers have been critical of the psychological support that has been made available to them during their careers (Brown & Potrac, 2009; Conn, 2017), and recent consensus statements have called for sporting organisations to work alongside researchers and clinicians to develop and evaluate therapeutic interventions for sport performers (Schinke, Stambulova, Si, & Moore, 2018; Henriksen et al., 2019). These recommendations are echoed in the UK Government's recently published *Mental Health and Elite Sport Action Plan* (Department for Digital, Culture, Media & Sport, 2018).

Mindfulness- and acceptance-based interventions (MABIs) are increasingly used with sport performers to enhance both sports performance and well-being (Gardner & Moore, 2017). These approaches seek to reduce distress and promote well-being not by altering the *content* of one's internal experiences (i.e. thoughts and emotions), but by focusing on modifying one's *relationship* with them (Baer & Huss, 2008), and have been shown to reduce symptoms of psychological distress and to promote well-being in both clinical and non-clinical populations (Eberth & Sedlmeier, 2012; Khoury et al., 2013; Bohlmeijer, Lamers & Fledderus, 2015; Stenhoff, White, Steadman & Reilly, 2019). Whilst the focus of therapeutic techniques may differ, mindfulness — defined as 'paying attention in a particular way: on purpose, in the present moment, and non-judgmentally' (Kabat-Zinn, 1994, p. 4) — is a core strategy used in many MABIs.

Recent systematic reviews have explored the efficacy of MABIs for enhancing sport performance (Sappington & Longshore, 2015; Noetel, Ciarrochi, Van Zanden, & Lonsdale, 2017), yet to date there has been no attempt to synthesise quantitative studies that have evaluated MABIs with sport performers and included measures of mental health and / or well-being outcomes.

The purpose of this review was to conduct a narrative synthesis and appraisal of the methodological quality of intervention studies that have (i) evaluated MABIs with sport performers and (ii) included measures of mental health and / or well-being outcomes. Specifically, the review aimed to answer the following three questions:

1. What specific forms of interventions have most commonly been used in studies evaluating the impact of MABIs on mental health and well-being outcomes in sport performers?
2. What measures were used to assess mental health and / or well-being outcomes?
3. How might the methodological quality of these studies be improved?

Methods

This review followed guidance set out in the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) statement (Moher, Liberati. Tetzlaff, Altman & Prisma Group, 2009).

Pre-registration of review protocol

The protocol for this review was registered with the International Prospective Register of Systematic Reviews (PROSPERO) on 14th February 2019 (registration number CRD42019106209; bit.ly/2F8YbeF).

Study inclusion and exclusion criteria

This review included studies that described the use of a mindfulness or acceptance-based intervention with a primary or secondary aim of improving the mental health or well-being of sport performers. All widely recognised forms of MABIs (i.e. MBSR, MBCT, ACT, MAC, MSPE, MMTS) were included. Lesser known interventions were also included providing that mindfulness or acceptance practices were a core component of the intervention. Interventions combining mindfulness or acceptance practices with elements from other therapeutic approaches (i.e. Cognitive Behavioural Therapy; CBT) were included, providing that they encouraged formal practice of mindfulness meditation. Randomised controlled trials, controlled trials and — due to the relative infancy of this area — uncontrolled studies (i.e. those with no comparison group), were all included. Details of the inclusion and exclusion criteria are presented in Table 1.

Table 1: Eligibility criteria

	Inclusion criteria	**Exclusion criteria**
Study design	Randomised controlled trials, non-randomised controlled trials, uncontrolled trials.	Observational studies, case studies / case series, qualitative studies.
Population	Sport performers	Non sport-performers (i.e. coaches, physios, etc).
Intervention	Any specified MABI where mindfulness and / or acceptance is a core component of the intervention	Non-MABIs. Studies that are described as MABIs but provide no definition of the intervention content.
Comparison	Any comparator and no comparator	N/A
Outcomes	Validated measures of psychological distress and / or well-being reported at baseline and at post-intervention.	Studies using no measure of psychological distress and / or well-being.
Publication	Peer-reviewed articles published in English.	Unpublished studies, theses, studies not published in English.

Search strategy

Four electronic databases — SportDiscus, Ovid MEDLINE, PsycINFO and Scopus — were searched from their inception date until 7th March 2019. Search terms relating to the population, interventions and outcomes of interest were developed in Ovid MEDLINE and adapted for each database as required. An example of the search terms that were used is presented in Table 2. English language and peer-reviewed limiters were used in SportDiscus and PsycINFO. Date restrictions were not applied. To complete the search, the reference lists of each of the included studies and relevant review articles reviewed (Sappington & Longshore, 2015; Noetel, Ciarrochi, Van Zanden, & Lonsdale, 2017) were reviewed. The complete Ovid MEDLINE search is presented in Appendix B.

Table 2: Search terms

Category	Search terms
Intervention	mindful* or acceptance* AND
Outcomes	mental health or disorder or mental illness or psychiatr* or depress* or anxiety or stress or distress or burnout or addiction or mood or negative affect or positive affect or wellbeing or well-being or wellness or happiness or happy or thriv* or flourish or eudaimoni* or hedonism or hedonic AND
Population	sport or athlet*

Selection of studies for inclusion

First, all duplicate articles were removed from the initial search. AB then screened the titles and abstracts of the remaining studies. A random 10% of these were selected for screening by a second reviewer (trainee clinical psychologist). The full-text articles of all studies that appeared to meet the inclusion criteria were retrieved and these articles were assessed for eligibility by AB. Again, a random 10% of these articles were

screened independently by the second reviewer. Disagreements about eligibility were resolved through discussion and the involvement of a third reviewer where necessary.

Data extraction and synthesis

Data were extracted by AB and independently checked for accuracy by a second reviewer. Extracted data included: study authors and year of publication, country of origin, participant information, sample size, mental health and well-being outcome measures, intervention details and key findings related to mental health and well-being. Methodological heterogeneity prevented meta-analysis; therefore, data is synthesised narratively.

Quality assessment

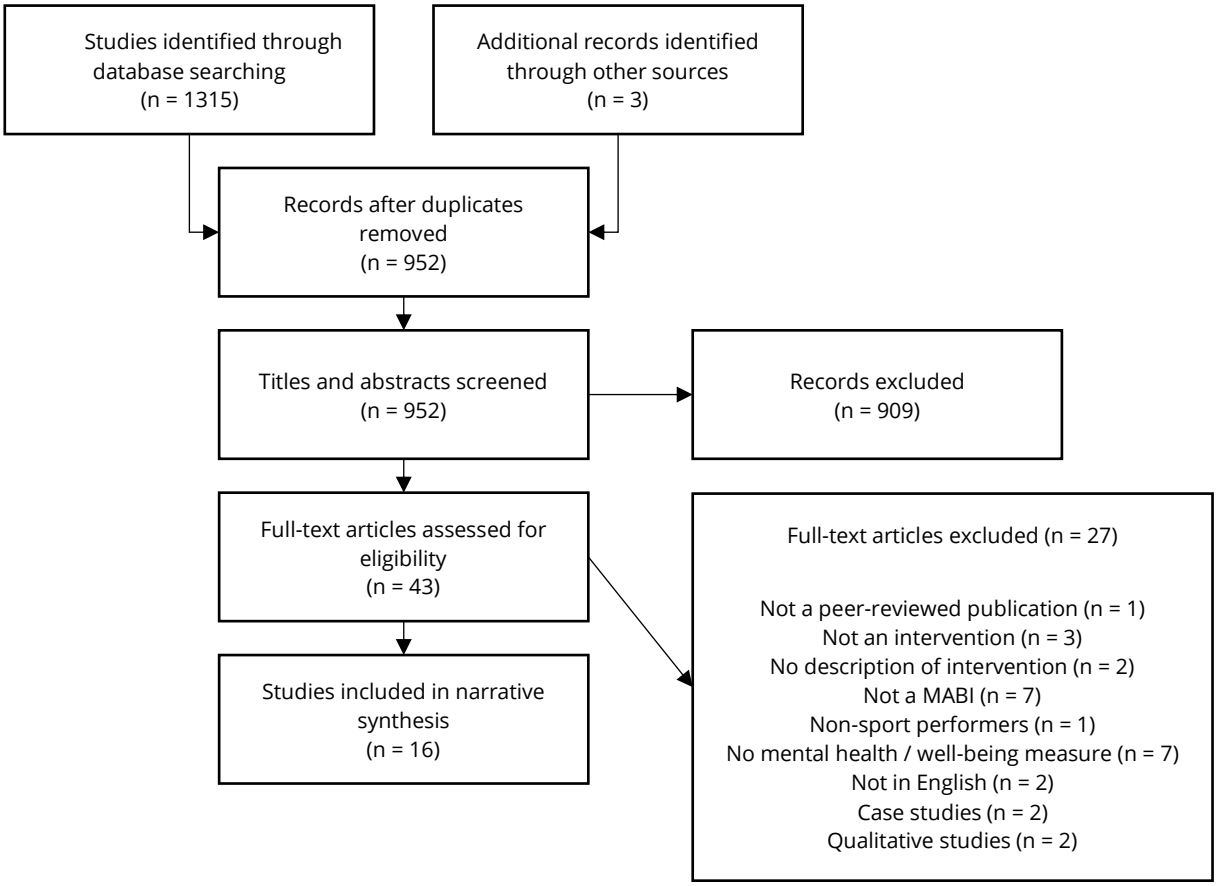
The Quality Assessment Tool for Quantitative Studies (QATQS; Effective Public Health Practice Project, 1998), was used to assess the quality of the included studies. The QATQS can be used with a range of quantitative study designs, including both controlled and uncontrolled trials. The QATQS assesses six areas of methodological quality: (i) selection bias; (ii) study design; (iii) confounders; (iv) blinding; (v) data collection methods and (vi) withdrawals and drop-outs. Each area is assessed and given a score between one and three (1 = strong, 2 = moderate, 3 = weak). A global score is calculated by considering the scores in each domain. Studies with no weak ratings are judged as strong. Studies with one weak rating are given an overall rating of moderate. Studies with two or more weak ratings are judged as weak. A companion document, *Dictionary for the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies* (Effective Public Health Practice Project, 1998), is available to assist reviewers with scoring. The tool was used in this study to aid reviewers during the quality assessment process. Study quality was assessed independently by AB and the second reviewer. Consensus between reviewers was high (90.63%). Disagreements were resolved through discussion and the involvement of a third reviewer where necessary.

Results

Study selection

Initial database searches returned a total of 1315 records. A further three records were identified through other sources. Following the removal of duplicate records, 952 titles and abstracts were screened. Forty-three were considered suitable for full-text screening. Following full-text screening, 27 articles were excluded. Sixteen studies met full inclusion criteria and are included in the review. A PRISMA flow diagram detailing the study selection process is presented in Figure 1.

Figure 1: PRISMA flow diagram



Study characteristics

Characteristics of the included studies are presented in Table 3. Studies were conducted in seven different countries. Nine of the studies were conducted in the United States of America (USA). Two were conducted in Australia and the rest were conducted in the United Kingdom (UK), Portugal, Iran, Norway and Taiwan.

Seven studies used a randomised controlled trial design (Carraça, Serpa, Rosado & Palmi, 2018; Dehghani et al., 2018; Gross et al., 2018; Moen et al., 2015; Mohammed et al., 2018; Rooks et al., 2017; Scott-Hamilton et al., 2016). Three studies used a non-randomised controlled design and five used uncontrolled designs. One study (Thompson et al., 2011) reported follow-up data on participants from two studies that were also included in this review (De Petrillo et al., 2009; Kaufman et al., 2009). Two of the ten controlled studies used active control groups (Gross et al., 2018; Rooks et al., 2017), whilst eight used inactive comparators.

Each of the included studies used measures that assessed symptoms of psychological distress (e.g. depression, anxiety). One study assessed domains of well-being (Baltzell & Akhtar, 2014). All studies reported on self-report outcome measures that were completed at baseline and post-intervention. Three studies conducted follow-up assessments. Two of these were conducted four-weeks after the intervention (Gross et al., 2018; Chen et al., 2019). One study (Thompson et al., 2011) conducted 12-month post-intervention follow-up assessments with a sample of participants from two studies (De Petrillo et al., 2009; Kaufman et al., 2009).

Five studies did not specify the profession or experience of the intervention facilitator. None of the studies assessed the competence of the facilitator during the intervention. Whilst most studies encouraged informal mindfulness practice during the intervention, only three studies reported details of home-practice (i.e. time practiced, adherence to the intervention). Five of the studies modified published intervention guidelines.

Participant characteristics

Participant characteristics are detailed in Table 3. The total sample included 516 participants (541 when participants included in multiple studies are included again), with an average sample size of 34.4 (range 12 - 100). The average age of participants was 30.70 years (range 18.50 - 52.19) and 57.31% of participants were male. Two studies provided no information about the age of their participants. Studies included participants from a range of sports, including soccer, basketball, American football, archery, golf, running, road cycling, mountain biking, swimming, skiing, biathlon and rowing. Participants competed at a range of skill levels, including amateur, recreational, collegiate and elite levels. One study included injured athletes only (Mohammed et al., 2018).

Table 3: Study and participant characteristics

First author and date	Country	Design	Intervention	Comparator	Sample size (total, % intervention)	Assessment time-points	Gender (%M, F)	Age in years (mean, SD, range)	Sport	Level
Baltzell (2014)	USA	Controlled	MMTS	Inactive	42 (45)	Pre-post	0, 100	NR; NR; NR	Soccer and rowing	Collegiate
Carraça (2018)	Portugal	RCT	MBSoccerP	Inactive	57 (49)	Pre-post	100, 0	25.79; 3.30; NR	Soccer	Elite
Chen (2019)	Taiwan	Uncontrolled	MSPE	None	21 (100)	Pre-post, four-week FU	100, 0	26.38; 2.60; 22-30	Baseball	Amateur
De Petrillo (2009)	USA	Controlled	MSPE	Inactive	25 (52)	Pre-post	40, 60	34.73; NR; 18-55	Long-distance running	Recreational
Dehghani (2018)	Iran	RCT	MAC	Inactive	31 (48)	Pre-post	0, 100	NR; NR; 18-30	Basketball	Collegiate
Goodman (2014)	USA	Controlled	MAC	Inactive	26 (50)	Pre-post	100, 0	20.23; 1.53; NR	Athletics	Collegiate
Gross (2018)	USA	RCT	MAC	PST	22 (50)	Pre-post, four-week FU	0, 100	NR; NR; NR	Basketball	Collegiate
Kaufman (2009)	USA	Uncontrolled	MSPE	None	32 (100)	Pre-post	71.9, 28.1	52.19; NR; 18-76	Archery and golf	Recreational
Moen (2015)	Norway	RCT	Mindfulness training	Inactive	50 (46)	Pre-post	49, 51	18.5; NR; 16-20	Multiple	Elite
Mohammed (2018)	UK	RCT	MBSR	Inactive	20 (50)	Pre-post	70, 30	NR; NR; 21-36	Multiple	Collegiate

Rooks (2017)	USA	RCT	Mindfulness training	RT	100 (56)	Pre-post	NR	19.81; 1.51; NR	Football	Collegiate
Scott-Hamilton (2016)	Australia	Uncontrolled	MiCBT	None	12 (100)	Pre-post	83.3, 16.7	33.57; 12.50; 17-52	Multiple	Competitive
Scott-Hamilton et al (2016)	Australia	RCT	MiCBT	Inactive	47 (57)	Pre-post	89.4, 10.6	Intervention: 38.96; 12.40; 16-57 Control: 40.65; 10.88; 22-67	Cycling and mountain biking	Competitive
Thompson (2011) *	USA	Follow-up	MSPE	N/A	25 (N/A)	12-month FU	56, 44	48.82; NR; 18-72	Multiple	Recreational
Vidic (2017)	USA	Uncontrolled	Mindfulness training	None	13 (100)	Pre-post	0, 100	19.85, 1.39; 18-22	Basketball	Collegiate
Vidic (2018)	USA	Uncontrolled	Mindfulness training	None	18 (100)	Pre-post	100, 0	19.56; 1.19; 18-22	Soccer	Collegiate

Note: NR = not recorded; FU = follow-up; PST = Psychological Skills Training; RT = Relaxation training; * = follow-up study

Studies including participants from multiple sports:

Moen (2015): Biathlon, cross-country skiing, shooting and track and field

Mohammed (2018): Basketball, running, football, tennis, kickboxing, bodybuilding and cycling

Scott-Hamilton (2016): Road cycling, cross-country mountain biking, alpine downhill skiing and swimming

Thompson (2011): Archery, golf and running

Quality assessment

Fifteen studies were judged to be of weak quality. One was of moderate quality (Rooks et al., 2017). Weak ratings were driven by selection bias (i.e. participants were not randomly selected nor systematically recruited, therefore were unlikely to be representative of the target population), unclear descriptions as to whether potential confounders were controlled for, a lack of blinding and inadequate descriptions of withdrawals and drop-outs. Individual quality ratings for each study are reported in Table 4.

What specific forms of interventions have most commonly been used in studies evaluating the impact of MABIs on mental health and wellbeing outcomes in sport performers?

A range of MABIs were used (see Table 5). The Mindful Sport Performance Enhancement (MSPE; Kaufman, Glass & Arnkoff, 2009) approach was the most frequently reported intervention (n=4), followed by Mindfulness-Acceptance-Commitment (MAC; Gardner & Moore, 2007; n=3), Mindfulness-integrated Cognitive Behavioural Therapy (MiCBT; Cayoun, 2011; n=2), Mindfulness-based Stress Reduction (MBSR; Kabat-Zinn, 1990; n=1), Mindfulness Meditation Training in Sport (MMTS; Baltzell & Summers, 2018; n=1) and Mindfulness-based Soccer Program (MBSoccerP; Carraça et al., 2018; n=1). Four studies reported on unnamed mindfulness interventions, each of which were influenced by the MBSR program (Kabat-Zinn, 1990). Fourteen of the interventions were delivered in a group format. One study used both individual and group-based practice (Moen et al., 2015). For practical reasons, one intervention was delivered on an individual basis (Mohammed et al., 2018). Interventions varied in length, ranging from four to 12 sessions.

Table 4: Quality assessment

First author and date	Selection bias	Study design	Confounders	Blinding	Data collection tools	Withdrawals	Global rating
Baltzell (2014)	Weak	Strong	Weak	Weak	Strong	Weak	Weak
Carraça (2018)	Weak	Strong	Weak	Weak	Strong	Strong	Weak
Chen (2019)	Weak	Moderate	Weak	Weak	Strong	Strong	Weak
De Petrillo (2009)	Weak	Strong	Strong	Weak	Strong	Moderate	Weak
Dehghani (2018)	Weak	Strong	Weak	Weak	Strong	Strong	Weak
Goodman (2014)	Weak	Strong	Weak	Weak	Strong	Moderate	Weak
Gross (2018)	Weak	Strong	Strong	Weak	Strong	Strong	Weak
Kaufman (2009)	Weak	Moderate	Weak	Weak	Strong	Weak	Weak
Moen (2015)	Weak	Strong	Weak	Weak	Strong	Moderate	Weak
Mohammed (2018)	Weak	Strong	Weak	Weak	Strong	Weak	Weak
Rooks (2017)	Weak	Strong	Strong	Moderate	Strong	Strong	Moderate
Scott-Hamilton (2016)	Weak	Moderate	Weak	Weak	Strong	Weak	Weak
Scott-Hamilton et al (2016)	Weak	Strong	Weak	Weak	Strong	Moderate	Weak
Thompson (2011)	Weak	Weak	Weak	Weak	Strong	Weak	Weak
Vidic (2017)	Weak	Moderate	Weak	Weak	Strong	Weak	Weak
Vidic (2018)	Weak	Moderate	Weak	Weak	Strong	Weak	Weak

Table 5: Intervention characteristics

First author and date	Intervention	Modification from protocol?	Aim of the intervention	Summary of intervention content	Facilitator	Format	Length	Home-practice encouraged?	Home-practice reported?	Facilitator competence formally assessed?
Baltzell (2014)	MMTS	No	To train participants to increase their mindfulness, in general, and then to learn to integrate mindfulness skills when practicing and competing	Mindfulness meditation, acceptance and non-judgement of emotions and thoughts	An expert meditation teacher	Group	12-weekly 30-minute sessions	Yes	No	No
Carraça (2018)	MBSoccerP	No	Aim of intervention not stated	Body scan, mindfulness meditation, acceptance, values and committed action and compassionate imagery	NR	Group	Eight-weekly 90-120 minutes sessions	Yes	No	No
Chen (2019)	MSPE	No	MSPE sessions place emphasis on learning, engaging, and practicing core mindfulness skills in ways that maximize	Body scan, mindfulness meditation, sitting and walking meditation, mindful yoga and diaphragmatic breathing.	NR	Group	Four-weekly 150-180-minute sessions	Yes	Yes	No

			their integration into practice, competition, and daily life							
De Petrillo (2009)	MSPE	Yes	MSPE sessions place emphasis on learning, engaging, and practicing core mindfulness skills in ways that maximize their integration into practice, competition, and daily life	Body scan, mindfulness meditation, mindful breathing, sitting with the breath, mindful yoga and walking meditation. Protocol was modified to be more relevant to long-distance runners.	First author. No further details reported	Group	Four-weekly 150-180-minute sessions	Yes	No	No
Dehghani (2018)	MAC	No	MAC aims to work with athletes for the purpose of enhancing sport performance and overall well-being	Psychoeducation, mindfulness and cognitive defusion. values and values-driven behaviour, acceptance, and commitment	A clinical psychology PhD student who had passed the MAC curriculum	Group	Eight-weekly 90-minute sessions	NR	No	No

Goodman (2014)	MAC	Yes	MAC aims to work with athletes for the purpose of enhancing sport performance and overall well-being	Mindfulness meditation, cognitive defusion, value driven behaviour and committed action. 60-minute Authors modified MAC by adding Hatha yoga sessions at the end of each session and condensing the 8-week protocol (one session per week) to 5 weeks (two sessions each week, one session the first and last weeks)	Facilitator 1: A licensed clinical psychologist. Has taught university-level courses on meditation, mindfulness, and sports psychology. Facilitator 2: A registered yoga instructor at the 500-hr level and holds professional certifications in positive psychology and advanced coaching. Director of a mindfulness living learning program and has taught university level courses on the science and application of mind– body integration.	Group	Eight 90-minute sessions over five weeks, followed by one-hour Hatha yoga	Yes	No	No

Gross (2018)	MAC	No	MAC aims to work with athletes for the purpose of enhancing sport performance and overall well-being	Psychoeducation, mindfulness and cognitive defusion. values and values-driven behaviour, acceptance, and commitment	First author, a fourth-year doctoral student with previous experience running MAC groups.	Group	Six-weekly 60-minute sessions	NR	No	No
Kaufman (2009)	MSPE	No	MSPE sessions place emphasis on learning, engaging, and practicing core mindfulness skills in ways that maximize their integration into practice, competition, and daily life	Body scan, mindful breathing, the sitting meditation, mindful yoga, and the walking meditation	NR	Group	Four-weekly 150-180-minute sessions	Yes	No	No
Moen (2015)	Mindfulness training	N/A	Aim of intervention not stated	Body scan, mindful meditation	An experienced mindfulness coach	Group and individual practice	12 weeks. Participants required to practice individually for a minimum of 90-minutes per week and to attend four weekly two-hour	Yes	No	No

							mindfulness-training classes			
Mohammed (2018)	MBSR	Yes	To reduce the perception of pain and decrease anxiety/stress, as well as increase pain tolerance, mindfulness, positive mood and to decrease negative mood	Mindful meditation including mindful breathing, body scan meditation and sitting meditation. MBSR program modified due to the nature of the severely injured athletes' state - sessions were reduced from 150 minutes to 90 minutes	First author. No further details reported.	Individual sessions	Eight-weekly 90-minute 1-1 sessions	Yes	No	No
Rooks (2017)	Mindfulness training	N/A	To protect individuals from the attentional and emotional costs of high-demand training intervals	Body scan, mindful breathing and choiceless awareness exercises	NR	Group	Four-weekly 45-minute instructor-led group training; 2.4-hours of proctored training (four-days a week over four-weeks) and 3.6-hours of at-home	Yes	Yes	No

							individual practice (over four-weeks)			
Scott-Hamilton & Schutte (2016)	MiCBT	Yes	MiCBT aims to help people to internalise attention in order to regulate attention and emotion, and externalise these skills to the contexts in which their impairment is triggered or maintained	Body scan, mindfulness meditation. Authors modified the protocol by adding a mindful spin-cycling exercise	First author who undertook supervised training in MiCBT foundation skills	Group	Eight-weekly sessions	Yes	Yes	No
Scott-Hamilton et al (2016)	MiCBT	Yes	MiCBT aims to help people to internalise attention in order to regulate attention and emotion, and externalise these skills to the contexts in which their impairment is triggered or maintained	Body scan, mindfulness meditation. Authors modified the protocol by adding a mindful spin-cycling exercise	First author who undertook supervised training in MiCBT foundation skills.	Group	Eight-weekly sessions	Yes	No	No

Thompson (2011)	MSPE	N/A	N/A: FU data only	N/A: FU data only	N/A: FU data only	N/A: FU data only	N/A: FU data only	N/A: FU data only	N/A	N/A
Vidic (2017)	Mindfulness meditation	N/A	To help individuals work with their own awareness and distractibility with the goal of eliminating stress and suffering that is mainly derived from past-future thinking.	Education about mindfulness and guided mindfulness meditation	A practitioner with 30+ years of experience with mindfulness practice and training with college students.	Group	Ten 60-minute sessions over 16 weeks	Yes	No	No
Vidic (2018)	Mindfulness meditation	N/A	To provide college-athletes with direction and an opportunity to develop competence as they worked to bring their minds more into the present moment.	Education about mindfulness and guided mindfulness meditation	A practitioner with 30+ years of experience of practicing and teaching mindfulness meditation to college students.	Group	Six 60-minute sessions over 9 weeks	Yes	No	No

Note: NR = not recorded; FU = follow-up; MMTS: Mindfulness Meditation Training in Sport; MBSoccerP: Mindfulness-based soccer program; MSPE: Mindful Sport Performance Enhancement; MAC: Mindfulness-acceptance-commitment approach; MBSR: Mindfulness-based stress reduction; MiCBT: Mindfulness-integrated Cognitive Behavioural Therapy

What measures were used to assess mental health and / or well-being outcomes?

Eighteen different validated measures of mental health and / or well-being were reported across the 17 studies (see Table 5). Sixteen measures assessed symptoms of psychological distress and two assessed domains of well-being. Some outcomes were assessed using a diverse range of measurement tools. For example, anxiety was measured using six measures—the Sport Anxiety Scale (SAS), the Sport Anxiety Scale 2 (SAS-2), the Sport Competition Anxiety Test (SCAT), the Revised Competitive State Anxiety Inventory-2 (CSAI-2R), the Beck Anxiety Inventory (BAI) and the State-Trait Anxiety Inventory (STAI).

Table 5: Mental health and well-being measures used across studies

Measure	Studies
Anxiety	
Beck Anxiety Inventory (BAI; Beck, Epstein, Brown & Steer, 1988)	Chen et al. (2019)
Sport Anxiety Scale (SAS; Smith, Smoll & Schutz, 1990)	De Petrillo et al. (2009) Kaufman et al. (2009) Thompson et al. (2011)
Sport Anxiety Scale 2 (SAS-2; Smith, Smoll, Cumming & Grossbard, 2006)	Scott-Hamilton & Schutte (2016) Scott-Hamilton et al. (2016)
Sport Competition Anxiety Test (SCAT; Martens, 1977)	Dehghani et al. (2018)
State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch & Lushene, 1970)	Rooks et al. (2017)
Revised Competitive State Anxiety Inventory-2 (CSAI-2R; Cox, Martens & Russell, 2003)	Chen et al. (2019)
Burnout	
Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001)	Moen et al. (2015)
Depression	
Centre for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977)	Rooks et al. (2017)
Chinese version of the Patient Health Questionnaire (PHQ-9; Wang et al., 2014)	Chen et al. (2019)

Eating Disorder	
Chinese version of Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994)	Chen et al. (2019)
Life satisfaction	
Satisfaction with Life Scale (SwLS; Diener, Emmons, Larsen & Griffin, 1985)	Baltzell & Akhtar (2014)
Mond and Affect	
Positive Affect, Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988)	Baltzell & Akhtar (2014) Rooks et al. (2017)
Profile of Mood States (POMS; McNair, Lorr & Droppleman, 1971)	Mohammed et al. (2018)
Psychological distress	
Brief Symptom Inventory (BSI; Derogatis, 1993)	Carraça et al. (2018)
Counselling Centre Assessment of Psychological Symptoms-62 (CCAPS-62; Locke et al., 2011)	Gross et al. (2018)
Depression, Anxiety and Stress Scales (DASS; Lovibond & Lovibond, 1995)	Goodman et al. (2014) Mohammed et al. (2018)
Psychological well-being	
Psychological Well-Being Scale (PWBS; Ryff, 1989)	Baltzell & Akhtar (2014)
Stress	
Perceived Stress Scale (PSS; Cohen, Kamarck & Mermelstein, 1994)	Goodman et al. (2014) Moen et al. (2015) Vidic et al. (2017) Vidic et al. (2018)

Study findings

Study findings are summarised in Table 6 and are presented narratively below. Studies that measured a common outcome (i.e. depression) have been grouped and reported together. Studies that used composite measures (i.e. Brief Symptom Inventory) have been combined under the heading *psychological distress*.

Studies measuring anxiety

Of the eight studies that reported the effect of a MABI on symptoms of anxiety, four used controlled study designs whilst three used uncontrolled designs. One RCT reported a significant treatment effect on the Sport Competition Anxiety Test, in favour of the intervention group ($p < .001$; Dehghani et al., 2018). There were no significant differences found between the intervention and control groups in any of the other controlled studies (Rooks et al., 2017; Scott-Hamilton, Schutte & Brown, 2016; De Petrillo et al., 2009).

Of the three studies that used uncontrolled designs, Scott-Hamilton and Schutte (2016) found that participants high in adherence (i.e. those who followed recommended practice of mindfulness exercises) reported significant improvements in anxiety, as measured by the Sport Anxiety Scale-2, when compared to low adherence participants ($p < .05$). Chen et al (2019) measured anxiety using both the Beck Anxiety Inventory (BAI) and the Revised Competitive State Anxiety Inventory-2 (CSAI-2R). The authors reported improvements in BAI anxiety scores at post-intervention and at four-week follow-up, however these findings were not statistically significant. Significant improvements were reported at follow-up on the cognitive anxiety subscale of the CSAI-2R ($p < .01$), whilst the self-confidence and somatic anxiety subscales did not reveal statistical change at post-intervention or at follow-up. Whilst Kaufman et al. (2009) reported no significant improvement from pre- to post-intervention on the Sport Anxiety Scale, significant decreases in sport anxiety among participants from both this study and from De Petrillo et al. (2009) were reported from post-intervention to 12-month follow-up ($p < .05$; Thompson et al., 2011).

Studies measuring burnout

Moen, Abrahamsen & Furrer (2015) reported on the effect of mindfulness training on burnout symptoms, as measured by the Athlete Burnout Questionnaire. The authors reported a significant treatment effect on burnout symptoms in favour of the intervention group ($p < .001$).

Studies measuring depression

Depression outcomes were reported in two studies. Rooks et al. (2017) found no significant between-group differences on the Centre for Epidemiologic Studies Depression Scale (CES-D). In an uncontrolled study, Chen et al. (2019) reported improvements in depression scores at post-intervention and at four-week follow-up, however these findings were not statistically significant.

Studies measures eating disorder

Chen et al. (2019) assessed eating disorder symptomatology using the Chinese version of the Eating Disorder Examination Questionnaire (EDE-Q). In the absence of a control group, the authors reported significant improvement on the global score of the EDE-Q at both post-intervention ($p < .01$) and at follow-up ($p < .01$), as well as on both the shape and weight concern subscales ($p < .01$).

Studies measuring mood and affect

Two studies used the Positive Affect, Negative Affect Schedule (PANAS). Baltzell and Akhtar (2014) reported no significant between-group differences in overall PANAS scores, although the intervention group reported a significant increase on the PANAS determined subscale compared to the control group ($p < .01$). The authors reported that whilst scores of the negative affect scale remained stable in the intervention group, the control group reported a significant increase in negative affect. Rooks et al. (2017) also reported no significant between-group differences on the PANAS. Mohammed et al. (2018) measured intervention effects on the Profile of Mood States (POMS) and reported no significant between-group differences between the intervention and control group.

Studies using composite measures of psychological distress

Four studies used composite measures of psychological distress. Carraça et al. (2018) investigated the effect of MBSoccerP on Brief Symptom Inventory (BSI) scores. The authors reported no significant between-group

differences on total BSI scores, but noted the intervention group reported significant pre- to post-intervention improvements on the BSI anxiety subscale compared to the control group ($p < .05$). Gross et al. (2018) reported that whilst there were no significant between-group differences on the total Counselling Centre Assessment of Psychological Symptoms-62 (CCAPS-62) psychological distress index score, the MAC group reported significant improvements on the substance use and hostility subscales when compared with the control group ($p < .05$). Two studies used the Depression, Anxiety and Stress Scales. Neither study found any significant pre- to post-intervention differences between the intervention and inactive control groups (Goodman et al., 2014; Mohammed et al., 2018.

Studies measuring perceived stress

Perceived stress was investigated in four studies. Neither Goodman et al. (2014) nor Moen et al. (2014) found any significant differences in perceived stress between the intervention and inactive control groups. Two uncontrolled studies (Vidic et al., 2017; Vidic et al., 2018) reported pre- to post-intervention improvements in perceived stress, yet only one of these results was statistically significant (Vidic et al., 2017).

Studies measuring well-being

Baltzell and Akhtar (2014) measured two domains of well-being — psychological well-being and life satisfaction. There authors reported no significant within or between-group differences on the Satisfaction with Life Scale or on any of the subscales of the Psychological Well-being Scale.

Table 6: Summary of study findings

First author and date	Measure	Key findings (statistics provided where reported)
Baltzell (2014)	Positive and Negative Affect Scale (PANAS)	No significant between-group differences or interaction effects
	Satisfaction with Life Scale (SwLS)	No significant between-group differences or interaction effects
	Psychological Well-being Scale (PWS)	No significant between-group differences or interaction effects
Carraça (2018)	Brief Symptom Inventory (BSI)	No significant between-group differences on total score, though significant treatment effect reported on the anxiety subscale in favour of the intervention group; $t = -.64$, $p < .05$
Chen (2019) *	Beck Anxiety Inventory (BAI)	Improvements at post-intervention and follow-up were not statistically significant
	Eating Disorder Examination Questionnaire (EDE-Q)	Significant improvement at post-intervention ($p < .01$) and follow-up ($p < .01$)
	Patient Health Questionnaire 9 (PHQ-9)	Improvements at post-intervention and follow-up were not statistically significant
	Revised Competitive State Anxiety Inventory-2 (CASI-2R)	Cognitive anxiety subscale showed significant improvement at follow-up ($p < .01$). Confidence and somatic anxiety subscales did not reveal significant change at post-intervention or follow-up.
De Petrillo (2009)	Sport Anxiety Scale (SAS)	No significant between-group differences or interaction effects
Dehghani (2018)	Sport Competition Anxiety Test (SCAT)	Intervention group reported significant improvement in competitive anxiety relative to control group; $\eta^2 = .62$, $p < .001$ (significant interaction effect)
Goodman (2014)	Depression, Anxiety and Stress Scales (DASS-21)	No significant between-group differences or interaction effects
	Perceived Stress Scale (PSS)	No significant between-group differences or interaction effects

Gross (2018)	Counselling Centre Assessment of Psychological Symptoms-62 (CCAPS-62)	No significant between-group differences or interaction effects on total score, though the intervention group reported significant improvements on the substance-use, F (2, 32) = 3.72, p < .04, partial η^2 = .19, and hostility F (2, 32) = 5.92, p < .05, partial η^2 = .27, subscales.
Kaufman (2009) *	Sport Anxiety Scale (SAS)	No significant improvement
Moen (2015)	Athlete Burnout Questionnaire (ABQ)	Intervention group reported significant decrease in global burnout score relative to control group; F (1,54) = 14.89, p < .001, η^2 = .24 (significant interaction effect)
Mohammed (2018)	Depression, Anxiety and Stress Scales (DASS-21; anxiety and stress scales only)	No significant between-group differences or interaction effects
	Profile of Mood States (POMS)	No significant between-group differences or interaction effects
Rooks (2017)	Centre for Epidemiological Studies Depression (CES-D)	No significant between-group differences or interaction effects
	Positive and Negative Affect Schedule (PANAS)	No significant between-group differences or interaction effects
	Stait-Trait Anxiety Inventory - State scale (STAI-S)	No significant between-group differences or interaction effects
Scott-Hamilton (2016) *	Sport Anxiety Scale 2 (SAS-2)	High adherence participants were significantly less anxious than low adherence participants at post-test; F (1, 9) = 5.39, p < .05, partial η^2 = .375
Scott-Hamilton et al (2016)	Sport Anxiety Scale 2 (SAS-2)	No significant between-group differences or interaction effects
Thompson (2011) **	Sport Anxiety Scale (SAS)	Significant decreases in sport anxiety from post-workshop (M = 40.35) to follow-up (M = 34.09), F (1, 19) = 10.23, p < .05.
Vidic (2017) *	Perceived Stress Scale (PSS)	Significant improvement at post-intervention; F (2,24) = 4.50, p < 0.05

Vidic (2018) *	Perceived Stress Scale (PSS)	Improvement at post-intervention, but this was not statistically significant; $t = .79$, $p = .44$

Note: * = uncontrolled study (i.e. no comparison group) ** = follow-up study including participants from De Petrillo et al. (2009) and Kaufman et al. (2009).

Discussion

This review aimed to synthesise and appraise the methodological quality of studies that have evaluated MABIs with sport performers and included measures of mental health and / or well-being. Sixteen studies with a total of 516 unique participants were included. A diverse range of interventions and outcome measures were used. Whilst each of the studies included measures that assessed symptoms of psychological distress, only one assessed well-being. Methodological quality across the studies was generally weak. Our findings suggest MABIs may have beneficial effects for competitive anxiety and for burnout, yet there is no evidence to suggest that the included MABIs are any more effective than other more established interventions.

This review is timely. The mental health and well-being of sport performers is receiving increasing public and academic attention (Rice et al., 2016; Ingle, 2019), and recent consensus statements and UK Government policy have highlighted that the mental health and well-being of sport performers should be a key consideration for researchers and clinicians (Schinke, Stambulova, Si, & Moore, 2018; Henriksen et al., 2019; Department for Digital, Culture, Media & Sport, 2018).

The findings highlight the heterogeneity of outcome domains and outcome measures used to assess mental health and well-being in this population. This lack of consensus as to which, and how, mental health and well-being outcomes should be recorded, prevents the quantitative synthesis of results through meta-analysis and thus poses a barrier to establishing a robust evidence base. Such heterogeneity could be improved through the development of an agreed Core Outcome Set (Webbe, Sinha & Gale, 2018). This would encourage researchers to measure and report on pre-agreed standardised outcomes and thus reduce the potential of reporting bias, facilitate meta-analyses and strengthen the evidence base. A recent consensus statement from the International Society of Sport Psychology proposed that researchers 'unite to develop a more contextualized definition of athlete mental health and more comprehensive strategies of assessment' (Henriksen et al., 2019, p. 1). The development of a Core Outcome Set would certainly be in line with this recommendation.

Of the six measures used to measure anxiety, four focused specifically on competitive anxiety. Whilst this is not surprising, given the context in which these interventions were delivered, the inclusion of more general measures of anxiety, such as the Beck Anxiety Inventory (Beck, Epstein, Brown & Steer, 1988), may help to distinguish between the effects of MABIs on competitive and generalised symptoms of anxiety and to better understand any potential associations between the two.

Whilst each study included a measure of psychological distress, considerably less attention was afforded to assessing the effects of MABIs on well-being. This finding reflects the suggestion that research in this area has been hampered by a focus on psychological distress, rather than well-being, and an assumption that athletes who are not 'ill' are therefore 'healthy' (Uphill, Sly & Swain, 2016). The dual-continuum model of mental health (Westerhof & Keyes, 2010) suggests that psychological distress and well-being exist on distinct, but related, domains, and that the alleviation of psychological distress does not automatically lead to improvements in well-being. It has been recommended that studies move beyond the narrow focus of conceptualising mental health as the absence of psychological distress and towards a more holistic understanding of mental health (Trompetter, Lamers, Westerhof, Fledderus & Bohlmeijer, 2017). To address this, researchers should seek to include validated measures of well-being, such as the Mental Health Continuum—Short Form (Keyes, 2002), alongside measures of psychological distress in their studies.

Of the 16 studies included in our review, only two reported significant treatment effects in favour of the intervention group (Moen et al., 2015; Dehghani et al., 2018). Findings from these two studies provide preliminary evidence that MABIs can improve burnout and competitive anxiety among elite junior athletes and collegiate athletes, respectively. Notably, neither of these studies used an active control group, thus limiting our ability to ascribe these changes to the interventions. Statistically significant improvements in mental health were reported in three of the five uncontrolled studies. Future studies should seek to replicate these findings with larger and more representative samples and consider assessing the acceptability of these interventions with this population. In addition, researchers may consider including active, rather than

inactive, control groups (for example, psychological skills training; relaxation training). This will allow for any positive between-group effects to be attributed to the intervention itself, rather than to extraneous factors.

Given that MABIs have been shown to improve mental health and well-being in both clinical and non-clinical populations (Eberth & Sedlmeier, 2012; Khoury et al., 2013; Goldberg et al., 2018), it is perhaps surprising that only two of the 10 controlled studies reported significant benefits to mental health or well-being. The absence of significant effects may be partly explained by a floor effect. The interventions included in this review were delivered to athletes with low levels of psychological distress, leaving little room for significant change. In addition, it is possible that small sample sizes, the short duration of the interventions and poor methodological quality may have contributed to the lack of statistically significant differences between pre- and post-intervention scores. Furthermore, findings from these studies may have been influenced by participants' adherence to the intervention and by the skill and competence of the intervention facilitator/s, as well as fidelity to manualised interventions.

Home-practice is considered an integral feature of mindfulness meditation and has been associated with improvements in clinical outcomes (for a review see Lloyd, White, Eames & Crane, 2018). Whilst most studies encouraged between-session mindfulness practice, only three studies reported details of home-practice (i.e. time practiced). Future studies should seek to assess both the quantity and quality of home-practice using a standardised measurement tool (for a sample measurement tool, see Lloyd et al., 2018).

Similarly, researchers should consider measuring participants' adherence to the intervention. Adherence is an important factor in the facilitation of mindfulness skills (Carmody & Baer, 2003) and should be considered when evaluating the effectiveness of an intervention. Adherence was measured in just one of the included studies (Scott-Hamilton & Schutte, 2016). The authors reported that participants who followed the recommended practice of mindfulness exercises reported significantly greater decreases in anxiety when compared to participants who showed less adherence to the programme, supporting previous findings on the

relationship between adherence and outcomes in MABIs (Trompetter, Bohmeijer, Veehof & Schreurs, 2015). Future studies would benefit from including a measurement of participants' adherence to the intervention.

Although most studies provided details of the instructor's skill level, this was not always well-defined. For example, some studies described facilitators as 'expert' or 'experienced', whilst others simply stated that interventions were led by 'the first author'. Further, none of the studies assessed facilitator competence during the intervention. It has been suggested that the efficacy and quality of MABIs are dependent on the skill and competence of the facilitator:

> The quality of a mindfulness-based class is only as good as the instructor and his or her understanding of what is required to deliver a programme which is both rooted in a depth of personal mindfulness practice and integrated with the skills and understandings relevant to the particular program or context within which the teaching is offered.
>
> Crane et al., 2012, p. 76

Considering this, it is important that researchers establish that interventions are being delivered competently, by appropriately trained facilitators, and as intended. Future studies would benefit from providing more detailed descriptions of the facilitator/s skill level and from assessing both facilitator competence and intervention fidelity. To assist with this, researchers may consider using a published measure such as the Mindfulness-Based Interventions Teaching Assessment Criteria (MBI: TAC; Crane et al., 2013).

Results from our quality assessment highlighted a lack of high-quality research in this area. Most studies were deemed methodologically poor, with just one study rated as moderate quality (Rooks et al., 2017). Whilst some studies used random assignment to intervention or control groups, none of the studies used random selection of participants. Studies tended to rely on convenience sampling methods, and this is likely to have

resulted in biased and unrepresentative samples. In addition, most studies used small samples. Larger samples are needed to ensure that studies are sufficiently powered to detect true intervention effects.

Eight studies were conducted with collegiate sport performers. Just two studies were conducted with elite-level sport performers and none of the studies included para-athletes. Research in this area would benefit from examining the effects of MABIs on sport performers competing at different sporting levels. Researchers may consider forming national or international collaborations to overcome the apparent difficulties in recruiting large and representative samples.

A further limitation of the current evidence base is the lack of follow-up assessments. Only three studies conducted follow-up assessments that extended beyond the post-intervention assessment time-point. Of these, two were conducted four-weeks post-intervention whilst the other was conducted 12-months post-intervention. Studies employing follow-up assessments are needed to explore the long-term effects of MABIs on mental health and well-being in this population.

In terms of study reporting, studies were unclear in their descriptions of whether potential confounders were controlled for and did not always state whether outcome assessors were blind to the intervention status of the participants. This increases the likelihood of bias in the studies. The poor quality and unclear reporting demonstrated in this review is perhaps not surprising, given that concerns have consistently been raised about the methodological shortcomings of studies examining MABIs (Goldberg et al., 2018). Several good practice guidelines exist to aid the reporting of intervention studies (e.g. Consolidated Standards of Reporting Trials [CONSORT] guidelines; Schulz, Altman & Moher, 2010; Template for Intervention Description and Replication [TIDieR] guidelines; Hoffmann et al., 2014). It is recommended that authors adhere to these guidelines to improve the consistency, transparency and quality of reporting in this area.

Overall, the poor methodological quality of the included studies limits the extent to which we can draw conclusions about the efficacy of these interventions. Rigorous and high-quality studies are needed to better

examine the effects of MABIs on the mental health and well-being of sport performers. The Medical Research Council's Developing and Evaluating Complex Interventions document (Craig et al., 2008) offers guidance on the development, piloting, evaluation and implementation of health interventions. It is recommended that researchers follow this guidance and carry out detailed piloting and feasibility work to (i) assess the acceptability and feasibility of interventions, (ii) refine intervention content and delivery and (iii) ensure that studies can be delivered as intended with adequate rates of recruitment. The recruitment of larger and more representative samples will enhance statistical power and the reliability of reported intervention effects and minimise threats to external validity. Researchers may consider forming national or international collaborations to overcome the apparent difficulties in recruiting large and representative samples of sport performers.

The findings of this review must be considered in light of its limitations. Unfortunately, the heterogeneity of study designs, interventions and outcome measures prevented meta-analysis and so firm conclusions regarding the efficacy of MABIs on mental health and well-being in this population cannot be drawn. Given the exclusion criteria it is possible that some relevant papers may have been missed. Observational studies, case studies, qualitative studies and unpublished studies were all excluded from this review. Observational studies may have offered useful insights into how and why MABIs may lead to change in mental health and well-being in this population. Case studies may have offered insights into what interventions and outcome measures are being used in routine practice. The inclusion of qualitative studies may have provided a rich and detailed understanding of how interventions were received and experienced by sport performers and facilitators alike, and the inclusion of unpublished articles would have reduced the risk of publication bias. Finally, for practical reasons we excluded studies that were not published in English and so we may have missed relevant studies published in other languages.

Despite these limitations our review has several strengths. Mindfulness- and acceptance-based interventions are increasingly used in sport (Gardner & Moore, 2017) and this is the first systematic review to

evaluate the efficacy and methodological quality of MABIs in the promotion of mental health and well-being among sport performers. This review is particularly timely, given recent calls from the UK Government, International Society of Sport Psychology and International Olympic Committee to improve the support that is available to sport performers (Department for Digital, Culture, Media & Sport, 2018; Schinke, Stambulova, Si, & Moore, 2018; Reardon et al., 2019). The broad search strategy enabled the identification of studies that reported on a range of more (e.g. MAC) and less established (e.g. MBSoccerP) interventions, and we included a range of experimental and quasi-experimental research designs which, given the lack of research in this field, is a strength of this review.

Conclusion

This systematic review aimed to synthesise and appraise the methodological quality of studies that have evaluated MABIs with sport performers and included measures of mental health and / or well-being. Specifically, the review aimed to appraise the methodological quality of studies and to investigate what interventions and outcome measures were used. Sixteen studies were included. A range of MABIs were used and there was considerable heterogeneity in the outcome measures reported across the studies. Whilst each of the studies included a measure of psychological distress, only one measured domains of well-being. Methodological quality across the studies was poor. Findings suggest that MABIs may have beneficial effects for competitive anxiety and for burnout, yet there is no evidence to suggest that the included MABIs are any more effective than other interventions. Researchers should seek to employ more rigorous study designs and include measures of well-being alongside measures of psychological distress.

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CHAPTER 2

Exploring subjective well-being in current and former football players: The role of psychological inflexibility.

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Abstract

Introduction: Whilst the mental health and well-being of football players is receiving increasing public and media attention there remains a paucity of empirical research in this area. Studies have focused on investigating the prevalence of symptoms of mental health difficulties. To date, no research has investigated subjective well-being in this population.

Aims: This cross-sectional study investigated (i) associations between subjective well-being and three ACT processes of change — psychological inflexibility, cognitive fusion and value-consistent behaviour, and (ii) psychological predictors of subjective well-being

Methods: A cross-sectional design was used. One hundred and one current and former football players completed an online questionnaire between February 2018 and May 2019.

Results: More than half (51.5%) of respondents reported clinical levels of psychological distress and 60% were found to experience less than optimal levels of subjective well-being. Psychological inflexibility was significantly negatively associated with subjective well-being and was a significant predictor of subjective well-being over and above psychological distress.

Conclusion: The promotion of psychological flexibility may have important implications for subjective well-being in this population. Further longitudinal research is required to better understand how changes in psychological flexibility relate to variations in subjective well-being over time.

Key words: Mental health; well-being; football; acceptance and commitment; psychological flexibility

Introduction

The mental health and well-being of football players is receiving increasing public and media attention (Conn, 2017; BBC Sport, 2019; Foster, 2019; McRae, 2019), with reports that record numbers of players are seeking support for their mental health (Professional Footballers Association, 2019). In 2015, researchers at FIFPro, the International Federation of Professional Footballers, published the first empirical study investigating symptoms of common mental disorders among current and retired football players. Findings revealed that more than one-third of respondents reported symptoms of anxiety and depression (Gouttebarge, Aoki, & Kerkhoffs, 2015). Similar rates of symptoms relating to anxiety and depression were reported in subsequent studies (Gouttebarge, Frings-Dresen & Sluiter, 2015; Gouttebarge, Aoki, Verhagen, & Kerkhoffs, 2017).

Football players have been critical of the psychological support that has been made available to them both during and beyond their careers (Brown & Potrac, 2009; Conn, 2017), suggesting that support has tended to be reactive, rather than proactive (BBC Sport, 2018) and focused on the treatment of psychological distress rather than on the promotion of well-being — 'There isn't enough in place for players and it is so reactive, there is much more we can do to be proactive and enable players to not to have to go to those depths as I did myself' (Foster, 2019, p. 9). This narrow focus is reflected in the academic literature, where conceptualisations of mental health within sport are 'typically framed in the language of mental illness' (Uphill, Sly & Swain, 2016, p. 1).

High levels of athletic identity — 'the degree to which an individual identifies with the athlete role' (Brewer, Van Raalte, & Linder, 1993, p. 237) — are common among sport performers, and have been associated with increased levels of psychosocial impairment, particularly at times when this identity is challenged — during times of injury, deselection and retirement, for example (for a review, see Brewer & Petitpas, 2017). Furthermore, it has been suggested that individuals with strong and exclusive athletic identities tend to

evaluate their competence and self-worth through their athletic achievements and neglect valued areas of their lives to fulfil their roles as athletes (Brewer, Van Raalte, & Linder, 1993).

Mental health has long been defined by the absence of mental illness (Keyes, 2002). More recently it has been proposed that mental health and mental illness exist on distinct, yet related, continua, where the absence of mental illness does not simply imply the presence of mental health, and vice-versa (Westerhof & Keyes, 2010). Consistent with this, the World Health Organisation defines mental health as 'a state of *well-being* in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community' (World Health Organisation, reference, 2004, p. 12). The term *subjective well-being* has been used to describe high levels of life satisfaction and positive affect, low levels of negative affect and optimal functioning in individual and social life (Diener & Suh, 1997; Keyes, 2002). Individuals with high levels of subjective well-being are described as *flourishing*. The term *languishing* describes individuals with low levels of subjective well-being. Individuals who are neither flourishing nor languishing are considered *moderately mentally healthy* (Keyes, 2002). Low levels of subjective well-being have been associated with impairments in psychosocial functioning and physical health outcomes (for a review see Keyes, 2014).

Given the reported rates of anxiety and depression among both current and former football players, and the theory that the absence of mental illness does not imply the presence of mental health, there is a clear need to develop empirically supported interventions not only to help players experiencing difficulties with their mental health, but also to promote subjective well-being. One such approach that may be effective in supporting this population is Acceptance and Commitment Therapy. Acceptance and Commitment Therapy (ACT) is commonly used with athletes to enhance sporting performance (Gardner & Moore, 2017; Noetel, Ciarrochi, Van Zanden & Lonsdale, 2018), and has been shown to alleviate psychological distress and promote subjective well-being in both clinical and non-clinical populations (Hayes, Luoma, Bond, Masuda & Lillis, 2006; Bohlmeijer, Lamers & Fledderus, 2015; Wersebe, Lieb, Meyer, Hofer & Gloster, 2018; Stenhoff, White,

Steadman & Reilly, 2019). Whilst the evidence base for ACT is growing, there remains a lack of research exploring its proposed processes of change (Bramwell & Richardson, 2018) and to date, there has been very little research that has explored the efficacy of ACT for promoting subjective well-being in athlete populations.

Acceptance and Commitment Therapy is a transdiagnostic psychotherapy that uses acceptance, mindfulness and behavioural change processes to promote *psychological flexibility* — 'the ability to be in the present moment with full awareness and openness to our experience, and to take action guided by our values' (Harris, 2009, p. 12). Psychological flexibility is established through six core processes of change — acceptance, cognitive defusion, values orientation, committed action, self-as-context and contact with the present moment — and is an important determinant of mental health and well-being (for a review see Kashdan & Rottenberg, 2010). In contrast, psychological *in*flexibility — 'the rigid dominance of psychological reactions, over chosen values and contingencies, in guiding action' (Bond et al., 2011, p. 678) — is associated with psychosocial difficulties and reduced quality of life (Bond et al., 2011; Levin et al., 2014). Several factors have been purported to reduce psychological flexibility. These include cognitive fusion, the 'excessive attachment to the literal content of human thought that makes healthy psychological flexibility difficult or impossible' (Strosahl, Hayes, Wilson & Gifford, 2004, p. 32), and values inconsistent behaviour (Harris, 2009).

Whilst previous studies have investigated the prevalence of psychological distress among current and former football players[1], this is the first to assess psychological distress *and* subjective well-being in this population. This study aimed to (i) investigate the relationships between subjective well-being, psychological distress and three ACT processes of change — psychological flexibility, cognitive fusion and value-consistent behaviour, and (ii) examine how ACT processes of change predict levels of subjective well-being relative to other factors. A better understanding of what affects subjective well-being among football players is an

[1] From here on in we use the terms *players* or *football players* to refer to both current and former football players. We will be more specific in our terminology where necessary.

important first step if we are to develop empirically supported interventions to enhance the health and well-being of this often-overlooked population. It is hypothesised that:

1. Players' levels of subjective well-being will be moderately, but not highly, negatively associated with levels of distress.

2. Players with lower levels of subjective well-being will report higher levels of psychological inflexibility and cognitive fusion, and lower levels of value-consistent behaviour.

3. Psychological inflexibility, relative to psychological distress, will contribute to a significantly greater amount of variance in subjective well-being.

4. Players with higher levels of athletic identity will report higher levels of psychological inflexibility and cognitive fusion and report a lower number of life domains as valued.

Methods

Participants

We recruited a convenience sample of current and former football players (n = 101). Recruitment took place between February 2018 and May 2019. In order to take part in the study, participants were required to be aged 16 years and above; a current or former (i.e. stopped playing within the last two years) academy, professional or semi-professional football player and fluent in English.

Measures

Demographic and career-specific variables

Demographic and career-specific (e.g. playing status, current playing level, highest playing level) information was collected using a self-report questionnaire developed specifically for this study (Appendix C).

Subjective well-being

The Mental Health Continuum Short Form (MHC-SF; Appendix D; Keyes, 2002) was used to measure subjective well-being. The MHC-SF contains 14-items that are rated on a 6-point scale from 0 (never) to 5 (every day). Three items assess emotional well-being, five assess social well-being and six assess psychological well-being. Higher total scores indicate greater levels of subjective well-being (range 0-70). Respondents with high levels of emotional, social and psychological well-being are described as *flourishing*. Those experiencing low levels of emotional, social and psychological well-being are described as *languishing*. Individuals who are neither flourishing nor languishing are considered *moderately mentally healthy*. Summed Likert scores were used in correlational and regression analyses. In addition, participants were classed as flourishing, moderately mentally healthy or languishing, according to the measure's instructions. The measure has demonstrated high levels of internal reliability (α = .89; Lamers, Westerhof, Bohlmeijer, Klooster & Keyes 2011). Internal consistency was high in the current study (α = .93).

Psychological distress

The General Health Questionnaire 12 (GHQ-12; Appendix E; Goldberg & Williams, 1988) is a 12-item measure of symptoms of common mental disorders / psychological distress. Items are rated on a 4-point scale. Higher scores indicate higher levels of psychological distress (range 0-36). The measure has good levels of internal consistency (α = .90; Lundin, Hallgren, Theobald, Hellgren & Torgén, 2016). Internal consistency was high in the current study (α = .92). This study used two scoring methods: (i) the Likert method (where items are scored 0-1-2-3; range 0-36) and (ii) the GHQ method (where items are scored 0-0-1-1; range 0-12). Summed Likert scores were used in correlational and regression analyses. The GHQ scoring method was used to establish a 'clinical caseness' score, ranging from 0 to 12, where a score of three of more indicated clinical levels of psychological distress (Goldberg et al., 1997).

Psychological inflexibility

The Acceptance and Action Questionnaire II (AAQ-II; Appendix F; Bond et al., 2011) is a 7-item measure of psychological inflexibility. Items are measured on a 7-point scale from 1 (never true) to 7 (always true). Higher scores indicate greater psychological inflexibility (range 7-49). The measure has demonstrated good internal consistency (α=0.84), test-retest reliability (α=.79) and construct validity (Bond et al., 2011). Internal consistency was high in the current study (α = .92).

Psychological flexibility in response to self-critical thoughts

The Flexibility of Responses to Self-critical Thoughts Scale (FoReST-12; Appendix G; White, Larkin., McCluskey, Lloyd & McLeod, in press) is a 12-item measure of psychological flexibility in response to self-critical thoughts. Items are rated on a 7-point scale from 1 (never true) to 7 (always true). Higher scores indicate lower levels of flexibility in responding to self-critical thoughts (range 7-84). The scale has demonstrated good internal consistency in a nonclinical sample (α=.85). Internal consistency was high in the current study (α = .92).

Cognitive fusion

The Cognitive Fusion Questionnaire (CFQ; Gillanders et al., 2104; Appendix H) is a 7-item measure of cognitive fusion. Items are rated on a 7-point scale from 1 (never true) to 7 (always true). Higher scores indicate increased levels of cognitive fusion (range 7-49). The measure has demonstrated good internal consistency (α > .80; Gillanders et al., 2014). Internal consistency was high in the current study (α = .95).

Valued living

The Valued Living Questionnaire (VLQ; Appendix I; Wilson, Sandoz, Kitchens & Roberts, 2010) is a two-part questionnaire that measures valued living. First, respondents rate, on a scale of 1-10, the importance that they place on 10 different life domains: (i) family, friends / social life, (ii) marriage / couples / intimate relations,

(iii) parenting, (iv) work, (v) education / training, (vi) recreation / fun, (vii) spirituality, (ix) citizenship / community life and (x) physical self-care. Second, respondents' rate, again on a scale of 1-10, the extent to which they have been living consistently with their values. Responses from both the importance and consistency subscales were multiplied and then averaged to calculate a weighted valued living composite score (VLQcomp), as recommended by the measure's authors. Higher composite scores indicate higher levels of value-consistent behaviour (range 0-100). In this study, a score of six or more for an item on the importance subscale (VLQimp) indicated a highly valued life domain. Similarly, a score of six or more for an item on the consistency subscale (VLQcons) was indicative of value-consistent behaviour. The measure has demonstrated adequate internal consistency (α = .74; Wilson et al., 2010). Internal consistency was adequate in the study (composite score α = .69; importance subscale α = .76; consistency subscale α = .57).

Athletic identity

The Athletic Identity Scale (AIMS 7; Brewer & Cornelius, 2001; Appendix J) is a 7-item measure of athletic identity. Items are rated on a 7-point scale from 1 (strongly disagree) to 7 (strongly agree). Higher scores indicate increased levels of athletic identity (range 7-49). The measure has a good level of internal consistency (α = 0.81; Brewer & Cornelius, 2001). Internal consistency was high in the current study (α = .83).

Procedure

This study was approved by the University of Liverpool Health and Life Sciences Research Ethics Committee (reference: 2230; Appendix K). A cross-sectional correlational design was used and data were collected online using Qualtrics (qualtrics.com; Qualtrics, 2018). A link to the questionnaire was advertised on social media and promotional materials were sent to each of the 12 clubs in the *JD Welsh Premier League*. The *Professional Footballers Association* (PFA) and *PFA Scotland* were approached to support recruitment but declined to support the study. Participants were directed to the study website (onthehead.org) and provided informed consent (Appendix L) before completing the online questionnaire. On completion of the

questionnaire participants were provided with contact details for a range of support organisations, including the *Professional Footballers Association*, *Sporting Chance* and *Life After Professional Sport*.

Sample size and power

A priori power analysis was conducted using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang 2009). Based on the planned hierarchical regression analysis using six predictor variables, a minimum of 98 participants were required to reach .80 power with a medium effect size (f^2 = .15).

Statistical analysis

Statistical analyses were conducted in JASP (JASP Team, 2018; jasp-stats.org) a statistical software programme. Incomplete data sets were removed from the analysis and subscale and total scores were calculated for each of the measures. All measures were assessed for normality and homogeneity of variance prior to analysis. Visual inspection of histograms, boxplots and Q-Q plots revealed all that scores appeared normally distributed, yet the Kolmogorov-Smirnov test suggested otherwise. When used with larger samples (i.e. samples larger than 30; Field, 2018), the Kolmogorov-Smirnov test is overly conservative and 'the violation of the normality assumption should not cause major problems' (Ghasemi & Zahediasl, 2012, p. 486), implying that parametric procedures may be used even when data are not normally distributed (Field, 2018). Descriptive statistics were calculated, and correlational analyses were used to explore hypothesised associations between the measures. A hierarchical multiple linear regression was used to examine whether psychological inflexibility and valued living predicted subjective well-being whilst controlling for age, gender, playing status (i.e. current or former player) and psychological distress. Differences between groups were explored using Welch's *t*-test[2]

[2] It has been proposed that researchers use Welch's *t*-test by default. Welch's *t*-tests perform better than Student's t-tests whenever sample sizes and variances are unequal and perform as well as the Student's t-test when sample sizes and variances are equal. Indeed, it is suggested that 'the default use of Welch's t-test is a straightforward way to improve statistical practice' (Delacre, Lakens & Keys, 2017, p. 99), and Welch's *t*-test is now the default setting in some statistical programs (Delacre, Lakens & Keys, 2017). For a comprehensive overview, readers are directed to Delacre, Lakens & Keys (2017).

and Welch's ANOVA. Post hoc tests were used to examine the differences between the groups with Bonferroni adjustments for multiple comparisons.

Results

One hundred and ninety-three people were recruited to the study. Ninety-two participants did not complete all the measures and were excluded from analysis. One hundred and one people completed the online questionnaire, including 43 males and 58 females. Participants were primarily White British (n = 90; 89%) with a mean age of 24.85 years (SD = 5.912, range 16 - 51 years). The sample consisted of 85 current and 16 former football players. Thirty participants (30%) reported they had received support for a mental health difficulty.

Table 1: Participant characteristics

Demographic variable	**Current players (n = 85)**	**Former players (n =16)**
Age (years), *M (SD)*, range	23.73 (4.819), 16-38	30.81 (7.609), 20-51
Gender		
Male	35 (34.7%)	8 (7.9%)
Female	50 (49.5%)	8 (7.9%)
Ethnicity		
White British	75 (74.3%)	15 (14.9%)
Other White background	1 (1%)	0 (0%)
White and Black Caribbean	3 (3%)	0 (0%)
Other Mixed / Multiple ethnic background	1 (1%)	0 (0%)
Pakistani	2 (2%)	0 (0%)
African	1 (1%)	0 (0%)
Caribbean	1 (1%)	1 (1%)
Other Black / African / Caribbean background	1 (1%)	0 (0%)
Education		
No qualifications	1 (1%)	0 (0%)
1-4 GCSEs or equivalent	3 (3%)	0 (0%)
5+ GCSEs or equivalent	18 (17.8%)	2 (2%)
2+ A-Levels or equivalent	27 (26.7%)	5 (5%)
Degree level or above	35 (34.7%)	9 (8.9%)
Other qualifications	1 (1%)	0 (0%)
Have you ever received support for mental health difficulties?		

Yes	24 (23.8%)	6 (5.9%)
No	61 (60.4%)	10 (9.9%)
Current playing level		
Academy	18 (21.2%)	-
Semi-professional	28 (32.9%)	-
Professional	39 (45.9%)	-
Current league		
Male players		
English Football League 1	1 (3.2%)	-
English Football League 2	1 (3.2%)	-
National League	2 (6.5%)	-
Welsh Premier League	23 (74.2%)	-
Huw Gray Alliance League	1 (3.2%)	-
Welsh Football League Division 1	2 (6.5%)	-
Welsh Premier Development League	1 (3.2%)	-
Female players		-
FA Women's Super League	26 (81.3%)	-
FA Women's Championship	1 (3.1%)	-
FA Women's National League	4 (12.5%)	-
Scottish Women's Premier League Division 2	1 (3.1%)	-
Why did you finish playing?		
Voluntarily	-	7 (43.8%)
Forced	-	6 (37.5%)
Other	-	1 (6.3%)
Prefer not to say	-	2 (12.5%)

Descriptive statistics

Descriptive statistics are presented in Tables 2 and 3. Fifty-two (51.5%) participants reported clinical levels of psychological distress, as indicated by a score of three or more on the GHQ-12[3]. Forty (39.6%) were classified as flourishing, 12 (11.9%) as languishing and 49 (48.5%) as moderately mentally healthy.

Table 2: Descriptive statistics

Scale	Whole sample n = 101 Mean (SD)	Gender			Playing Status		
		Male n = 43 Mean (SD)	Female n = 58 Mean (SD)	Welch's *t*-test	Current players n = 85 Mean (SD)	Former players n = 16 Mean (SD)	Welch's *t*-test
MHC-SF total score (0-70)	42.47 (14.26)	45.47 (14.01)	40.24 (14.16)	$t = 1.84$, $p = .068$	42.38 (13.51)	42.94 (18.26)	$t = 0.12$, $p = .91$
GHQ-12 total score (0-36)	14.63 (7.11) *	12.88 (5.63)	15.93 (7.83)	$t = 2.27$, $p < .05$	14.60 (6.85)	14.81 (8.61)	$t = 0.09$, $p = .93$
GHQ-12 caseness score (0-12)	3.88 (3.91) *	2.63 (3.25)	4.81 (4.15)	$t = 2.96$, $p < .005$	3.93 (3.92)	3.63 (4.08)	$t = 0.26$, $p = .79$
AAQ-II total score (7-49)	21.65 (9.83) **	18.00 (7.45)	24.36 (10.54)	$t = 3.55$, $p < .001$	21.80 (9.63)	20.88 (11.15)	$t = 0.31$, $p = .76$
CFQ total score (7-49)	23.54 (11.48) *	20.49 (9.61)	25.81 (12.28)	$t = 2.44$, $p < .05$	23.38 (11.43)	24.44 (12.08)	$t = 0.33$, $p = .75$
FoReST-12 total score (7-84)	33.71 (14.76) *	29.84 (13.09)	36.59 (15.37)	$t = 2.38$, $p < .05$	33.72 (14.71)	33.69 (15.50)	$t = 0.00$, $p = .99$
VLQ composite score (0-100)	44.11 (16.66) **	50.64 (16.56)	39.28 (15.14)	$t = 3.54$, $p < .001$	43.97 (15.03)	44.89 (24.20)	$t = 0.15$, $p = .89$
AIMS total score (7-49)	37.55 (7.68) * †	35.58 (6.54)	39.02 (8.17)	$t = 2.35$, $p < .05$	38.09 (7.94)	34.69 (5.40)	$t = 2.13$, $p < .05$

Note. MHC-SF: Mental Health Continuum-Short Form; GHQ-12: General Health Questionnaire-12; AAQ-II: Acceptance and Action Questionnaire-II; CFQ: Cognitive Fusion Questionnaire; FoReST-12: Flexibility of Responses to Self-Critical Thoughts questionnaire; VLQ: Valued Living Questionnaire; AIMS: Athletic Identity Measurement Scale.

* significant difference between genders at the $p < .05$ level, as indicated by Welch's *t*-test

** significant difference between genders at the $p < .001$ level, as indicated by Welch's *t*-test

[3] The GHQ scoring method (as detailed in the Methods section) was used to establish a 'clinical caseness' score ranging from 0 to 12, where a total score of three of more indicated clinical levels of psychological distress (for an overview of the scoring methods see Goldberg et al., 1997).

[†] significant difference between playing status at the $p < .05$ level, as indicated by Welch's *t*-test

Table 3: Questionnaire cut-off scores

Scale	Whole sample n = 101 n (%)	Gender: Male n = 43 n (%)	Gender: Female n = 58 n (%)
GHQ-12 score of three or more	52 (51.5%)	19 (44.3%)	33 (56.9%)
MHC-SF Flourishing	40 (39.6%)	23 (53.5%)	17 (29.3%)
MHC-SF Moderate mental health	49 (48.5%)	16 (37.2%)	33 (56.9%)
MHC-SF Languishing	12 (11.9%)	4 (9.3%)	8 (13.8%)

Correlational analysis

Means, standard deviations, and correlational results are reported in Table 3[4]. To account for the potential of a Type 1 error due to multiple testing, correlations were only deemed significant if they survived a conservative alpha level of $p < .01$. Subjective well-being was significantly and negatively correlated with psychological distress. Each of the ACT process of change measures were significantly associated with subjective well-being. Significant negative associations were found between subjective well-being and psychological inflexibility, cognitive fusion and psychological inflexibility in response to self-critical thoughts. Significant positive correlations were found between subjective well-being and value-consistent behaviour (composite score) and both the number of life domains rated as important, and the number of domains in which behaviour was rated as value-consistent. All effect sizes were of moderate to large magnitude[5]. No

[4] The table presents Pearson's correlations. Spearman's correlations were conducted with identical results.
[5] Where r = .10 constitutes a small effect size, r = .30 constitutes a moderate effect size and r = .50 constitutes a large effect size (Cohen, 1988)

significant correlations were found between athletic identity and cognitive fusion or either of the valued living domains. In addition to the hypothesised correlations, psychological distress was significantly associated with each of the ACT process of change measures.

Table 4: Means, standard deviations, Cronbach's Alpha and Pearson's correlation coefficients for all measures

Scale	Mean (SD)	α	1	2	3	4	5	6	7	8	9
1. MHC-SF	42.47 (14.26)	.93	-								
2. GHQ-12	14.63 (7.11)	.93	-.62**	-							
3. AAQ-II	21.65 (9.83)	.92	-.66**	.68**	-						
4. CFQ	23.54 (11.48)	.95	-.59**	.66**	.88**	-					
5. FoReST-12	33.71 (14.76)	.92	-.54**	.63**	.76**	.81**	-				
6.VLQcomp composite score	44.11 (16.66)	.69	.48**	-.51**	-.52**	-.45**	-.46**	-			
7. VLQimp importance scale †	7.53 (1.82)	.76	.31*	-.32*	-.22	-.18	-.17	.62**	-		
8. VLQcons consistency scale †	6.01 (2.67)	.57	.37**	-.47**	-.48**	-.40**	-.38**	.84**	.41**	-	
9. AIMS	37.55 (7.68)	.83	.16	-.06	.01	-.05	.08	-.11	-.02	-.08	-

Note. MHC-SF: Mental Health Continuum-Short Form; GHQ-12: General Health Questionnaire 12; AAQ-II: Acceptance and Action Questionnaire-II; CFQ: Cognitive Fusion Questionnaire; FoReST-12: Flexibility of Responses to Self-Critical Thoughts questionnaire; VLQ: Valued Living Questionnaire; AIMS: Athletic Identity Measurement Scale. * $p < .01$, ** $p < .001$.

Regression analyses

A hierarchical multiple regression analysis was used to investigate what proportion of variance in subjective well-being was predicted by psychological inflexibility. Results are presented in Table 4. The first step of the regression tested whether age, gender and playing status (i.e. current or former player) predicted subjective well-being. The second step tested whether psychological distress predicted subjective well-being when controlling for age, gender and playing status. The third step tested whether psychological inflexibility predicted subjective well-being when controlling for age, gender, playing status and psychological distress.

The overall regression model predicted approximately 51% of the variance in subjective well-being. At step one, age, gender and playing status predicted approximately 3% of the variance. At step two, whilst controlling for age, gender and playing status, psychological distress predicted approximately an additional 36% of variance. At step three, psychological inflexibility and value-consistent behaviour (composite score) predicted an additional 12% of the variance in subjective well-being. Both psychological distress and psychological inflexibility were significant predictors of subjective well-being. Psychological inflexibility was the strongest predictor of subjective well-being.

Table 5: Hierarchical regression analysis showing predictors of subjective well-being

Predictor	Cumulative			Individual predictors	
	R^2	R^2 change	*F* change	*β*	*p*
Step 1	.03	.03	F (3, 97) = 1.13		
Age				.03	.797
Gender				-.18	.080
Playing status				-.01	.929
Step 2	.39	.36	F (1, 96) = 56.44*		
Age				-.03	.739
Gender				-.05	.518
Playing status				.03	.729
Psychological distress				-.62	< .001
Step 3	.51	.12	F (2, 94) = 11.50*		
Age				-.10	.220
Gender				.06	.481
Playing status				.48	.550
Psychological distress				-.28	.008
Psychological inflexibility				-.42	< .001
Valued living				.16	.080

Note. Dependent variable = subjective well-being, as measured by the MHC-SF; n = 101; * *p* < *.001*

Post-hoc analysis

As can be seen in Table 2, when compared with male players females reported significantly higher levels of psychological distress, psychological inflexibility in relation to self-critical thoughts, cognitive fusion and athletic identity. Former players reported significantly lower levels of athletic identity than current players. There were no statistically significant differences in any of the other variables based on gender or playing status.

Welch's ANOVA was used to explore whether participants classified as languishing, flourishing or moderately mentally healthy differed on their scores on the AAQ-II. The ANOVA revealed that there was a significant effect of subjective well-being classification on psychological inflexibility, Welch's F (2, 28.28) = 20.60, $p < .001$, $\omega^2 = .308$. Adjusting alpha for the Bonferroni correction revealed participants classed as languishing scored significantly higher on the AAQ-II than both participants classed as moderately mentally healthy ($p < .05$) and those classed as flourishing ($p < .001$). Participants classed as flourishing scored significantly lower on the AAQ-II than participants classed as moderately mentally healthy ($p < .001$).

Discussion

This is the first study to assess both psychological distress and subjective well-being among current and former football players in the UK. The study aimed to explore associations between subjective well-being, psychological distress and ACT processes of change, and to examine the predictors of subjective well-being in this population. In doing so, the study sought to better understand whether ACT could be a useful framework for understanding and promoting subjective well-being in this population.

More than half (51.5%) of respondents reported clinical levels of psychological distress. This is higher than the rates reported by recent studies commissioned by FIFPro, the International Federation of Professional Footballers, using the same questionnaire measure (GHQ-12; Gouttebarge, Frings-Dresen & Sluiter, 2015;

Gouttebarge et al., 2015; Gouttebarge et al., 2017). These differences may be influenced by heterogeneity between samples. For instance, the aforementioned studies analysed data from male professional football players whereas the current sample included both male and female players, as well as players competing at a range of levels (i.e. academy level, semi-professionally and professionally). Researchers may seek to replicate these findings using larger and more representative samples of both male and female players at a range of skill levels.

This is the first study to assess subjective well-being among football players using the MHC-SF. Sixty percent of respondents reported less than optimal levels of subjective well-being. Less than optimal (i.e. anything less than flourishing) levels of well-being have been associated with impairments in psychosocial functioning and physical health outcomes (see Keyes, 2014, for a review). Considered alongside the high levels of psychological distress reported in this sample, these findings are concerning. Football players have been critical of the support that has been made available to them (Brown & Potrac, 2009) and can find it difficult to access psychological support (Wood, Harrison & Kucharska, 2017). This highlights the need for stakeholders within the game to develop proactive forms of support to not only address psychological distress, but also to promote subjective well-being.

The study findings did not support the hypothesis that levels of subjective well-being would be moderately, but not highly, negatively associated with levels of psychological distress. Whilst subjective well-being was significantly and highly negatively associated with psychological distress, of the 52 respondents who reported clinical levels of psychological distress, almost a quarter were considered flourishing, and more than half were considered moderately mentally healthy. These findings suggest that in this sample, the presence of psychological distress does not imply the absence of well-being, and that high levels of well-being can co-exist with high levels of psychological distress.

Hypothesis 2 was supported. Players with lower levels of subjective well-being reported higher levels of psychological inflexibility and cognitive fusion, and lower levels of value consistent behaviour. Psychological inflexibility (as measured by the AAQ-II) and psychological inflexibility in relation to self-critical thoughts (as measured by the FoReST-12) were significantly and negatively correlated with subjective well-being. The behaviour of individuals with high levels of psychological inflexibility reflects their attempts to avoid unwanted thoughts and feelings, rather than an engagement in value consistent behaviour and moving towards what matters to them. This finding is consistent with previous research where higher levels of psychological inflexibility have been associated with lower levels of subjective well-being (Hayes et al., 2006; Marshall & Brockman, 2016; Wersebe et al., 2018; Stenhoff et al., 2019), and suggests that football players with higher levels of psychological inflexibility may be at a greater risk of experiencing sub-optimal subjective well-being.

Cognitive fusion was also significantly negatively associated with subjective well-being — players with higher levels of cognitive fusion reported lower levels of subjective well-being. Individuals with higher levels of cognitive fusion tend to be excessively *fused* with their thoughts — thoughts are regarded as literal facts and have an excessively strong influence over one's behaviour. There has been relatively little research exploring the associations between cognitive fusion and subjective well-being. Future research may seek to replicate these findings with larger and more representative samples.

Compared to respondents with higher levels of subjective well-being, participants with lower levels of subjective well-being reported a more limited range of highly valued life domains and rated their behaviour as less value consistent. This suggests that individuals with lower levels of subjective well-being may be (i) less able to identify life domains as important and (ii) less able to engage in meaningful value-consistent behaviour, and supports findings from previous studies (Trompetter et al., 2013; Stenhoff et al., 2019).

As hypothesised, psychological inflexibility predicted subjective well-being over and above other factors, including age, gender, playing status and psychological distress. This finding suggests that for interventions

that aim to enhance subjective well-being, whilst addressing psychological distress will be important, there may be a need to explicitly focus on the promotion of psychological flexibility.

Contrary to our hypotheses, we found no association between athletic identity and any of the ACT process of change measures. Research examining associations between athletic identity and ACT processes of change is limited. A recent study reported that psychological flexibility moderated the relationship between athletic identity and emotional exhaustion (Chang, Wu, Kuo & Chen, 2018). It is possible that ACT processes of change may moderate the relationship between athletic identity and negative psychological outcomes at times when athletic identity is challenged. Future studies may wish to examine associations between these variables at these times — during times of injury, deselection or transition out of football, for example.

Limitations

These results should be interpreted with caution in light of some methodological limitations. First, the study relied on convenience sampling methods and so it is possible that the sample may be biased. Former players, players from the higher levels of the male game and non-White players are under-represented and thus our sample does not represent the diversity of the target population. This limits the generalisabilty of the findings. Whilst we strived to collaborate with two national player unions in the UK to aid recruitment, unfortunately, both organisations declined to support the study. Second, the study used a cross-sectional design and so we cannot make any claims about causality. For example, it remains unclear whether increased levels of psychological inflexibility lead to lower levels of subjective well-being, or whether individuals with lower levels of subjective well-being find it more difficult to be psychologically flexible. Finally, this study focused on higher order psychological factors that may act as predictors of subjective well-being in the population and did not collect data exploring sport-specific (i.e. injury, career satisfaction) stressors that may have influenced participants' level of subjective well-being or psychological distress. Future studies may wish to consider exploring these factors.

Strengths

Despite the increasing public and media attention afforded to mental health in football, there remains very little rigorous research in this area. This is the first empirical study to examine both psychological distress and subjective well-being among football players in the UK and adds to the growing evidence base in this area. Recent studies have focused solely on the prevalence of mental health difficulties among football players. The inclusion of a measure of subjective well-being in this study is a strength. The use of the GHQ-12 allows for direct comparisons between our findings and recently published studies exploring psychological distress in football. Finally, in 2018 a partnership was formed with the *Football Association of Wales* to aid recruitment to this and to future studies. This collaboration will aid the recruitment of larger and more representative samples for future research in this area.

Implications for research and practice

Recent consensus statements have called for sporting organisations to work alongside researchers and clinicians to improve the support that is offered to sport performers (Schinke, Stambulova, Si, & Moore, 2018; Henriksen et al., 2019). These recommendations are echoed in the UK Government's recently published *Mental Health and Elite Sport Action Plan* (Department for Digital, Culture, Media & Sport, 2018). It is hoped that our findings will raise awareness of the issues surrounding football players in the UK and encourage further debate and empirical research about how best to promote positive mental health and well-being among this population. Future studies should seek to replicate our findings with larger and more representative samples. Additionally, further longitudinal research is required to better understand how changes in these ACT processes of change relate to variations in subjective well-being and psychological distress over time. It is recommended that national player unions in the UK demonstrate greater willingness to collaborate with academic partners to enable further research in this area and to aid the recruitment of larger and more representative samples.

These findings may help us understand how psychological interventions can promote subjective well-being among current and former football players. Each of the ACT processes of change that we investigated (psychological flexibility, cognitive fusion and valued living) was associated with subjective well-being, and psychological inflexibility was identified as the strongest predictor of subjective well-being. The goal of ACT is to promote psychological flexibility, and ACT is effective in promoting subjective well-being and reducing psychological distress (Bohlmeijer, Lamers & Fledderus, 2015; Wersebe et al., 2018). Whilst we cannot infer causality from cross-sectional data, we propose that ACT may be helpful in promoting subjective well-being among this population. Studies investigating the acceptability and effectiveness of ACT in promoting subjective well-being with this population are warranted.

Conclusion

This is the first study to examine psychological distress and subjective well-being among both male and female current and former football players in the UK. One hundred and one people participated in the study. More than half (51.5%) of respondents reported clinical levels of psychological distress and 60% were found to experience less than optimal levels of subjective well-being. Almost one in three respondents reported that they had received support for mental health difficulties in the past. Psychological inflexibility was strongly associated with subjective well-being, and furthermore, was a significant predictor of subjective well-being over and above psychological distress. These findings suggest the promotion of psychological flexibility may have important implications for subjective well-being among current and former football players. Further longitudinal research is required to better understand how changes in psychological flexibility relate to variations in subjective well-being over time.

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Appendix A: Submission guidelines – Journal of Contextual Behavioural Science

Journal of Contextual Behavioural Sciences: Author guidelines

Further information on author guidelines is available at:
https://www.elsevier.com/journals/journal-of-contextual-behavioral-science/2212-1447/guide-for-authors

Types of article
All manuscripts must clearly and explicitly be of relevance to CBS. Articles should fall into one of seven categories:

1. Empirical research (up to 6000 words)
2. Brief empirical reports (up to 3000 words)
3. Review articles (up to 10,000 words)
4. Conceptual articles (up to 6000 words)
5. In practice (up to 3000 words)
6. Practical innovations (up to 3000 words)
7. Professional interest briefs (up to 3000 words)

Word limits exclude references, tables and figures but include the abstract

Empirical research
JCBS welcomes manuscripts across a breadth of domains from basic behavioral science to clinical trials. Research concerning the measurement and testing of process of change is particularly welcome. Potential methodologies include but are not limited to: randomized controlled trials, single case experimental designs, cross-sectional and prospective cohort studies, mixed-methods designs, small scale analog studies. Papers reporting null findings are also welcome if their methodology is sound and their power sufficient. Authors of such papers will need to emphasize the implications of their findings for future research and practice.

Review articles
Manuscripts reviewing a wide range of topics are encouraged as long as their content is directly relevant to CBS. Systematic reviews and meta-analyses are particularly welcome. Authors are advised to consult relevant MARS (http://www.apa.org/pubs/authors/jars.pdf) and PRISMA resources (http://www.prisma-statement.org/) when preparing such manuscripts.

Article structure
Introduction
State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.
Material and methods
Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

Results

Results should be clear and concise.

Discussion

This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

1. ***Title.*** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
2. ***Author names and affiliations.*** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.
3. ***Corresponding author.*** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials.
4. ***Present/permanent address.*** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Appendix B: OVID Medline Search

1. mindful*.mp. or exp Mindfulness/

2. exp "Acceptance and Commitment Therapy"/ or acceptance*.mp.

3. 1 or 2

4. mental health.mp. or exp Mental Health/

5. disorder.mp.

6. exp Mental Disorders/

7. mental illness.mp.

8. psychiatr*.mp. or exp Psychiatry/

9. depress*.mp.

10. exp Anxiety/ or anxiety.mp.

11. stress.mp. or exp Stress, Psychological/

12. distress.mp.

13. burnout.mp. or exp Burnout, Psychological/

14. addiction.mp.

15. mood.mp. or exp Affect/

16. negative affect.mp.

17. positive affect.mp.

18. wellbeing.mp.

19. well-being.mp.

20. well being.mp.

21. wellness.mp.

22. happiness.mp. or exp Happiness/

23. happy.mp.

24. thrive.mp.

25. thriving.mp.

26. flourish.mp.

27. eudaimonia.mp.

28. hedonism.mp.

29. hedonic.mp.

30. 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29

31. sport.mp. or exp Sports/

32. exp Athletes/ or athlet*.mp.

33. 31 or 32

34. 3 and 30 and 33

Appendix C: Demographic and career-specific variables

DEMOGRAPHIC INFORMATION

1. **AGE (IN YEARS)**
2. **GENDER**
    1. Male
    2. Female
    3. Non-binary
3. **ETHNIC GROUP**

    What is your ethnic group? Please choose one option that best describes your ethnic group or background:

    White

    1. English / Welsh / Scottish / Northern Irish / British
    2. Irish
    3. Gypsy or Irish Traveller
    4. Any other White background, please describe

    Mixed / Multiple ethnic groups

    1. White and Black Caribbean
    2. White and Black African
    3. White and Asian
    4. Any other Mixed / Multiple ethnic background, please describe

    Asian / Asian British

    1. Indian
    2. Pakistani
    3. Bangladeshi
    4. Chinese
    5. Any other Asian background, please describe

    Black / African / Caribbean / Black British

    1. African
    2. Caribbean
    3. Any other Black / African / Caribbean background, please describe

    Other ethnic group

    1. Arab
    2. Any other ethnic group, please describe
4. **RELIGION**

    What is your religion? Please choose one option that best describes your religion:

    a. No religion
    b. Christian (including Church of England, Catholic, Protestant and all other Christian denominations)
    c. Buddhist
    d. Hindu
    e. Jewish
    f. Muslim
    g. Sikh
    h. Any other religion, please describe
    i. Prefer not to say
5. **MARITAL STATUS**

    a. Single (never married or never registered a same-sex civil partnership)
    b. Married

c. In a registered same-sex civil partnership

d. Separated (but still legally married or still legally in a same-sex civil partnership)

e. Divorced or formerly in a same-sex civil partnership which is now legally dissolved

f. Widowed or surviving partner from a same-sex civil partnership

6. DO YOU HAVE CHILDREN?

a. Yes

b. No

7. SEXUAL IDENTITY

Which of the following options best describes how you think of yourself?

a. Heterosexual or Straight

b. Gay or Lesbian

c. Bisexual

d. Other

e. Prefer not to say

8. HIGHEST EDUCATIONAL ATTAINMENT

What is your highest level of educational qualification? Please choose only one option.

a. **No qualifications:** No academic or professional qualifications.

b. **1-4 GCSEs or equivalent:** 1-4 O Levels/CSE/GCSEs (any grades), Entry Level, Foundation Diploma, NVQ level 1, Foundation GNVQ, Basic/Essential Skills.

c. **5+ GCSEs or equivalent**: 5+ O Level (Passes)/CSEs (Grade 1)/ GCSEs (Grades A*-C), School Certificate, 1 A Level/ 2-3 AS Levels/VCEs, Intermediate/Higher Diploma, Welsh Baccalaureate Intermediate Diploma, NVQ level 2, Intermediate GNVQ, City and Guilds Craft, BTEC First/General Diploma, RSA Diploma.

d. **Apprenticeship:** Apprenticeship**.**

e. **2+ A Levels or equivalent (Level 3 qualifications):** 2+ A Levels/VCEs, 4+ AS Levels, Higher School Certificate, Progression/Advanced Diploma, Welsh Baccalaureate Advanced Diploma, NVQ Level 3; Advanced GNVQ, City and Guilds Advanced Craft, ONC, OND, BTEC National, RSA Advanced Diploma.

f. **Degree level or above (Level 4 qualifications and above):** Degree (for example BA, BSc), Higher Degree (for example MA, PhD, PGCE), NVQ Level 4-5, HNC, HND, RSA Higher, Diploma, BTEC Higher level, Foundation degree (NI), Professional qualifications (for example teaching, nursing, accountancy).

g. **Other qualifications:** Vocational/Work-related Qualifications, Foreign Qualifications/ Qualifications gained outside the UK (NI) (Not stated/level unknown)

h. Prefer not to say

9. MENTAL HEALTH DIFFICULTIES

a. Have you ever received support (e.g. counselling, psychotherapy, or medication) for mental health difficulties?

i. Yes

ii. No

iii. Prefer not to say

CAREER SPECIFIC VARIABLES

1. **Are you currently still playing academy, professional or semi-professional football?**
    1. **Yes**
        a. If yes, do you have an academy, professional or semi-professional contract?
        i. Academy
            1. Number of years as an academy player
            2. Which country are you currently playing in?
                a. England
                b. Wales
                c. Scotland
                d. Northern Ireland
                e. Other
        ii. Professional / Semi-professional
            1. Number of years as a professional / semi-professional?
            2. Current playing level
                a. English leagues
                    i. Premier League
                    ii. Championship
                    iii. League 1
                    iv. League 2
                    v. National League
                    vi. FA Women's Super League
                    vii. FA Women's Championship
                    viii. FA Women's National League
                    ix. FA Women's Super League Development League
                b. Scottish leagues
                    i. Scottish Premiership
                    ii. Scottish League 1
                    iii. Scottish League 2
                    iv. Scottish Women's Premier League 1
                    v. Scottish Women's Premier League 2
                c. Northern Irish leagues
                    i. NIFL Premiership
                    ii. NIFL Championship
                    iii. Women's Premiership
                d. Welsh leagues
                    i. Welsh Premier League
                    ii. Huws Gray Alliance League
                    iii. Welsh Football League Division 1
                    iv. Welsh Premier Development League
                    v. Welsh Premier Women's League
            3. Highest playing level
                a. English leagues
                    i. Premier League
                    ii. Championship

iii. League 1
iv. League 2
v. National League
vi. FA Women's Super League
vii. FA Women's Championship
viii. FA Women's National League
ix. FA Women's Super League Development League

b. Scottish leagues
i. Scottish Premiership
ii. Scottish League 1
iii. Scottish League 2
iv. Scottish Women's Premier League 1
v. Scottish Women's Premier League 2

c. Northern Irish leagues
i. NIFL Premiership
ii. NIFL Championship
iii. Women's Premiership

d. Welsh leagues
i. Welsh Premier League
ii. Huws Gray Alliance League
iii. Welsh Football League Division 1
iv. Welsh Premier Development League
v. Welsh Premier Women's League

e. European League

4. Have you ever represented your country at senior level?
a. Yes
b. No

5. Current weekly wage
a. Enter amount here
b. Prefer not to say

6. Largest weekly wage
a. Enter amount here
b. Prefer not to say

2. No (For retired / former football players only)

i. Highest playing level

1. English leagues
a. Premier League
b. Championship
c. League 1
d. League 2
e. National League
f. FA Women's Super League
g. FA Women's Championship
h. FA Women's National League

i. FA Women's Super League Development League

2. Scottish leagues
    a. Scottish Premiership
    b. Scottish League 1
    c. Scottish League 2
    d. Scottish Women's Premier League 1
    e. Scottish Women's Premier League 2
3. Northern Irish leagues
    a. NIFL Premiership
    b. NIFL Championship
    c. Women's Premiership
4. Welsh leagues
    a. Welsh Premier League
    b. Huws Gray Alliance League
    c. Welsh Football League Division 1
    d. Welsh Premier Development League
    e. Welsh Premier Women's League
5. European League

ii. Have you ever represented your country at senior level?
    1. Yes
    2. No

iii. Largest weekly wage
    1. Enter amount here
    2. Prefer not to say

iv. In what year did you finish playing?

v. How old were you when you stopped playing? (years)

vi. Why did you finish playing?
    1. Voluntary retirement
    2. Forced retirement (e.g. retired due to injury)
    3. Released by academy
    4. Other (please describe)
    5. Prefer not to say

vii. Are you currently employed?
    1. Yes
    2. No
    3. Prefer not to say

viii. Have you ever been declared bankrupt?
    1. Yes
    2. No
    3. Prefer not to say

ix. Have you ever been convicted of a crime?
    1. Yes
    2. No
    3. Prefer not to say

Appendix D: Mental Health Continuum-Short Form

Removed from thesis for copyright reasons

Appendix E: General Health Questionnaire-12

Removed from thesis for copyright reasons

Appendix F: Acceptance and Action Questionnaire-II (AAQ-II)

Removed from thesis for copyright reasons

Appendix G: Flexibility of Responses to Self-critical Thoughts (FoReST-12)

Removed from thesis for copyright reasons

Appendix H: Cognitive Fusion Questionnaire

Removed from thesis for copyright reasons

Appendix I: Valued Living Questionnaire (VLQ)

Removed from thesis for copyright reasons

Removed from thesis for copyright reasons

Appendix J: Athletic Identity Measurement Scale (AIMS)

Removed from thesis for copyright reasons

Appendix K: Ethical approval letter

Health and Life Sciences Research Ethics Committee (Psychology, Health and Society)

12 January 2018

Dear Dr White

I am pleased to inform you that your application for research ethics approval has been approved. Application details and conditions of approval can be found below. Appendix A contains a list of documents approved by the Committee.

Application Details

Reference:	2230
Project Title:	Exploring subjective well-being in elite football players
Principal Investigator/Supervisor:	Dr Ross White
Co-Investigator(s):	Mr Andrew Bethell, Dr James Reilly
Lead Student Investigator:	-
Department:	Psychological Sciences
Approval Date:	12/01/2018
Approval Expiry Date:	Five years from the approval date listed above

The application was **APPROVED** subject to the following conditions:

Conditions of approval

- All serious adverse events must be reported via the Research Integrity and Ethics Team (ethics@liverpool.ac.uk) within 24 hours of their occurrence.
- If you wish to extend the duration of the study beyond the research ethics approval expiry date listed above, a new application should be submitted.
- If you wish to make an amendment to the research, please create and submit an amendment form using the research ethics system.
- If the named Principal Investigator or Supervisor leaves the employment of the University during the course of this approval, the approval will lapse. Therefore it will be necessary to create and submit an amendment form using the research ethics system.
- It is the responsibility of the Principal Investigator/Supervisor to inform all the investigators of the terms of the approval.

Kind regards,

Health and Life Sciences Research Ethics Committee (Psychology, Health and Society)

iphsrec@liverpool.ac.uk

0151 795 5420

Appendix - Approved Documents

(Relevant only to amendments involving changes to the study documentation)

The final document set reviewed and approved by the committee is listed below:

Document Type	File Name	Date	Version
Evidence Of Peer Review	Bethell%2c Andrew_Approval of proposal amendment_v1.2 13.09.17		
Study Proposal/Protocol	Research proposal for ethical approval	06/09/2017	1.2
Participant Consent Form	Consent Form v1	05/12/2017	1.0
Questionnaire	GENERAL HEALTH QUESTIONNAIRE 12	05/12/2017	1
Questionnaire	MENTAL HEALTH CONTINUUM SHORT FORM	05/12/2017	1
Questionnaire	ACCEPTANCE AND ACTION QUESTIONNAIRE II	05/12/2017	1
Questionnaire	COGNITIVE FUSION QUESTIONNAIRE	05/12/2017	1
Questionnaire	FOREST	05/12/2017	1
Questionnaire	VALUED LIVING QUESTIONNAIRE	05/12/2017	1
Questionnaire	ATHLETIC IDENTITY SCALE	05/12/2017	1
Questionnaire	Demographic details	05/12/2017	1
Advertisement	Advert	07/12/2017	1
Participant Information Sheet	PIS v1.1	11/01/2018	1.1

Appendix L: Participant information sheet and consent form

Version 1.2; 23/02/2018

Tackling mental health in football

You are being invited to participate in a research study (Exploring subjective well-being in football players). Before you decide whether to participate, it is important for you to understand why the research is being conducted and what it will involve. Please take time to read the following information carefully and feel free to ask us if you would like more information or if there is anything that you do not understand. Please also feel free to discuss this with your friends and relatives if you wish. We would like to stress that you do not have to accept this invitation and should only agree to take part if you want to.

Why are we conducting this research?

We are interested in identifying factors that might predict mental health and well-being in current and former football players. We hope that findings from this research will help inform the development of psychological support for current and former players in the future.

Who is being asked to take part?

We are asking current and recently retired academy, professional and semi-professional football players to take part in this study.

Do I have to take part?

You do not have to take part in this study. If you decide to participate, you are free to withdraw from the study at any time without explanation. However, because the information that you provide is anonymous it will not be possible for us to delete your data.

What will happen if I take part?

If you decide to take part in the study then you will be directed to our website (onthehead.org). Here, you will be asked to complete a series of questionnaires. The questionnaires will take approximately 15-20 minutes to complete, and you will be asked questions about your football career, happiness, life satisfaction and mental health. You will also be asked whether you would like to be contacted to take part in similar studies in the future.

What are the risks and benefits of taking part?

Whilst there are no anticipated risks to you if you take part in this study, some questions may encourage you to reflect on your mental health and well-being. You will be given details of a number support organisations on completion of the questionnaires.

There are no direct benefits in taking part in the study. However, we hope that your participation in this study will help us to understand more about mental health in elite football players. We anticipate that findings from this study will help us to develop better support for players in the future.

Will my information remain confidential?

Yes, your information will remain strictly confidential. If you decide to take part then you will be assigned a unique study identification number. You will not be asked to provide any identifiable information, and the research team will not know your identity. Please note that your club will **not** know whether you decide to participate in this study.

What happens to the information that I provide?

All information collected as part of this study will be stored securely at the University of Liverpool. In line with ethical and governance requirements, this will be kept for a minimum of ten years following the end of the project, after which it will be destroyed. The research data that we produce will be made openly available to the wider academic community in accordance with the University of Liverpool Research Data Management Policy.

Future research opportunities

If you are interested in being contacted for similar studies in the future then we will ask you to provide us with your email address so that we can keep you informed of future research opportunities. This email address will be stored securely and separately from your questionnaire responses. Please note that you are free to decline if you do not want to take part in these other research opportunities – just as you are free to withdraw from this study at any time.

What will happen to the results of the study?

Results from the study will be submitted for publication in scientific journals. As stated previously, the data presented in these papers will not be identifiable. We will also make the findings available through the study website (onthehead.org). Please note that you **will not** be identifiable in any publications associated with this study.

Who can I contact if I have further questions?

If you have any questions regarding the study or would like further information, please contact the lead researcher, Andrew Bethell (Trainee Clinical Psychologist, University of Liverpool; abethell@liverpool.ac.uk) or the academic supervisor, Dr Ross White (Clinical Psychologist, University of Liverpool; rgwhite@liverpool.ac.uk).

What if I am unhappy or if there is a problem?

If you are unhappy about any aspects of the research, or if there is a problem, then please let us know by contacting Dr Ross White (rgwhite@liverpool.ac.uk). If you remain unhappy or have a complaint which you feel you cannot come to use with then you should contact the University of Liverpool Research Governance Officer at ethics@liv.ac.uk. When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher involved, and the details of the complaint that you wish to make.

Consent form

1. I confirm that I have read and have understood the Participant Information Sheet (version 1.2; 23/02/2018) for the above study. I have had the opportunity to consider the information, ask questions and have these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw from the study at any time without giving any reason.

3. I understand that I am not required to provide any identifiable information and that my questionnaire responses will be processed anonymously and confidentially.

I agree to take part in this research study

Date:

Future research opportunities

I would like to receive emails from the research team informing me of future research opportunities.

Yes / No

Please enter your email address: