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Sandra D. Leyland Dr
University of Sunderland, sandra.leyland@sunderland.ac.uk

Alan Currie Prof
Cumbria, Northumberland, Tyne and Wear NHS Foundation Trust, alan.currie@cntw.nhs.uk

Elizabeth Board Dr
University of Sunderland, elizabeth.board@sunderland.ac.uk

Amit D. Mistry Dr
Queen Mary University, London, amist85@googlemail.com

Rod Jaques Dr
English Institute of Sport, rod.jaques@eis2win.co.uk

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A Survey of the Mental Health of UK Olympic and Paralympic Sport Athletes.

Cover Page Footnote

Thank you to the UK High Performance Sport System athletes who participated and the associated Health and Performance Support staff at the English Institute of Sport and Sport National Governing Bodies who assisted with distribution of the survey.

Authors

Sandra D. Leyland Dr, Alan Currie Prof, Elizabeth Board Dr, Amit D. Mistry Dr, Rod Jaques Dr, and Craig Ranson Dr

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Sandra D. Leyland
University of Sunderland

Alan Currie
Cumbria, Northumberland, Tyne and Wear NHS Foundation Trust

Elizabeth Board
University of Sunderland

Amit D. Mistry
Queen Mary University, London

Rod Jaques
English Institute of Sport

Craig Ranson
English Institute of Sport

A B S T R A C T

This study examined the prevalence of psychological distress and well-being amongst elite athletes in the UK. An online survey was emailed to 753 athletes within the English Institute of Sport. Response rate 52.3%. 371 participants (median age 25) completed measures of psychological distress and subjective well-being alongside demographics and sport-related variables. High or very high psychological distress was reported by 23.7%. Poor subjective well-being was reported by 18.8%. Of those reporting psychological distress, 9% also reported good subjective well-being. The odds of psychological distress and poor well-being increased if the athlete was female (OR 2.03, distress; OR 2.00, poor well-being), currently injured or ill (OR 1.87; OR 1.93) or planning to retire (OR 4.74; OR 8.10). Likelihood of poor well-being increased if a non-podium athlete (OR 0.98). Paralympic sport athletes reported greater psychological distress than Olympic sport athletes (p = .040). Winter sport athletes reported higher psychological distress than summer sport athletes (p = .044). Overall mean score (17.9, SD 6.5) was indicative of a moderate level of psychological distress. Mental health support plans should include regular athlete screening of both psychological distress and subjective well-being.

Keywords: elite athlete, mental health, psychological distress, sport, well-being

Concern for the mental health of elite athletes has been highlighted in recent consensus statements from panels of international experts (Henriksen et al., 2018; Reardon et al., 2019). Elite sport organizations are advised to place mental health at the core of their athlete support systems (Moesch et al., 2018). In the United Kingdom the "Mental Health and Elite Sport Action Plan", devised by the government, requires all elite sport groups to embed mental health support in athlete performance plans by the year 2024 (Crouch, 2018). The aim is not only to help elite athletes avoid mental ill-health during their career, but to thrive psychologically by promoting positive well-being.

Organizations in the UK that provide support for elite athletes have equal responsibilities and obligations to Olympic and Paralympic athletes and greater knowledge of the issues and needs in the Paralympic group is especially important. It is thought that Paralympic athletes have additional stresses and greater morbidity (Swartz et al., 2019). To date few studies have compared the mental health of Olympic and Paralympic athletes (Macdougall et al., 2015; Purcell et al., 2020).

To inform targeted initiatives for mental health support, it is necessary to identify factors associated with increased risk and follow a holistic approach which includes support for positive well-being as well as avoidance of mental ill-health. This will be informed by knowledge of the scale of the problem. The purpose of this survey, therefore, is to identify the prevalence of psychological distress and subjective well-being in elite UK Olympic and Paralympic sport athletes and to identify sport-specific and non-sport-specific factors known to increase the susceptibility of elite athletes to these symptoms and to poor psychological well-being.

Literature Review

Subjective well-being (SWB) is "a person's cognitive and affective evaluation of his or her life" (Diener et al., 2002, p. 63). The relationship between mental illness and well-being is complex with debate around whether the two concepts are part of a continuum or separate domains (Huppert, 2014). It is widely agreed that mental health is more than merely the absence of mental illness (Magyar & Keyes, 2019) and that absence of mental distress does not guarantee the presence of well-being (Manderscheid et al., 2010). Keyes (2002) suggests two related but separate continua, one reflecting mental illness and the other mental health. It is possible for an athlete who is experiencing mental ill-health to report positive subjective well-being. Conversely, an athlete may report a poor sense of well-being but be free from mental ill-health.

The importance of measuring well-being as well as symptoms of mental ill-health in epidemiological studies with elite athletes is recognized (Reardon, 2017). Well-being is associated with positive coping strategies and performance during sporting events and is therefore advantageous for athletes (Nicholls et al., 2016). One recent study reported that although low well-being was experienced by 22% of the Danish elite athletes sampled, only 6.5% of those with low well-being also reported moderate or severe depression/anxiety (Kuettel et al., 2021). This suggests that low well-being does not necessarily reflect symptoms of mental ill-health. The need to consider well-being and not just the presence or absence of clinically defined disorders and symptoms is deemed necessary in establishing and maintaining effective athlete support systems (Manderscheid et al., 2010; Schinke et al., 2017). However, the prevalence of subjective well-being in UK elite athletes has not previously been reported.

Several studies with elite athletes have assessed prevalence rates of a range of specific mental health disorders (MHDs). A recent meta-analysis, representing a range of sports and nationalities, revealed a 34% prevalence of anxious and depressive symptoms and significant distress in 20% of current and former elite athletes (Gouttebarge et al., 2019). A range of scales have been implemented in mental health surveys with athletes. Differences in the measurement of mental health constructs can make comparisons problematic. In this survey we measured psychological distress using the Kessler Psychological Distress Scale (K-10, Kessler et al., 2002). K-10 has recently been used in comparable studies with elite athletes from the Australian Institute of Sport where high or very high distress was observed in 16.5% (Gulliver et al., 2015) and 17.7% (Purcell et al., 2020) of the athletes surveyed.

Susceptibility to MHDs in elite athletes is multidimensional with contributions from both sport-specific and non-sport-specific factors (Hughes & Leavey 2012; Rice et al., 2016). Females (Åkesdotter et al., 2020; Kuettel et al., 2021) and younger athletes (Beable et al., 2017) appear to be at greater risk of mental health symptoms. Those who participate in individual compared with team sports are also at greater risk due possibly to individual differences in coping style and attribution after failure (Nixdorf et al., 2016). Transition periods such as retirement are also associated with MHDs and symptoms (Gouttebarge et al., 2017; Gouttebarge et al., 2019; Rice et al., 2016). Symptoms of mental ill-health are frequently found in association with sports injuries (Gouttebarge et al., 2016; Reardon et al., 2019) potentially impairing rehabilitation and return to play (Putukian, 2016). The incidence of injury for athletes with a disability is reported to be high in comparison with Olympic athletes, especially during training (Fagher et al., 2020). Consideration of sport-specific factors such as these and their association with mental health is important as poor mental health can impact career decisions and transition coping (Schinke et al., 2017).

Knowledge of the needs in Paralympic athletes is especially important as existing data is limited for this group. In respect of psychological support interventions, it is important to know if these athletes need more, less, or a different type of support. It has been suggested that Paralympic athletes face additional stressors not experienced by Olympic athletes which impact their athlete identity and sense of well-being (Macdougall et al., 2015; Van de Vliet et al., 2008). These include chronic pain, poorly adapted facilities, logistical problems when travelling, and reclassification into a different disability category (Swartz et al., 2019). More Paralympic athletes are competing in events (Patricious & Webborn, 2021). However, fewer studies report on the mental health of Paralympic athletes in comparison with Olympic athletes (Swartz et al., 2019).

To our knowledge, only one survey of the prevalence of mental health disorders has previously been carried out with elite athletes in the UK that included Paralympic athletes. Measurement of well-being was not included. In that study, 47.8% reported signs of anxiety or depression and more than a quarter (26.8%) reported symptoms of distress, with females (39.3%) scoring significantly higher than males (17.3%; Foskett & Longstaff, 2018). Their sample included amateur as well as professional athletes, but comparisons between Olympic and Paralympic and summer and winter sports were not made. The authors concluded that further cross-sectional research is called for to better understand the prevalence of mental health issues among elite athletes in the UK (Foskett & Longstaff, 2018). Information on mental health and related characteristics among elite athletes in the UK has typically focused on psychological distress rather than well-being. Gaining an understanding of well-being alongside psychological distress will aid the development of mental health support initiatives that support positive well-being as well as avoidance of symptoms of mental ill-health.

The aim of this study was to examine the prevalence of psychological distress and subjective well-being in elite UK Olympic and Paralympic sport athletes. A secondary aim was to explore associations with gender, age, funding level, sport-season, injury status and retirement plans.

Method

Study Design

This was a cross-sectional survey. Data were collected between October 2018 and June 2019. A recruitment message containing a link to participant information and an online survey was distributed to 753 athletes, aged 14 or above, via an email invitation from a representative within the English Institute of Sport. All were participating in one of 32 High Performance System Olympic or Paralympic World Class Programs at the time of this study. Consent was obtained prior to completing the survey by selecting an option to continue. For those under the age of 18 years, information was mailed first to parents requesting consent for their child's participation. Participants and parents were advised that the survey was not being used to provide diagnostic information and that they should seek support from a medical professional such as their Sports Medicine Doctor or General Practitioner if they had any concerns regarding their (or their child's) health. For athletes who consented, the survey took 10 minutes or less to complete. An automatic reminder was sent after two weeks to those who did not respond and to anyone who started the survey but did not complete it. Participants were informed of the purpose of the survey and the option to withdraw. They were reminded that participation was voluntary and that responses were anonymous and the data confidential. At all stages, participants were offered the option "prefer not to say".

Measures

Demographic and background information collected included age, gender, Olympic and Paralympic sport, season (summer and winter), funding level (highest to lowest; podium, podium potential, or pathway), and sport (e.g. sailing, shooting, swimming). We also asked, "have you had any injuries or illnesses in the last year that caused you to miss more than one week of training or competition?" and "if so, how many?" Also "have you had any injuries or illnesses in the last year that caused you to miss more than three weeks of training or competition?" and "if so, how many?" Lastly, we asked "are you considering retiring from your current level of sport within the next 12 months?".

Psychological distress was measured using the Kessler Psychological Distress Scale (K-10; Kessler et al., 2002). This is an effective screening tool for serious mental illness in population health risk appraisal surveys (Kessler et al., 2003). Participants were asked to indicate how they have been feeling over the past 30 days on 10 symptoms of anxiety and depression (e.g., nervous) on a scale of 1 ("none of the time") to 5 ("all of the time"). The sum of 10 items gave scores ranging from 10 (low psychological distress) to 50 (high psychological distress). Scores were then categorized to identify cases of low (10-15), moderate (16-21), high (22-30) and very high (31-50) distress. Psychological distress "caseness" was indicated by a score of 22 or higher (Slade et al.,

2011). Previous studies have reported good internal reliability (Slade et al., 2011). In the present sample, Cronbach's alpha coefficient was good (Cronbach α =.89).

Subjective well-being was measured using the World Health Organization Well-Being Index (WHO-5; Staehr Johansen, 1998). WHO-5 has good psychometric properties and takes a short time to complete (Topp et al., 2015). Topp et al. (2015) report acceptable sensitivity of 0.86 and specificity of 0.81. Participants were asked to rate how they have been feeling over the past two weeks on five positively phrased items (e.g. calm and relaxed). Each item was scored on a 6-point scale of 0 ("at no time") to 5 ("all of the time"). The sum was calculated to give a score ranging from 0 to 25. Higher scores indicate positive subjective well-being and scores of 12 or below indicated a case of poor well-being (Staehr Johansen, 1998). Internal consistency in the present sample was good indicating general agreement between scale items considered to measure the same thing (Cronbach α = .87).

Participants

A total of 394 surveys were returned (response rate 52.3%, *n* = 394). Of these respondents, 23 did not meet the inclusion criteria (e.g. athlete support staff) or withdrew after starting the survey leaving a sample size of 371 (participation rate 49.3%, *n* = 371). Athletes represented 29 different sports (16 Olympic and 13 Paralympic). These represent 84% (*n* = 18) of the targeted Olympic and 93% (*n* = 14) of the targeted Paralympic sports. Four athletes chose not to disclose their sport. Athletes who disclosed their age were between 17 and 58 years (median age 25). There were 146 (39.4%) males, 183 (49.3%) females, and 42 (11.2%) who chose not to disclose gender. Sample characteristics are presented in Table 1. Age, gender, funding level, injury/illness, and retirement status were not disclosed by 35 (9.4% *n* = 371) participants and was reported as undisclosed.

Data Analysis

Anonymized data were analyzed using IBM SPSS for windows version 25.0. Data were examined for missing values, distributions, and assumptions of univariate analyses (Field, 2005). The following statistical analyses were carried out: (a) Cronbach α-tests to assess the internal consistency of each scale; (b) descriptive statistics including the percentage prevalence of psychological distress and subjective well-being based on clinical case cutoff points; (c) analysis of variance and independent samples t-tests to detect differences between groups based on demographic variables; (d) binary logistic regressions to ascertain if age, gender, sport category, sport season, funding level, current injury/illness or retirement would independently predict psychological distress and poor subjective well-being; and (e) Pearson's correlation coefficients were used to investigate the strength and direction of relationship between psychological distress and subjective well-being.

Results

Prevalence Rates for Psychological Distress and Poor Subjective Well-being

Of the whole sample, 53.9% (*n* = 371) reported moderate or very high levels of psychological distress (46.1% low distress, 30.2% moderate, 17.8% high distress, and 5.9% very high distress). Next, 18.9% (*n* = 371) reported poor and 71.7% (*n* = 371) positive subjective well-being. Of the total sample, 52 (14%, *n* = 371) met the case cutoff for both psychological distress (K-10 scores ≥ 22) and poor well-being (WHO-5 scores ≤ 12). Thirty four (9.2%, *n* = 371) reported high or very high psychological distress (K-10 scores ≥ 22) and positive well-being. Next, 232 athletes (62.5%, *n* = 371) reported low or moderate psychological distress and positive subjective well-being. Finally, 18 (5.7%, *n* = 371) reported low or moderate psychological distress but met the case cutoff for poor subjective well-being (WHO-5 scores ≤ 12). Very high psychological distress (K-10 scores ≥ 31) was reported by 22 (5.9%, *n* = 371) athletes. Of these, 3 reported positive subjective well-being.

Table 1
SAMPLE CHARACTERISTICS, PREVALENCE OF PSYCHOLOGICAL DISTRESS AND POOR SUBJECTIVE WELL-BEING

	Sample Characteristics		**K-10 Psychological Distress Score ≥ 22**		**WHO-5 Poor Subjective Well-being Score ≤ 12**	
Category	*n*	*% of sample*	*Number of cases*	*% of category*	*Number of cases*	*% of category*
Total sample	371	100%	88	23.7%	70	18.8%
Gender						
Males	146	39.4%	29	19.8%	22	15.0%
Females	183	49.3%	54	29.5%	45	24.5%
Undisclosed	42	11.3%	5	11.9%	3	7.1%
Age						
17-24	162	43.7%	43	26.5%	30	18.5%
25-34	130	35.0%	32	24.6%	28	21.5%
≥ 35	33	8.9%	8	24.2%	9	27.2%
Undisclosed	46	12.4%	5	10.9%	3	6.5%
Funding level						
Podium	164	44.2%	40	24.3%	27	16.4%
Potential	138	37.2%	36	26.0%	34	24.6%
Pathway	9	2.4%	2	22.2%	2	22.2%
Undisclosed	60	16.2%	10	16.7%	7	11.7%
Sport category						
Olympic	268	72.2%	60	22.3%	46	17.1%
Paralympic	100	27.0%	27	27.0%	23	23.0%
Undisclosed	3	0.8%	1	33.3%	1	33.3%
Sport season						
Summer	352	94.9%	80	22.7%	64	18.1%
Winter	16	4.3%	7	43.7%	5	31.2%
Undisclosed	3	0.8%	1	33.3%	1	33.3%
Injury/illness currently						
Yes	100	27%	36	36.0%	30	30.0%
No	232	62.5%	49	21.1%	39	16.8%
Undisclosed	39	10.5%	3	7.7%	1	2.6%
Injury/illness for 1 week						
Yes	201	54.2%	64	31.8%	49	24.3%
Not	130	35.0%	21	16.1%	20	15.3%
Undisclosed	40	10.8%	3	7.5%	1	2.5%
Injury/illness for 3 weeks						
Yes	119	32.1%	46	39.0%	31	26.1%
No	212	57.1%	39	18.4%	38	17.9%
Undisclosed	40	10.8%	3	7.5%	1	2.5%
Plan to retire						
Yes	31	8.4%	18	58.1%	18	58.1%
No	302	81.4%	67	22.2%	51	16.9%
Undisclosed	38	10.2%	4	10.5%	1	2.6%

Comparison of Grouped Means for Categorical Variables

Means and standard deviation data for K-10 and WHO-5 scores are presented in Table 2. K-10 scores were higher for females (t = -1.976, df 327, p = .049), Paralympic athletes (t = 2.060, df 366, p = .040), winter sports (t= -2.024, df 366, p = .044), and those experiencing injury or illness currently (t = 3.357, df 330, p = .001), for one week in the past year (t = 4.198, df 311.76, p = .000), three weeks in the past year (t = 3.648, df 208.48, p = .000), or planning retirement (t = 5.002, df 331, p = .000). Scores by age and funding levels did not differ. WHO-5 scores were lower for females (t = 2.81, df 327, p = .005), and those injured or ill; currently (t = -3.120, df 330, p = .002), for one week in the past year (t = -2.319, df 329, p = .021), three weeks in the past year (t = -2.655, df 329, p = .008), or planning retirement (t = -6.290, df 331, p = .000). No other differences were found. The number of injuries lasting one week or more did not differ between gender, age, sport category, sport season, funding level, or plans to retire and was positively correlated with scores on K-10 (r = .161, n = 201, p = .023) but not WHO-5.

Table 2
MEAN AND STANDARD DEVIATION FOR K-10 AND WHO-5 SCORES

	Psychological Distress (K-10)	**Subjective Well-being (WHO-5)**
Sample characteristics	Mean (SD)	Mean (SD)
Total sample	17.9 (6.5)	16.0 (4.7)
Gender		
Males	17.4 (5.7)	16.8 (4.7)
Females	18.8 (7.0)	15.4 (4.6)
Age group		
17-24	18.3 (6.4)	16.4 (4.5)
25-34	18.5 (6.9)	15.8 (4.8)
≥ 35	16.9 (4.8)	15.1 (5.5)
Funding level		
Podium	18.2 (6.8)	16.3 (4.5)
Podium Potential	18.3 (6.5)	15.7 (4.9)
Pathway	17.8 (5.2)	17.7 (6.0)
Sport category		
Olympic	17.4 (6.1)	16.3 (4.4)
Paralympic	19.0 (7.4)	15.4 (5.3)
Sport season		
Summer	17.7 (6.4)	16.1 (4.7)
Winter	21.1 (8.0)	14.6 (4.9)
Current Injury/illness		
Yes	20.1 (7.2)	14.8 (5.1)
No	17.5 (6.1)	16.5 (4.4)
Injury/illness for 1 week		
Yes	19.4 (6.9)	15.5 (4.7)
Not	16.5 (5.6)	16.7 (4.6)
Injury/illness for 3 weeks		
Yes	20.1 (7.2)	15.1 (4.5)
No	17.2 (6.0)	16.5 (4.7)
Plan to retire		
Yes	23.7 (7.2)	11.2 (4.4)
No	17.7 (6.2)	16.5 (4.4)

Predictors of Psychological Distress and Poor Well-being

The odds of psychological distress increased for athletes who were female (OR = 2.037, p=0.016), currently injured or ill (OR = 1.876, p=0.029), or planning to retire (OR = 4.749, p= 0.000). The odds of poor well-being increased for females (OR = 2.004, p=0.036), current injury or illness (OR = 1.934, p=0.038), plans to retire (OR = 8.104, p=0.000), and for non-podium athletes (OR = 1.986, p=0.36).

Relationship Between K-10 and WHO-5 Scores

Scores on K-10 were negatively correlated with scores on WHO-5 (r = -.704, n = 336, p =.000). The coefficient of determination was 49.5 indicating less than 50% shared variance.

Discussion

The prevalence of psychological distress and general trends for age and gender was similar to prevalence rates for a range of MHDs reported in earlier elite athlete studies from the UK (Foskett & Longstaff, 2018), New Zealand (Beable, 2017), the Netherlands (Gouttebarge et al., 2017), Denmark (Kuettel et al., 2021), and Sweden (Åkesdotter, 2020). However, 23.7% (*n* = 371) is higher than the prevalence of psychological distress reported in previous surveys in which K-10 was utilized (16.5%, Gulliver et al., 2015, and 17.7%, Purcell et al., 2020). The mean score for psychological distress based on K-10 scores (17.9) was also higher than that reported for Australian elite athletes (15.7) by Gulliver et al. (2015) and (16.4) reported by Purcell et al. (2020). The reason for this is not clear but may be attributable to the greater proportion of Paralympic athletes in our study who made up 27% of the sample in comparison with 3.6% in the study by Gulliver et al., (2015) and 14.7% in the study by Purcell et al., (2020). Over one quarter of the Paralympians in our study (27%, *n* = 100) reported high or very high psychological distress. In this study, distress was positively correlated with the number of injuries reported. However, the number of injuries did not differ between Paralympic and Olympic athletes. It has previously been reported that Paralympians are likely to experience stressors that differ from Olympic athletes (Macdougall et al., 2015). Further qualitative research is necessary to identify the unique challenges that contribute to distress beyond those related to injury status.

Few studies have included measures of well-being alongside measures of mental ill-health. The percentage of athletes reporting a positive sense of well-being (81.2%, *n* = 371) in our study was higher than 78% reported in a recent study of Danish elite athletes (Kuettel et al., 2021). This difference may be partly due to differences in the measurement of well-being. Well-being in the study by Kuettel and colleagues was indicated if participants scored at or above the mean for that sample. In contrast, positive well-being was reported in this study if scores exceeded the clinical cutoff point that is an indicator of depression (Staehr Johansen, 1998). Development of sport-specific measures of well-being would enable standardization across studies.

The correlation between well-being and psychological distress in this study was negative. This suggests that individuals reporting low subjective well-being also scored high on scores for psychological distress. However, of the 88 athletes meeting the case cutoff point for psychological distress, 34 (38.6%, *n* = 88) reported a positive sense of well-being (nine Paralympic athletes, 24 Olympic athletes, and one undisclosed). Poor subjective well-being was reported by 70 athletes; however, 18 (25.7%, *n* = 70) of these athletes did not meet the case cutoff criteria for psychological distress. The relationship between distress and well-being reported in this study reinforces the view that while the two constructs are related, they should be considered as separate constructs (Keyes, 2002). The implication is that it should not be assumed that an athlete who does not present with a clinical disorder is mentally well or that those who have symptoms of mental ill- health still cannot experience well-being.

Our findings highlight a range of stressors influencing susceptibility to both mental health problems and poor well-being that reflect the high-performance arena of Olympic and Paralympic sports. Plans to retire and experience of injury or illness elicited the highest prevalence for psychological distress and poor subjective well-being. High or very high psychological distress and poor subjective well-being was reported by close to 60% (*n* = 31) of the athletes planning to

retire in this study. The reason for this is unclear. Athletes forced to retire due to injury are likely to experience greater psychological distress than those with time to prepare and plan (Park et al., 2013). However, in this study, the number of injuries or illnesses experienced did not differ between those planning to retire and those not. Furthermore, it is unclear if current mental health status increases injury risk or drives retirement, or if injury and thoughts of retirement initiate or exacerbate mental health symptoms and poor well-being. Our findings support the view that further qualitative research is needed to inform mental health support strategies during transitions such as retirement from sport (Beable et al., 2017; Henricksen et al., 2018; Rice et al., 2016).

It is possible that athletes experience psychological distress and poor well-being for reasons outside of their athletic career. Planning for retirement and time out for injury and illness, for example, may elicit more general concerns regarding family and finance. The impact of adjustment difficulties on mental health depends partly on the individual's coping and support resources as well as life skill support from sport organizations (Park et al., 2013). Having a strong social network of friends prior to retirement that continues during retirement, for example, can mitigate some of the stressors associated with retirement (Kail & Carr, 2020). In line with a holistic approach to athlete care, coaches and other members of the athletes' entourage should work with athletes to understand the stressors they face in all aspects of their lives. The English Institute of Sport, the British Olympic Association, and the British Paralympic Association, have offered career and lifestyle support to athletes since 2017. We recommend that assessment and monitoring of psychological distress and well-being is included in this support so that early interventions can be implemented if necessary.

High distress reported by Paralympic athletes and those experiencing injury/illness in this study supports the view that Paralympic athletes may face stressors not necessarily experienced by Olympic athletes (Swartz et al., 2019). Injury, pain, fatigue, and physical illness may present more serious consequences for Paralympic athletes with considerable impact on function, quality of sleep, mood states, and quality of life (Blauwet & Willick, 2012; Macdougall et al., 2015). Our findings reinforce the view that more research is needed to identify the unique needs of athletes with disabilities to inform mental health strategies and support services for Paralympic athletes in training and competition (Fagher et al., 2020).

Prevalence of psychological distress and poor subjective well-being were higher in athletes competing in winter compared to summer sports. This may be linked to reports of a two-fold increase in severe injuries during the winter sport competitive season (Alhammoud et al., 2020). In the current study, injury/illness rates were similar in winter and summer sport athletes; however, our sample size was small and did not include all winter sports. The finding that psychological distress and poor well-being scores were highest for athletes competing in Paralympic or winter sports warrants further investigation but has implications for those considering how best to implement mental health support that meets the unique needs of these athletes at an organizational level and in clinical practice. Periodic screening for well-being as well as for symptoms of mental illness will help to monitor an athlete's mental health and identify periods for early intervention.

Limitations and Strengths

Potential sources of bias include athletes with mental health problems being less (or more) willing to respond, or responses which may have been influenced by the perceived stigma associated with mental health surveys. In addition, although self-reported symptoms offer insight into probable psychological distress and mental health problems, they do not offer clinical diagnosis. Comparison with other studies is problematic when different measures or threshold criteria are used. Finally, screening tools developed for the general population may not best reflect the sport environment. The results of this study suggest that indicators of well-being as well as psychological distress should be considered in the endeavor to create sport-specific measures.

This is one of the largest studies to date to explore the prevalence of both psychological distress and subjective well-being in both Olympic and Paralympic athletes. The participation rate (49.3%) is satisfactory and compares favorably to other studies, both nationally and internationally which range from 29% to 57% (Åkesdotter et al., 2020; Beable et al., 2017; Gouttebarge et al., 2017; Gulliver et al., 2015; Purcell et al., 2020). Differences between studies may reflect disparity in the mental health problems observed and instruments used to measure mental health constructs,

as well as the data collection methods. Time of data collection is also an important consideration. In this study, the athletes from each sport were invited to participate at points during the year that did not coincide with recent or imminent competition. More broadly, campaigns to raise awareness in the general community and mental health support for professional athletes at an organizational level seek to encourage openness about mental health concerns. The results reported in this study may partly reflect this cultural change.

Conclusions and Practical Recommendations

The results from this research offer an important contribution to the debate regarding the prevalence of MHDs in Olympic and Paralympic athletes to help guide and inform policies, strategies, and interventions aimed at optimizing the mental health and well-being of elite athletes in the UK. Subjective well-being has an important role in our understanding of the mental health of athletes. Mental health support should aim to enhance well-being as well as reduce symptoms of psychological distress. Support to address mental health concerns can be provided at a number of levels in sport from prevention, screening, and early detection through to assessment, treatment, and rehabilitation (Currie & Johnston, 2016). At each stage, information on the prevalence of symptoms is helpful to inform both overall strategy and service provision.

Our findings strengthen current position statements calling for a comprehensive mental health and well-being framework, which not only identifies athletes at risk of developing poor mental health but which is also responsive to the multifaceted generic, sport-specific, and disability-specific mental health and well-being needs of all elite athletes (Moesch et al., 2018). It is particularly important to monitor during transitions such as retirement and injury.

Information from this study points towards Paralympians needing more support which is delivered in a manner that acknowledges the additional barriers and the extra challenges they face. Previous research has indicated that Para athletes have lower athlete identity and poorer body image than Olympic athletes and this impacts on their experience of well-being (Macdougall et al., 2015). Sports medicine professionals, for example, are well placed to discuss the psychological issues related to an athlete's injury. The implication is that both should be considered in well-being enhancement strategies used by coaches and health professionals when working with Para athletes.

Recommendations include targeted screening from psychological and other practitioners within the athlete's entourage with appropriate support and intervention if indicated. The International Olympic Committee (IOC) has recently published the mental health in elite athlete toolkit which aims to promote a collaborative approach to mental health promotion and protection (IOC, 2021). We concur with its recommendation that "(m)ental health screenings should be included as a routine part of physical health screenings and be actively encouraged by athletes' entourage members" (IOC, 2021, p. 25) and that assessment should be within the roles and responsibilities of all involved in athlete support. The results of this study offer an assessment of Olympic and Paralympic athletes within the UK high performance system and will contribute to further development of mental health support. Interventions and preventative strategies should include support for positive well-being as well as prevention of mental ill-health within a holistic approach. Finally, the results reported in this study strengthen the argument for routine screening of well-being and mental health symptoms of athletes and for ready access to mental health support including appropriate access to mental health treatment and care.

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