Swansea University
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The Level of Well-being and Mental Health Symptoms Among Student-Athletes Across a COVID-19 Affected Academic Year

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Abstract

Background information: Due to their dual-career lifestyles, the student-athlete population can be at-risk of lowered well-being and mental ill-health. Furthermore, the novel coronavirus disease (COVID-19) pandemic has raised additional threats to student-athletes' well-being and mental health. Despite this, student-athletes appear reluctant to seek support for any well-being or mental health concerns they may have. Thus, this study aimed to identify the levels of well-being and psychological distress in United Kingdom (UK) student-athletes, alongside ascertaining COVID-19's effects on well-being and the level of help-seeking behaviour. **Method:** A total of 277 high-performance student-athletes from a UK-based university completed an online survey at two time-points during an academic year to measure the levels of well-being, psychological distress, self-stigma, and help-seeking behaviours. The survey was distributed via emails to the Performance Directors' and included questions on background information, the self-perceived effect of COVID-19 on well-being, WEMWBS and K10 scales. **Results:** The student-athlete participants, on average, reported medium levels of well-being, with medium to high psychological distress across the academic year. COVID-19 reduced self-perceived well-being for 39.4% of participants, primarily due to the loss of training and competition. An independent t-test identified males held significantly lower psychological distress than females ($p = .002$) at time-point 1. There were no gender differences in help-seeking behaviours ($p > .05$). Multiple regression models showed gender, time-point, self-stigma, sport, and help-seeking intentions significantly contributed to well-being and psychological distress. **Conclusion:** Across the academic year of 2020/21, performance student-athletes' well-being and mental health lowered, likely due to several factors that included the COVID-19 pandemic and help-seeking behaviours. More research is needed to understand the impact of well-being and mental health on student-athletes within the UK, the long-term impact of the COVID-19 pandemic, and factors that affect help-seeking behaviour.

Declarations and Statements

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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Date: 14th June 2022

This thesis is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.
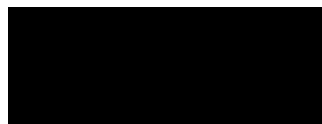
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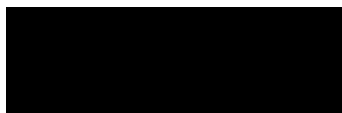
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The University's ethical procedures have been followed and, where appropriate, that ethical approval has been granted.

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Abbreviations

ANOVA	Analysis of Variance
BUCS	British Universities and Colleges Sport
COVID	Coronavirus
GHSQ	General Help-seeking Questionnaire
GP	General practitioner
ID	Identification
K10	Kessler Psychological Distress Scale 10
MHL	Mental Health Literacy
NGB	National Governing Bodies
PTSD	Post-Traumatic Stress Disorder
SARS	Severe Acute Respiratory Syndrome
SD	Standard Deviation
SSOSH	Self-Stigma of Seeking Psychology Help
SOMI	State of Mind Ireland
UK	United Kingdom
USA	United States of America
WEMWBS	Warwick-Edinburgh Mental Well-being Scale
WHO	World Health Organisation

Chapter 1: Introduction

Rationale and Background

High-performance university student-athletes combine full or part-time academic education alongside partaking in sport at the highest university level with rigorous training and competition schedules (dual-lifestyle). The dual-lifestyle led by student-athletes often leads to high demands and stressors that exceed personal coping ability (Lopes Dos Santos et al., 2020). Student-athletes often experience elevated stress levels and psychological distress alongside lowered well-being, with prevalence rates mirroring non-student athletes who report low to medium levels of well-being and moderate psychological distress (Gorczynski et al., 2017; Ryan et al., 2018; Chow et al., 2020; Knowles et al., 2021). Mental ill-health, an overarching term for mental health problems and mental illness (American Psychiatry Association, 2013), can lead to underperformance, poor social functioning, substance abuse and, in severe cases, suicide and self-harm. Female student-athletes appear particularly at-risk to lower well-being and higher psychological distress than their male counterparts (Ryan et al., 2018; Rice et al., 2020). Although a small number of studies (e.g., Wilson & Pritchard, 2005) have found that the dual-lifestyle, with associated mental health benefits, for some student-athletes can lead to lower stress and higher well-being than their non-student-athlete counterparts.

As with elite athletes, student-athletes, in general, appear less likely than their non-sporting university counterparts to seek help for any well-being or mental ill-health concerns. The sporting environment honours and encourages toughness, and unaided by a lack of mental health education results in any weakness being considered undesirable and often concealed (Bauman, 2016; Purcell et al., 2019). Stigma is deemed to surround help-seeking in student-athletes and is regarded as the primary barrier to seeking psychological support (Gulliver et al., 2012a; Bauman, 2016).

The novel coronavirus disease of 2019 (COVID-19) was declared a worldwide pandemic on the 11th of March 2020 (World Health Organisation, 2020a). Initial research raised concerns surrounding COVID-19's impact on the well-being and mental health of the global population owing to the unique, unexpected stressors of mortality, national lockdowns, isolation, and social distancing measures (e.g., Bono et al., 2020; Warren & Bordoloi, 2020; Waselewski et al., 2020; White & Van Der Boor, 2020; Xiong et al., 2020; Reardon et al., 2021). For the student-athlete population, the COVID-19 pandemic also led to changes in their mode of academic learning (i.e., online) alongside restricted access to training and competition (Izzicupo et al., 2021). With such changes to their dual-lifestyle, it was unsurprising that in comparison to pre-pandemic levels, student athletes' well-being and mental health appeared to lower throughout the initial "lockdown" period (e.g., Graupensperger et al., 2020; Reardon et al., 2021). There are, however, inconsistencies within the literature, with some researchers (Izzicupo et al., 2021) suggesting student-athletes' sporting (home workouts) and academic (online learning) lifestyles enable them to cope during the COVID-19 pandemic.

The rarity of global pandemics and COVID-19's ongoing nature means its impact on United Kingdom (UK) university student-athletes' mental health has not been fully explored; the full and long-term effects of the COVID-19 pandemic are currently unknown. Furthermore, existing research on student-athlete well-being, psychological distress and mental health pre-pandemic have predominately occurred on student-athletes from the United States of America (USA). Compared to the UK, the USA colleges and universities differ academically and take a professional approach to sports. Therefore, the academic and sporting experience and subsequent available research are less likely to mirror the UK student-athletes experiences (Kopaczewski, 2018). Accordingly, measuring the level of well-being and psychological distress among UK university student-athletes, particularly during a pandemic, is of considerable value. Additionally, to implement targeted interventions, it is necessary to

establish and understand factors, including help-seeking behaviours and self-stigma, that can influence and moderate student-athletes' well-being, psychological distress, and mental health.

Aim of the Thesis

The present study aimed to survey high-performance student-athletes at a UK university at two time-points during a COVID-19 affected year. The time-points for data collection were between November and December 2020 (the middle to the end of semester 1) and April to June 2021 (the middle to the end of semester 2). Levels of well-being, mental health (measured through psychological distress), stigma, and help-seeking behaviours were measured. Consequently, the study investigated and addressed the following research questions and subsequent research hypothesises:

Question 1: What are the levels of well-being, psychological distress, stigma, and help-seeking behaviours across the sample?

> *Hypothesis 1* = Performance student-athletes, on average, have medium well-being and moderate psychological distress.

> *Hypothesis 2* = Performance student-athletes have medium self-stigma and negative attitudes towards help-seeking.

Question 2: Are well-being and psychological distress levels in student-athletes affected by: gender, sport, or COVID-19?

> *Hypothesis 3* = Female student-athletes report lower well-being and higher psychological distress than their male counterparts.

Hypothesis 4 = A difference in university high-performance sports does not affect student-athletes well-being or psychological distress levels.

Hypothesis 5 = COVID-19 will negatively affect the samples' well-being and, subsequently, mental health across an academic year.

Question 3: Do the levels of stigma and or help-seeking behaviour affect well-being and psychological distress in student-athletes?

Hypothesis 6 = Student-athletes with lower stigma and or higher help-seeking intentions have increased well-being and lower psychological distress.

Chapter 2: Literature Review

Well-being

Well-being is a complex, multi-faced, subjective experience, traditionally examined through two perspectives: hedonic and eudaimonic (Lundqvist, 2011). The hedonic approach proposed that well-being is defined as feelings of life satisfaction and happiness derived through striving for pleasure (i.e., *emotional well-being*; Diener et al., 1999; Ryan & Deci, 2001). In essence, it consists of positive affect and the relative absence of negative affect (Keyes, 2007; Lundqvist, 2011). In contrast, eudaimonic well-being is the contentment and happiness achieved from a meaningful purpose in one's life and reaching one's potential. Fundamentally eudaimonic well-being is when one experiences psychological functioning, growth, and personal development (i.e., *psychological well-being*; Ryff, 1989; Ryff & Keyes, 1995; Deci & Ryan, 2008).

Initially, eudaimonic well-being was considered to comprise of positive functioning elements only. Keyes (1998), however, later suggested it also encompassed social aspects (i.e., *social well-being*), which broke down into five components: social coherence, social actualisation, social integration, social contribution, and social acceptance (Westerhof & Keyes, 2010; Lundqvist, 2011). Hence, the combination of psychological and social well-being in the eudaimonic tradition relates to the successful, positive functioning in one's personal or social life (Keyes, 1998; Keyes & Lopez, 2002; Lundqvist, 2011). The eudaimonic tradition is achieved through six dimensions: autonomy, positive relationships with others, personal growth, self-acceptance, environmental mastery and purpose in life (Ryff, 1989; Ryff & Keyes, 1995; Westerhof & Keyes, 2010; Lundqvist, 2011). While initially hedonic and eudaimonic were considered district approaches to the study of well-being, more recently, it has been accepted generally that hedonic (emotional well-being) and eudaimonic (psychological and

social well-being) aspects overlap. Thus, to enhance the opportunity to understand and explore well-being fully, both the hedonic and eudaimonic traditions should be considered in conjunction (Lundqvist, 2011).

Due to the complexity of well-being, there have been numerous attempts to define the concept (Dodge et al., 2012). Through their critical review of the extensive literature, and while adopting a multi-dimensional approach, Dodge et al. (2012) proposed well-being to be "the balance point between an individual's resource pool and the challenges faced" (p. 230; see Figure 2.1). More specifically, they proposed that well-being occurs through the balance of physical, social, and psychological resources required to encounter specific physical, social, and psychological challenges. When more challenges than resources appear, or vice versa, well-being becomes unstable and will lower (Dodge et al., 2012).

Figure 2.1

Well-being equilibrium definition model

Note. This figure shows the proposed definition of well-being by Dodge et al. (2012), explaining well-being as a balance point and see-saw between an individual's resources and challenges faced (p. 230).

Mental Health

Mental health is "a state of well-being in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (World Health Organisation, 2005, p. 12). The definition comprises three key core components: well-being (emotional, psychological, and social well-being), an individual's effective functioning, and efficient operating for a community (World Health Organisation 2005; Westerhof & Keyes, 2010). Mental ill-health, an overarching term for mental health problems and mental illness, is identified through standardised diagnostic criteria (American Psychiatry Association, 2013) and includes depression, anxiety, eating difficulties, phobias, and suicidal feelings. Mental ill-health can stem from many factors, including genetics, loneliness, loss, economic worries, and trauma (Mind, 2017). Globally, mental ill-health is an increasing public health concern (Mental Health Foundation, 2016), contributing to high premature death rates, with a 10 – 20-year reduction in life expectancy (World Health Organisation, 2015).

In the United Kingdom (UK), mental ill-health is the largest single cause of disability (World Health Organisation, 2008; NHS England, 2016). Half of the UK adult population perceive themselves to have had a mental health condition in their life, with one-third of women and one-fifth of men receiving a professional mental health diagnosis (Mental Health Foundation, 2016). The 2015 Welsh Health Survey identified that 13% of adults (i.e., ≥ 16 years) living in Wales had reported receiving mental health treatment over a single week. In England, during 2016, mental illness and ill-health's estimated yearly economic cost stood at £105 billion (NHS England, 2016). The NHS reported the economic costs were due to decreased work productivity and physical activity, reduced quality of life, service costs, and various associated chronic physical conditions. Consequently, enhancing mental health is of

paramount importance to the UK's population and economy (Department of Health and Social Care, 2011).

Well-being and Mental Health

Well-being and mental health are distinct, although interrelated constructs, with each affecting and being affected by the other (Keyes & Lopez, 2002; Keyes, 2005, 2007; Keyes et al., 2010). Mental health consists of *emotional well-being* (feeling happiness and satisfaction with life), *psychological well-being* (positive functioning in terms of self-realisation), and *social well-being* (positive social functioning feeling social value; Keyes, 2007; Westerhof & Keyes, 2010). Complete mental health related to an individual has a combination of functioning well and feeling good about life (Keyes et al., 2010).

Mental health does not constitute the absence of mental illness. Keyes and Lopez (2002) proposed and illustrated through the dual continuum model (see Figure 2.2) that mental illness and mental health belong on two separate but correlated continuums, reflecting two distinct yet unipolar factors. Across four quadrants, the model illustrates that an individual without mental illness can also have low well-being ('languishing' state) or have high well-being levels whilst experiencing mental illness ('struggling' state). Moreover, the model outlines one can simultaneously have mental illness and low levels of well-being ('floundering' state) or experience high mental health and low mental illness ('flourishing' state). Simply the model details four mental health and illness groups: flourishing (complete mental health), floundering (entire mental illness), languishing, and struggling (incomplete mental health and illness, respectively; Keyes & Lopes, 2002).

Figure 2.2

Keyes and Lopez (2002) Dual Continuum Model of Mental Health and Mental Illness
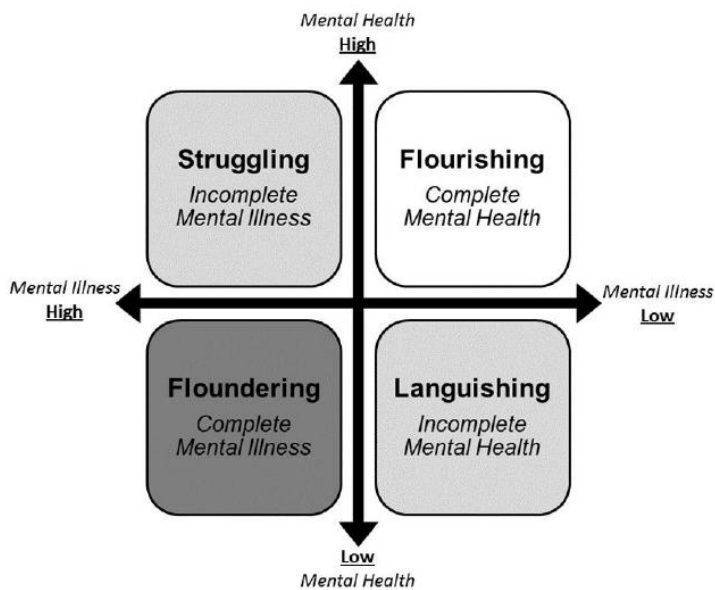
Note. The figure illustrates the dual continuum of mental health and mental illness, proposing them on two separate but correlated continuums.

Well-Being and Mental Health among Athletes

Elite athletes spend a vast proportion of their lives dedicated to their sport, participating, and competing at the highest level (Swann et al., 2015, p. 11). Traditionally, elite athletes have been unsupported in managing mental health, with mental ill-health stigmatised within the sporting environment (Castaldelli-Maia et al., 2019). The sporting culture honours and encourages toughness, focusing on physical performance, which creates the possibility of any psychological issues and weakness greeted with displeasure (Bauman, 2016). Earlier research on well-being and mental health in elite athletes mistakenly assumed that they experienced positive well-being and mental health, with society's desire and tendency to idealise athletes and their health (Bär & Markser, 2013). Recent research, however, has highlighted elite athletes

encounter a similar prevalence of lowered well-being and mental ill-health symptoms to the non-athletic population (Gulliver et al., 2012a; Rice et al., 2016; Purcell et al., 2019), with athletes reporting to suffer medium well-being levels (Rice et al., 2020). Some athletes also appear more vulnerable to certain mental health disorders (e.g., eating and alcohol disorders) than non-athletes (e.g., Sundgot-Borgen & Torstveit., 2004), however there is limited research available on athletes' well-being and mental health.

The environment within elite sports tends to encourage competitiveness and is suggested to negatively affect mental health at times (Bauman, 2016) and compromise mental well-being (Rice et al., 2016), due to many psychological and physical stressors (Lundqvist, 2011). Stressors include injury (Gulliver et al., 2015; Rice et al., 2020), performance failure (Hammond et al., 2013), criticism (Bauman et al., 2016), career uncertainty, organisational stressors (Hanton et al., 2005; Mellalieu et al., 2009), and the psychological effects of overtraining, injury, and burnout (Rice et al., 2016). These stressors can present risks to an athlete's well-being (Lundqvist, 2011) and mental health (Rice et al., 2016; Breslin & Shannon et al., 2017), particularly in higher-risk populations, such as those from individual sports and female athletes. Focusing on a singular pathway to success and participating for goal-oriented reasons, individual sporting athletes appear more susceptible to mental ill-health symptoms than team sports athletes (Pluhar et al., 2019). Likewise, compared to their male counterparts, female elite athletes are particularly vulnerable to mental ill-health symptoms (Schaal et al., 2011; Rice et al., 2020), linked to genetic, physiological, hormonal, and socio-environment factors (McLean & Anderson, 2009; Vamvakopoulos, 1995).

Regarding specific mental health concerns, research has demonstrated that elite athletes are as vulnerable to substance abuse and misuse as non-athletes (Reardon et al., 2019). Often, substances are utilised in the athletic environment for reasons including performance

enhancement, self-treatment, or coping response to sporting stressors, and as a self-treatment for poor well-being and mental ill-health (e.g., Reardon & Creado, 2014; Creado & Reardon, 2016; Gouttebarge et al., 2019). Additionally, binge drinking and excessive alcohol consumption are normalised within sports settings, usually as a reward post-competition (Gouttebarge et al., 2019). Such substance abuse can also increase the risk of mental health disorders or heighten current symptoms (National Institute on Drug Abuse, 2020; Mental Health Foundation, 2020a).

Anxiety (Rice et al., 2016) and depression (see Gulliver et al., 2012a; Hammond et al., 2013) affect many athletes at some point across their careers (Breslin & Shannon et al., 2017). In terms of general anxiety, the global population has an estimated prevalence rate of 10.6%–12.0% over 12 months (Rice et al., 2019). Contrastingly, in elite athletes, general anxiety rates range from 6.0% (clinical diagnosis; Schaal et al., 2011) to 14.6% (self-reported measure; Du Preez et al., 2017). Athletes, irrespective of gender, report generalised anxiety, feelings of anxiousness, and worry over various situations (Gulliver et al., 2015; Ryan et al., 2018). Such symptoms are intensified by performance and training environments, low levels of self-confidence, and perfectionist tendencies (Koivula et al., 2002; Abrahamsen et al., 2008; Rice et al., 2016). Gouttebarge et al. (2015) found significant life events across 12 months positively linked with anxiety, depression, distress, and burnout in male football players.

Finally, in terms of eating disorders, some research (Byrne & McLean, 2002; Hausenblas & Symons Downs, 2001; Sundgot-Borgen & Torstveit, 2004; Reardon et al., 2019), though not all (Torstveit et al., 2008), suggests athletes have an increased risk of eating disorders (Rice et al., 2016). For example, Torstveit et al. (2008) reported no difference between a female non-athletic control sample and female elite athletes. In contrast, Sundgot-Borgen and Torstveit (2004) found for both genders, athletes reported greater subclinical or

clinical eating disorders than a non-athletic sample (13.5% and 4.6%, respectively). Moreover, Sundgot-Borgen and Torstveit discovered female athletes had higher eating disorder rates than their male counterparts (20% and 8%, respectively). While the aetiology of eating disorders is complex, evidence suggests this higher rate is linked to athletes holding negative feelings concerning their physical appearance and body weight (Hausenblas & Symons Downs, 2001; Filaire et al., 2007). Eating disorders are particularly evident in sports where strictly managing or temporarily changing body weight is required. More specifically, eating disorders are evident in weight categories sports (e.g., judo and boxing) or sports (e.g., gymnastics and swimming) where the athlete's general physical appearance receives judgment and emphasis is placed on a lean body (Byrne & McLean, 2002; Schaal et al., 2011; McLester et al., 2014; Uphill et al., 2016; Rice et al., 2016; Mancine et al., 2020).

Well-Being and Mental Health among Students

Research by Gorczynski and colleagues (e.g., Gorczynski et al., 2017; Gorczynski et al., 2020) has demonstrated that many university students display a vulnerability to mental health symptoms and disorders. More specifically, Gorczynski et al. (2017) found UK university students held medium well-being and moderate psychological distress. Students experience symptoms ranging from low and unhappy feelings to long-term disorders, including depression, anxiety, and constant worry. In 2015, 78% of UK university students reported mental health symptoms, with 33% of students contemplating suicide on one or more occasions (All-Party Parliamentary Group on Students, 2015). At-risk populations, including sexual orientation minority groups and female students, have been found particularly vulnerable to lowered well-being and mental ill-health (Gorczynski et al., 2017).

For some individuals attending university and Higher Education is a significant milestone and achievement in life, perceived by many as enjoyable and worthwhile. University, however, coincides with a phase of adolescent biological and social transitions (Micoogullari et al., 2017; World Health Organisation, 2020b) which is considered the peak age for mental illness and ill-health (Jurewicz 2015). Specifically, time at university for students falls during the emerging adulthood life stage (Arnett, 2000). A recently considered stage of life, emerging adulthood is a stage between adolescence and young adulthood which features identity instability, exploration, self-focus, and feelings of insecurity about the future. Therefore, emerging adulthood poses many risks to lowered well-being and mental ill-health with high rates of identity crisis, depression, and stress levels. It is also a time of risk behaviours, including substance abuse (Matud et al., 2020).

Many students struggle to cope with university's social, academic, and financial demands, in turn encountering stress, a loss of motivation, a lack of energy, and often feeling down (Arnett, 2016; Gorczynski et al., 2020). Students' other challenges include moving away from home, increased independence, and subsequent loneliness (The Insight Network and Dig-In, 2019), particularly evident during the initial transition period to university (Wilson & Pritchard, 2005). Such challenges are especially apparent if the student is the first in a family to attend university or has more financial pressures meaning they have to take up paid work (Universities UK, 2018). Many students turn to unhealthy coping strategies to relieve the stress, including disordered eating and substance abuse, with the latter magnified through normalised binge drinking among university students (National Union of Students, 2018; Ryan et al., 2018; Tarrant et al., 2019).

Within university students, low well-being and poor mental health can often lead to adverse outcomes, including academic underperformance, general health reductions, poor

social functioning, dropping out of university, and in server cases, suicide (Eisenberg et al., 2013; Thorley, 2017; Universities UK, 2018; Jenkins et al., 2021). Some university students also often hold negative attitudes, low help-seeking intentions, and stigma towards mental ill-health (Cheng et al., 2018). Many possess a low level of mental health literacy (MHL), with around 33.0% - 42.3% of students have reported being unaware of mental health symptoms or where to access support (Gorczynski et al., 2017). Regardless, the demands on the UK university well-being services have increased significantly in recent years, with Gorczynski et al. (2017) noted that 51.8% of student participants in their study had or intended to seek help from a mental health professional.

Well-Being and Mental Health among Student-Athletes

Student-athletes undertake full-time or part-time education alongside high-performance sports offered by universities. Athletes attend university and higher education to strengthen or establish an identity other than an athlete (Steele et al., 2020) and form future career paths (Cosh & Tully, 2015). Nevertheless, alongside competitive sport (dual-lifestyle), university life results in high demands across academic and sporting domains for student-athletes. As a result, it has been proposed that student-athletes may have similar risks of experiencing lowered well-being and mental ill-health symptoms as their non-student-athlete university counterparts (Wilson & Pritchard, 2005; Ryan et al., 2018; Chow et al., 2020). More specifically, student-athletes report similar prevalence rates of low to medium levels of well-being and moderate psychological distress as non-student athletes (Gorczynski et al., 2017; Ryan et al., 2018; Chow et al., 2020; Knowles et al., 2021). To date, however, there has been limited research attention directed towards examining the impact of a dual-lifestyle on student-athletes' well-being and mental health.

While student-athletes value the opportunity to attend university and develop their sporting and academic lives, high demands and stress can lead to conflict between the components (academic, sporting, and social) and, for some, an inability to meet the challenges (Cosh & Tully, 2015; Condello et al., 2019; Steele et al., 2020). By struggling to balance the dual-lifestyle, some student-athletes can suffer decreasing energy levels, sleep quality, lowered well-being, and increased susceptibility to physical and mental ill-health (Lopes Dos Santos et al., 2020). Student-athletes also tend to prioritise athletic performance over academic outcomes. The greater focus on athletic identity, making educational sacrifices (Cosh & Tully, 2015; Lopes Dos Santos et al., 2020; Steele et al., 2020), can lead to significant pressures on academic performance (Lopes Dos Santos et al., 2020).

Stressors faced by student-athletes in tertiary education were found to be universal, irrespective of sports, study program and competition level (Cosh & Tully, 2015). Student-athletes allegedly experience overtraining, fatigue, injury, performance worry, lowered well-being, and feeling overwhelmed (Dubuc-Charbonneau & Durand-Bush, 2015; Rice et al., 2016; Ryan et al., 2018). These experiences increase the susceptibility to burnout (Dubuc-Charbonneau & Durand-Bush, 2015) and chronic fatigue (Weigand et al., 2013). Wilson and Pritchard (2005) compared the experiences and stressors of first-year student-athletes to non-student-athletes at a private United States of America (USA) college. It was found that student-athletes suffered more time-management worry, burnout, fear of failing, anxiety, depression, and self-esteem issues than their non-student-athletes' counterparts. However, the student-athletes recorded fewer worries over financial stress and academic problems than their non-student-athletes.

There is a normalised drinking culture at universities and colleges within worldwide well-being and mental health research (e.g., Zhou & Heim, 2016). The drinking culture leads

many student-athletes to engage with regular binge drinking to socialise and reward themselves for their hard work (Barnes, 2014; Zhou & Heim, 2016; Ryan et al., 2018). In particular, male student-athletes demonstrate a higher tendency of binge drinking than the general public (Barnes, 2014). Such substance misuse can place them at-risk of short and long-term physical and mental effects (Mental Health Foundation, 2020a; Ryan et al., 2018).

With the balance of a dual-lifestyle, student-athletes' levels of depression and anxiety appear similar to non-student-athletes (Chow et al., 2020). Nonetheless, due to a lack of consistent methodology, making current prevalence estimations is challenging (Rao & Hong, 2016). Student-athletes generalised anxiety rates appear like that of non-athletes. Contrastingly student-athletes report social anxiety due to the lack of socialisation (Ryan et al., 2018; Lopes Dos Santos et al., 2020) and encounter increased mood disturbance during increased training load (Weigand et al., 2013). Moreover, depression rates are particularly evident pre and post-competition, especially after performance failure (Hammond et al., 2013). For student-athletes, depression at a clinical level is as prevalent as the broader student population (Rao & Hong, 2016). Well-being and some specific disorders, however, are considered higher among female student-athletes (Rao & Hong, 2016; Lopes Dos Santos et al., 2020) and in certain sport such as swimming where swimmers, associated with the extended training hours and lonely nature of the sport (Uzzell et al., 2021).

Some reports and studies (e.g., Mind, 2017; Ryan et al., 2018) noted that student-athletes appear more susceptible to eating disorders than their non-student-athlete counterpart. For student-athletes eating disorders are associated with a lifestyle of observing dieting, training, and weight fluctuations, with pressures to maintain body size. Conversely, Wilson and Pritchard (2005) found that student-athletes had less concern with body satisfaction and physical appearance due to healthier attitudes and habits than non-student-athletes. Similarly,

McLester et al. (2014) found female student-athletes satisfied with their body image with lower susceptibility to eating disorders than female university non-student athletes. Exact estimation on whether student-athletes are more susceptible to eating disorders than non-student athletes is challenging, with literature adopting different methods, sports, competition levels, and sample sizes (McLester et al., 2014).

Where available, the research on student-athlete well-being and mental health has predominantly occurred within the USA. The UK and the USA adopt different approaches to sport and education, including varying course lengths (a 3-year course in the UK vs., a 4-year course in the USA) and sports. In the USA colleges and universities sports mirror the professional environment (Kopaczewski, 2018; UK Study Centre, 2018). Therefore, the evidence available on USA student-athletes may not fully or exactly reflect students' experiences within the UK, with different factors potentially affecting well-being, psychological distress, and mental health differentially. With unknown effects on well-being and psychological distress, there is a need to explore specifically the well-being and mental health of UK university high-performance student-athletes.

Well-being and Mental Health Help-Seeking among Athletes and Student-athletes

Help-seeking and stigma are moderators of well-being and mental health (Aguirre Velasco et al., 2020); however, athletes and student-athletes appear reluctant to seek support for any well-being or mental health concerns (Ryan et al., 2018). Importantly, student-athletes are less likely than their non-student-athlete counterparts to seek support (Bauman et al., 2016). Both athletes and student-athlete populations often have low mental awareness, lacking mental health understanding (Purcell et al., 2019). In essence, both athletes and their coaches have low MHL, subsequently possessing inadequate knowledge of mental health (including

development and prevention) and a limited understanding of help-seeking (Kutcher et al., 2016; Sebbens et al., 2016; Breslin & Haughey et al., 2017; Breslin & Shannon et al., 2017; Castaldelli-Maia et al., 2019).

Seeking help from professional psychologists and doctors for any mental ill-health allows for the potential of a professional diagnosis and access to support (American Psychological Association, 2013); negative attitudes, however, surround help-seeking in the elite sporting environment (Ryan et al., 2018). Many athletes perceived there to be barriers to help-seeking (Bissett & Tamminen, 2020), including a lack of time (López & Levy, 2013) and fears of appearing weak (Gucciardi et al., 2017; Kola-Palmer et al., 2020). The embedded masculinity within sports creates a significant barrier to help-seeking, particularly for male athletes and student-athletes (Ryan et al., 2018; Tahtinen & Kristjansdottir, 2019). Although of note, Tahtinen and Kristjansdottir (2019) found experiencing certain symptoms at clinical levels (e.g., depression) may decrease female athletes' help-seeking intentions from a psychologist. Student-athletes also tended to express a desire to seek help from a counsellor familiar with the sporting environment to meet their specific needs (López & Levy, 2013), which are rarely available.

With the promotion of mental toughness in the sporting domain, stigma held by athletes and coaches also provides a significant barrier to help-seeking (Gulliver et al., 2012a; Bauman, 2016). Corrigan and Watson (2002) outlined that stigma takes shape in two primary forms: self and public. Public stigma relates to society's negative attitudes towards help-seeking for low well-being and mental ill-health, resulting in an individual often avoiding seeking help due to the idea that society may view them as undesirable. In the student-athlete population, public stigma plays a crucial role in attitudes towards psychological help (Kaier et al., 2015; Bird et al., 2018). Kaier et al. (2015) found higher levels of public stigma in the student-athlete

population than their non-student athletes' counterparts. In contrast, self-stigma refers to a negative attitude and judgment placed upon oneself for seeking help (Corrigan & Watson, 2002). In a small sample of student-athletes, Wahto et al. (2016) found self-stigma was seen to mediate the relationships amid public stigma and psychological help-seeking. Bird et al. (2018) found medium self-stigma in both student-athletes and students, which contributed to more negative attitudes to counselling.

Well-being and Mental Health Interventions

Student-athletes lifestyles present them with various stress, such as academic stress, stress over a lack of sleep (Wilson & Pritchard, 2005), which alongside high demands, often exceed student-athletes personal coping ability (Lopes Dos Santos et al., 2020). Developing coping strategies, patterns used to manage actions and thoughts encountered in a stressful or unpleasant situation (American Psychological Association, n.d) are valuable modifiable factors for moderating mental health outcomes. Such strategies enable the creation of a supportive environment to allow student-athletes to excel in their dual-career (Brown et al., 2015; Cosh & Tully, 2015; Rice et al., 2016). In particular, the effective coping strategies of goal setting, proactive communication, and social support from peers, parents, and coaches influence student-athletes ability to perceive an environment as facilitative to manage the dual-demands (Brown et al., 2015; Cosh & Tully, 2015; Rice et al., 2016). Many student-athletes, however, engage with avoidance coping to manage their dual demands, including denial, drinking alcohol, and overtraining. Strategies that tend to be ineffective can increase the likelihood of stress, burnout, lower well-being, and poor mental health (Nicholls & Polman, 2007; Cosh & Tully, 2015; Dubuc-Charbonneau & Durand-Bush, 2015; Rice et al., 2016).

It is critical to address stigma and attitudes regarding help-seeking within the sporting environment to aid student-athletes' willingness to seek help to improve well-being ((Breslin & Haughey et al., 2017; Kola-Palmer et al., 2020). Building MHL by providing education has been found to increase mental health awareness, knowledge, and confidence to seek support for mental ill-health (e.g., Gulliver et al., 2012c). Increasing MHL can change negative attitudes towards help-seeking, breaking down stigma and enhancing well-being support of student-athletes (e.g., Gulliver et al., 2012b; Breslin & Haughey et al., 2017; Breslin & Shannon et al., 2017; Breslin et al., 2018; Bu et al., 2020). Student-athletes have expressed a likeliness in seeking help from a family member or coach or when referred by them (Wahto et al., 2016); as such, MHL for coaches is crucial in aiding student-athletes mental health. Like athletes and student-athletes, for coaches, MHL has also been found to increase their mental health awareness and knowledge (e.g., Longshore & Sachs, 2015; Sebbens et al., 2016; Breslin & Haughey et al., 2017; Breslin & Shannon et al., 2017).

For student-athletes, specifically, sporting MHL, interventions, and programs aim to improve well-being and mental health in the dual-lifestyle environment. In student-athletes, Van Raalte et al. (2015) examined the impact of a tailored web-based MHL intervention on a sample of student-athletes, finding mental health exercises and interactive material had significant outcomes in enhancing mental health referral information. Breslin et al. (2018) similarly found student-athletes mental health knowledge and MHL, compared to a control sample, increased through the application of the State of Mind Ireland (SOMI) Pilot Program. The SOMI is a program presented by a specialist tutor in scheduled university classes on campus and contains content of mental health knowledge and skill enhancement.

MHL interventions and implementing coping strategies in the student-athlete population would address the specific dual-demands from both education and athletics and the stigma associated with student-athletes to enhance or protect their well-being and mental

health. There is, however, limited evidence of longitudinal MHL training or interventions within the student-athlete population, meaning the long-term impact on MHL and well-being remains unknown. There is a need to develop a targeted and evidence-based MHL intervention. Nevertheless, for a specific MHL intervention, further research relating to the levels of well-being and the factors affecting the well-being and mental health of UK university student-athletes is necessary.

Well-Being and Mental Health during a Global Pandemic

On the 11th of March 2020, the Word Health Organisation (WHO) declared the novel Coronavirus disease (COVID-19) a global pandemic (World Health Organisation, 2020a). With swift advancements in the situation, spread and mutations (Xiong et al., 2020), the UK government implemented a national lockdown, which led to travel restrictions, social distancing measures and a shift to working at home (White & Van Der Boor, 2020). Research on the short and long-term effects of a global pandemic on individuals' well-being and mental health is emerging (Warren & Bordoloi, 2020; Bono et al., 2020). It is unsurprising to note that the short-term impact of COVID-19 on depression and anxiety levels among UK adults is considerable and adverse (White & Van Der Boor, 2020), with psychological distress notably higher than pre-pandemic (Xiong et al., 2020). Stressors from the COVID-19 pandemic affecting well-being and psychological distress have been found to include fear of illness, isolation, separation, unemployment, and uncertainty. Meanwhile, those who have engaged with effective coping strategies such as eating healthy, getting outside, and positive thinking appear better able to maintain their well-being and mental health than those who adopted ineffective coping mechanisms, which include avoidance coping, overeating, and drinking (Mental Health Foundation, 2020b).

Those aged 18-24-year-olds have been particularly susceptible to anxiety, worry, loneliness, hopelessness, and ineffective coping (Mental Health Foundation, 2020b). Waselewski et al. (2020) reported in 18–25-year-old that 1 in 4 suffered behavioural, emotional, or mental disorders during the initial phases of the pandemic. Furthermore, with campus closures and subsequent transition to online teaching, UK university students have experienced disruption during a critical time in their development (Waselewski et al., 2020, White & Van Der Boor, 2020), with almost 50% of students worried about worsening mental health problems. With a halt to training and competition, similar well-being and mental health effects found in students were evident for athletes. The pandemic heightened some athletes' worry associated with depression and anxiety (Håkansson et al., 2020). For some athletes maintaining physical activity (Şenışık et al., 2021) and social connections through technology with teammates countered the athletic identity loss and subsequent well-being effects from the pandemic (Graupensperger et al., 2020).

For student-athletes in particular, COVID-19 has led to changes in both their sporting and educational "worlds" (Graupensperger et al., 2020; Hagiwara et al., 2021; Knowles et al., 2021; Reardon et al., 2021). COVID-19 Government regulations have disrupted student-athletes dual-career paths with a drastic reduction in their training hours, competition cancellation (Izzicupo et al., 2021), and a shift to online delivery of their degree programme (Abenza-Cano et al., 2020). COVID-19 has resulted in a lack of goals or purpose for this population, posing risks to an individual's sporting and university development and achievements (Graupensperger et al., 2020). The enforced cancellation of sport purportedly mirrors the retirement transition; a stage in one's career that often results in many athletes suffering from a loss of identity, low well-being, and poor mental health (Gouttebarge et al., 2019; Graupensperger et al., 2020; Reardon et al., 2021). Hence, with the effects of the pandemic, student-athletes have a relative risk of poor mental health as non-student-athletes

(Knowles et al., 2021). In contrast, however, in a student-athletes sample from varying countries Izzicupo et al. (2021) found that during the pandemic's initial phases, the majority perceived the dual-lifestyle useful to cope with COVID-19.

Due to the current nature of COVID-19, its full effects are unknown (Warren & Bordoloi, 2020; Bono et al., 2020), with no background research into the longitudinal effects (Bono et al., 2020). The pandemic's potential long-term impacts can be inferred from those found within previous epidemic research (e.g., severe acute respiratory syndrome (SARS)) with investigations indicating long-term post-traumatic stress disorder (PTSD) and depression symptoms for many individuals (Wu et al., 2009; Maunder, 2009). Therefore, measuring the impact of the virus on well-being and mental health is pivotal (Xiong et al., 2020; Bono et al., 2020; White & Van Der Boor, 2020).

Rationale and Research Questions

Evidence suggests that student-athletes, who (for the most part) are in the life stage of emerging adulthood, can become susceptible to lowered well-being and mental ill-health due to the requirement to manage the dual-lifestyle demands (Wilson & Pritchard, 2005; Ryan et al., 2018; Chow et al., 2020). Consequences of mental ill-health include poorer athletics and academic performance, and even suicide or self-harm. Moreover, student-athletes appear reluctant to seek support for any mental health concerns they may have due to stigma and the perceived need to portray mental toughness within the sporting domain (Ryan et al., 2018; Tahtinen & Kristjansdottir, 2019).

Research exploring student-athletes' well-being, psychological distress, and mental health has predominantly occurred with USA student-athletes. As UK university students' experience differs to their USA peers (Kopaczewski, 2018; UK Study Centre, 2018), there is a

need to explore factors relating to wellbeing, psychological distress, and mental health among student-athletes attending university in the UK and competing in top divisions of British Universities and Colleges Sport (BUCS). There is a particular need for research to inform the work of university and support staff who are responsible for their student's welfare, well-being, and mental health. In addition, many student-athletes have faced unique stressors across the academic year of 2020-2021 owing to COVID-19, where they experienced changes to both their sport and academia (Graupensperger et al., 2020; Hagiwara et al., 2021; Knowles et al., 2021; Reardon et al., 2021). There is considerable importance therefore, in researching COVID-19's effect on student-athletes' wellbeing and mental health. Such research could also allow for a platform for further research into long-term post-pandemic effects.

Hence, this study aimed to investigate the levels of well-being and mental health symptoms (through psychological distress) across two time-points. Two time-points allow for measuring well-being and psychological distress across the year, with both occurring during times mirroring academic stress from exams and deadlines. The project, therefore, set out to answer the following questions:

Question 1: What are the levels of well-being, psychological distress, stigma, and help-seeking behaviours across the sample?

Question 2: Are well-being and psychological distress levels in student-athletes affected by: gender, sport, or COVID-19?

Question 3: Do the levels of stigma and or help-seeking behaviour affect well-being and psychological distress in student-athletes?

Chapter 3: Methods

Participants

A sample of 184 high-performance student-athletes completed an online survey across two-time-points (n = 93 completed both time-points, n = 77 only completed time-point 1, n = 14 only completed time-points 2). The sample comprised of 53 females (n = 22 at both time-points, n = 27 at time-point 1 only, n = 4 at time-point 2 only) and 131 males (n = 71 at both time-points, n = 50 at time-point 1 only, n = 10 at time-point 2 only) from six high-performance sports: American Football, Football, Hockey, Netball, Rugby Union, Swimming. Of note, Hockey, Rugby Union, and Swimming included a mix of both genders, while American Football and Football included male participants only, and Netball included only females.

Participants were from a United Kingdom (UK) based university and enrolled in various undergraduate and postgraduate full-time or part-time programmes. The student-athlete participants were within the first-team of a university's British Universities and Colleges Sport (BUCS) registered sporting club's and categorised as competitive elite athletes (Swann et al., 2015). The sports involved were classified as high-performance by the university, and so the student-athletes had priority access to training facilities, scholarship funding, and performance support. Due to different National Governing Bodies (NGB), university policy, and BUCS guidelines, training, and competitions throughout the 2020/2021 academic year were varied for this level of student-athletes. Prior to the COVID-19 pandemic the high-performance teams trained between 3-8 times a week, with session varying from strength and conditioning to team practice; except for Swimming, who trained daily to twice a day for 1 hour 30 minutes to 2 hours each session.

The American Football, Football, Hockey, and Women's Rugby Union team competed in Premiership South division (i.e., top division, competing weekly/fortnightly), Men's Rugby

Union competed in BUCS Super Rugby (competing weekly/fortnightly), while Netball competed in division 1 of the Western league (i.e., second division, competing weekly/fortnightly). Swimmers, in contrast, competed in series 3 championships across an academic year (Short Course Championships, Long Course Championships and Team Championships) with the team placed 7th best university in the country in 2019/2020. Swimming, for the purpose of this study, was considered an individual sport.

Procedure

The university's ethics committee granted ethics approval. The survey was created via the online server Survey Monkey (Survey Monkey, 2020) and distributed to the participants for completion at two time-points. Time-point 1 commenced between the middle and end of semester 1 (November – December 2020), and time-point 2 was between the middle and end of semester 2 (April – June 2021). The two time-points were chosen to allow measurement of wellbeing and psychological distress across the year. Due to Coronavirus (COVID-19) restrictions, all correspondences with the student-athletes occurred online through the Performance Directors and first-team captains of each of the six BUCS registered high-performance sporting clubs at Swansea University. Initial recruitment, communication, and project explanation occurred with the Performance Directors. At the start of each time-point, the Performance Directors received and subsequently distributed the survey (a survey monkey link) and an information sheet through their communication channels to their high-performance student-athletes.

The Performance Directors and the Student Union Athletic Officer offered "gentle" reminders every two to three weeks during the time-point window to the student-athletes through various communication channels (e.g., email, social media). To encourage maximum

participation, reminders included reading the information sheet (to understand the aim and importance of the study) and completing the survey if they wished (i.e., being sure not to coerce). The survey was officially closed on survey monkey at the end of each time-point. At each time-point, in the last email sent to the Performance Directors, they were thanked for their assistance and asked to pass on an appreciation to their student-athletes for participation. In a debrief, related only to their own sport, the survey results were shared with the respective Performance Directors and were also made aware that the data would inform an intervention being delivered by the Student Union.

Protection of Participants' Rights

With the survey link, all participants in the study were provided with an information sheet. The sheet detailed the project and informed that student-athletes participant was voluntary with the right to withdraw from the study at any time. Participants were required to fill in a participant consent form before starting the survey. The survey was completed anonymously, as no identifying information was collected, protecting the confidentiality of the participants. All data was protected with password protection, and the findings were only shared with the respective sport and discussed sensitively if the data indicated lowered well-being.

Covid-19 Regulations

The COVID-19 restrictions changed throughout the 2020/2021 academic year. The university announced the decision to adopt a hybrid learning approach for whole academic 2020/2021 year (a mix of online and in-person learning). Time-point 1, in accordance with the Welsh Government, occurred post-2-week fire breaker lockdown and was under the COVID-

19 restrictions limiting indoor activities to 15 people and outside limited to 30 (Welsh Government, 2020a, 2020b). Time-point 2 occurred post-national wide lockdown and during a time of transitioning from alert level 3 to level 2 (May 2021) to level 1 (June 2021; Welsh Parliament, 2022). During the time-point (April 2021), outdoor sports in groups of 30 people were reintroduced, and a week later, indoor sports for 15 people returned (Welsh Parliament, 2022). At both time-point, hospitality reopened with a requirement to close by 6 pm, and "bubbles" of 6 enforced (i.e., meeting up in groups of 6 or 2 households; Welsh Government, 2020a, 2020b; Welsh Parliament, 2022).

Materials

The survey incorporated questions regarding demographics, the effect of COVID-19 on training, competition and well-being, the levels of well-being, psychological distress, self-stigma, and general help-seeking behaviours.

Demographic Information

The first section of the survey gathered demographic information on age, sport played, gender, ethnic group, and sexual orientation. Such demographic data were collected as each have been found to affect well-being and psychological distress (see Gorczynski et al., 2017). Written statements on age (at time-point 1 only, due to unnecessary data for analysis and to reduce survey fatigue at time-point 2) and sport played (at both time-points) were required. Gender, sexual orientation, and racial and ethnic groups responses were collected from a drop-down list. Each drop-down list had the option to choose 'other' available. At time-point 2, the

question 'Did you complete the initial version of this survey in November/December 2020?' with a drop-down list of 'yes' and 'no' was also included.

COVID-19

The survey included five COVID-19 related questions at time-point 1 and four at time-point 2, which assessed the participants' perceived impact of the pandemic on their well-being (see Appendix B.1 and B.2 for questions). These questions differed slightly at each time-point but included a mixture of closed and open questions. At time-point 1, four closed questions asked the perceived extent of the pandemic impact on the participants' training, competitions, and well-being levels. The three closed questions at time-point 2 then ascertained any changes to their training, competition, and well-being since time-point 1. The same open-ended question was asked at each time-point, in which participants were asked to provide a brief explanation for why they believed COVID-19 restrictions had or had not impacted their well-being positively or negatively.

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS):

The 14-item WEMWBS was used to measure levels of well-being (Tennant et al., 2007). Participants indicated how often they felt positive well-being aspects over the past 2-weeks (e.g., 'I've been thinking clearly' and 'I've been feeling good about myself'). Each item was rated on a scale from 1 (none of the time) to 5 (all of the time), with total scores ranging from 14 to 70. In line with the population norms from the Health Survey for England (The Health and Social Care Information Centre, 2012), based on one standard deviation above and below the mean (an average of 51), scores were considered: 'low' 14 - 42, 'medium' 43 - 60, and 'high' 61 - 70 (The Health and Social Care Information Centre, 2012; Stranges et al., 2014).

The WEMWBS holds a good test-retest reliability and good internal consistency (Tennant et al., 2007), and in this study had a Cronbach's alpha of .894 at time-point 1 and .882 at time-point 2.

Kessler Psychological Distress Scale 10 (K10):

The K10 is a 10-item measure for psychological distress (Kessler *et al.,* 2002) and was utilised to ascertain indicators of poor mental health. Participants indicated the extent of agreement with the statement 'During the last 30 days, about how often did you feel' - to questions including 'Depressed', 'Hopeless', 'So nervous that nothing could calm you down' on a scale from 1 (none of the time) to 5 (all the time). Scores range from 10 to 50, where scores are considered 'low distress' 10 - 15; 'moderate distress' 16 – 21; 'high distress' 22 – 29; 'very high distress' 30 -50 (Andrews & Slade, 2001). The K10 has shown high validity and internal consistency (Kessler *et al.,* 2002), and in the current study had a Cronbach's alpha of .874 and .896 at time-point 1 and time-point 2, respectively.

The Self-Stigma of Seeking Psychology Help (SSOSH):

The SSOSH is a 10-item measure to assess self-stigma concerning attitudes and intent for psychological help-seeking (Vogel et al., 2006), where higher scores correspond with greater self-stigma. On a 5-point scale, from 1 (strongly disagree) to 5 (strongly agree), individuals rate their likely reaction in each proposed situation (e.g., 'I would feel inadequate if I went to a therapist for psychological help', 'I would feel worse about myself if I could not solve my own problems'). Of note, questions 2, 4, 5, 7, and 9 are reverse scored. For this study, to ascertain self-stigma levels, scores of 25 constitute medium self-stigma, with scores above

the medium (> 25) representing high self-stigma and any score below (< 25) indicating low self-stigma. The scale holds high internal consistency and validity (Vogel et., 2006), and the current study had a Cronbach's alpha that exhibited high internal consistency and reliability ($\alpha = .857$ at time-point 1, $\alpha = .865$ at time-point 2).

The General Help-seeking Questionnaire (GHSQ):

The GHSQ consists of two questions and was utilised to assess participants' help-seeking intentions for a mental health concern (Wilson et al., 2005). Participants were given a list of 10 individuals (e.g., partners, mental health professionals, parents) and asked to rate the likeness to seek help from each one on a 7-point scale, ranging from 1 (extremely unlikely) to 7 (extremely likely). Specifically, the first question asked, 'If you were having a personal or emotional problem, how likely is it that you would seek help from the following people?'. The second question asked, 'If you were experiencing suicidal thoughts, how likely is it that you would seek help from the following people?'.

The GHSQ question both hold excellent test-retest reliability ($r = .92$; Wilson et al., 2005). However, both questions in the current study reported low Cronbach's alphas, exhibiting low internal consistency and reliability. At time-point 1 and time-point 2, question 1 recorded Cronbach's alphas of .397 and .511, respectively, while question 2 recorded .736 and .706, respectively. With its importance in understanding help-seeking and use in the analysis, for consistency, both questions were separated into two subscales family and external parameters to increase the Cronbach alphas (see Table D.1 in appendix D). The family parameter comprised 'intimate partner', 'friend', 'parent', 'other relatives/family member' and the reverse of 'I would not seek help from anyone'. The external parameter comprised 'Mental health

professional', 'Phone helpline', 'Doctor/General practitioner (GP)', 'Minister or religious leader', and 'I would seek help from another not listed above'.

Analysis

Missing Data

Before analysis, the data set was examined for missing data. Complete missing data sets were removed, and datasets with partially missing data remained but were only used when questionnaires had complete answers.

Statistical Analysis

Statistical analyses were performed using a statistical software package (IBM SPSS, version 26.0), with significance set as $p < .05$ and descriptive statistics presented as mean ± standard deviation (SD). Initially, Cronbach's alphas measured internal consistency on each questionnaire, accepting $\alpha > .70$ for acceptable consistency and $\alpha > .80$ for good internal consistency (Cortina, 1993). Percentages (%) for the COVID-19 responses were used to analyse the quantitative COVID-19 questions. For the qualitative COVID-19 questions, inductive thematic analysis was used, a data-driven thematic analysis process of coding the data without fitting it into a pre-existing frame or preconceptions (Braun & Clarke, 2006). The process has six steps: familiarisation, coding, generating themes, reviewing themes, defining and naming themes, and writing up. The initial steps involved getting to know the data (familiarisation) before examining it to create codes and keywords (coding). From the codes, pattens were then identified and themes created (generating themes) before being narrowed down and ensured to represent the data without missing anything (reviewing themes). Finally,

the themes are defined, named (defining and naming themes), and then written up (writing them up).

Independent-sample t-tests were run to establish any significant differences between mean scores of females and males, and time-point 1 and 2. A one-way ANOVA determined any statistically significant differences between sports scores (combined time-points), with a Tukey's HSD *post-hoc* to understand where the differences occur (Field, 2018). Sports analysis was conducted as a collective (i.e., Rugby Union), and sports were broken down by gender (i.e., female Rugby Union and male Rugby Union). A two-way ANOVA compared two independent variables against questionnaire scores to determine the interactions between time-points, sport, and gender. Pearson correlations were conducted to measure the linear correlation between the questionnaire scores at each time-point. Finally, multiple linear regression was run to model the relationship between the variables (Field, 2018). The model was performed to determine if time-point, sport, gender, self-stigma, problem/emotion help-seeking, suicidal thought help-seeking predicted well-being and psychological distress scores.

<p style="text-align:center">Chapter 4: Results</p>

Demographic Information

High-performance student-athletes from six high-performance British Universities and Colleges Sport (BUCS) teams at a United Kingdom (UK) university completed an online survey. A total of 93 student-athletes completed both time-points, 77 student-athletes only completed time-point 1 (November to December 2020), and 14 student-athletes only completed time-points 2 (April to June 2021; Table 4.1). Across the time-points, an average of 96.8% and 89.5% of participants identified as Heterosexual / Straight and White, respectively. While sub-analyses on sexual orientation and racial and ethnic groups were planned, this was not possible due to a straight homogenous sample. A breakdown of the participant's demographic information by time-point is below in table 4.1.

Table 4.1

Participant demographics by time-point

	Time-Point 1		Time-Point 2	
	n	*%*	*n*	*%*
Total Number of Responses	171		107	
Gender				
Female	49	28.7	26	24.3
Male	122	71.3	81	75.7
Sports				
American Football	42	24.6	35	32.7
Football	35	20.5	20	18.7
Female Hockey	18	10.5	9	8.4

Male Hockey	13	7.6	8	7.5
Netball	12	7.0	7	6.5
Female Rugby Union	10	5.8	5	4.7
Male Rugby Union	20	11.7	10	9.3
Female Swimming	9	5.3	5	4.7
Male Swimming	12	7.0	8	7.5
Sexual Orientation				
Bisexual	3	1.8	3	2.8
Other	1	0.6	1	0.9
Prefer not to say	2	1.2	0	0
Heterosexual/ Straight	165	96.5	103	96.3
Racial and Ethnic Group				
Asian, or Asian British	7	4.1	4	3.7
Black, African, Caribbean, or Black British	6	3.5	5	4.7
White	152	88.9	96	89.7
Mixed, or Multiple Ethnic Group	3	1.8	1	0.9
Other	3	1.8	1	0.9
Total	171		107	

Student-Athlete's Well-Being, Mental Health, Self-Stigma, and Help-Seeking Levels

Overall, the high-performance student-athletes, irrespective of time-point, were classified as having medium well-being (45.7 vs. 45.2; Health Survey for England, 2011; Stranges et al., 2014; Table 4.2). On average, the psychological distress classification for the student-athletes increased from moderate (time-point 1) to high (time-point 2; Andrews & Slade, 2001) across the 2020/21 academic year. However, an independent t-test revealed this

change in psychological distress across the year was not statistically different ($T(249) = - 0.40$, p = .688). Self-stigma, regardless of time-point, was classified as medium (25.2 vs. 25.6, respectively) by the student-athlete participants. Help-seeking intention for both questions decreased across the academic year (Table 4.2), where the participants held a higher likelihood of seeking help for 'suicidal ideations' (question 2) than for a 'personal or emotional problem' (question 1) throughout the year. For both GHSQ questions, the student-athlete participant showed higher intentions and likeliness to seek help from an intimate partner or friend (family sources), while least likely to seek help from phone lines, ministers, or religious leaders (external sources).

Table 4.2

Means ± standard deviation (SD) for the variable by time-point

	Time-Point 1	Time-Point 2
	Mean ± SD	Mean ± SD
Well-being	45.7 ± 7.8	45.2 ± 8.0
Psychological Distress	21.9 ± 6.7	22.3 ± 6.9
Self-stigma	25.2 ± 6.2	25.6 ± 6.9
General Help-Seeking Question 1		
Family	23.0 ± 6.0	22.0 ± 5.9
External	12.9 ± 4.6	11.8 ± 4.5
General Help-Seeking Question 2		
Family	23.7 ± 6.8	22.3 ± 7.2
External	15.9 ± 6.5	15.3 ± 6.8

Well-Being and Psychological Distress Levels regarding Gender, Sports and COVID-19

Gender

Male student-athletes reported a higher average well-being score than females at both time points, though an independent t-test revealed no statistical difference ($p > .05$; Table 4.3). Male student-athletes at both time-points, on average, were classified as having moderate psychological distress, while female student-athletes had an average of high psychological distress. Female student-athletes held statistically higher psychological distress ($p < .05$) than their male counterparts at time-point 1. A two-way ANOVA revealed no significant time-point*gender interaction for both well-being ($F(1, 251) = 0.21$, $p = .645$) and psychological distress scores ($F(1, 247) = 0.08$, $p = .785$). Males had lower self-stigma than females, though an independent t-test showed such differences were not statistically significant ($p > .05$) at either time-point (Table 4.3). Irrespective of the time-point, help-seeking intentions between males and females were not statistically different for 'suicidal ideation'. At time-point 1, females were statistically less likely than males to seek help from an external source for 'personal or emotional problems' ($T(147) = -2.21$, $p = .029$).

Table 4.3

Gender independent t-test results for well-being, psychological distress, and self-stigma scores

	Female	Male			
	Mean ± SD	Mean ± SD	*Df*	*t*	*p*
Well-being					
Time-point 1	44.4 ± 7.0	46.2 ± 8.1	-1.32	156	.188
Time-point 2	43.0 ± 8.1	45.9 ± 7.9	-1.50	95	.136
Psychological Distress					
Time-point 1	24.5 ± 6.3	20.9 ± 6.6	3.12	153	.002*
Time-point 2	24.6 ± 6.8	21.6 ± 6.8	1.87	94	.064
Self-Stigma					
Time-point 1	26.3 ± 5.8	24.7 ± 6.1	1.42	151	.157
Time-point 2	27.0 ± 8.2	25.2 ± 6.4	1.09	93	.277

Note. *p* < .05

Sports

Well-being scores did not statistically differ between the sports as a collective, as revealed in a one-way ANVOA ($F(5, 243) = 1.01$, $p > .05$). Swimming was the only high-performance collective sport where the student-athlete participants, on average, reported low well-being at any time-point ($M = 42.3 ± 3.0$, at time-point 2). When considering sports broken down by gender, well-being scores did not statistically differ ($F(8, 246) = 1.97$, $p = .051$). However, a significant difference in Tukey's HSD *post-hoc* was observed between male Football and women's Rugby Union ($p = .002$) and between male and female Rugby Union ($p = .038$). When considering both time-points collectively, there was a statistical difference in psychological distress scores between the sports as a collective ($F(5, 245) = 2.80$, $p < .05$). Tukey's HSD *post-hoc* revealed a significant difference between Netball and Football (M

difference = 5.7, $p < .05$). Likewise, there was a statistical difference in psychological distress scores between the sports when broken down by gender ($F(8, 242) = 2.06, p = .041$). However, a Tukey's HSD *post-hoc* did not reveal any difference between the sports. The mean and SD for each sport's well-being and psychological distress scores are presented in table 4.4.

Self-stigma scores did not statistically differ between the sports as a collective ($F(5,244) = 0.358, p = .877$). Swimming reported the biggest difference in self-stigma score across the sports from time-point 1 to 2 ($M = 24.9 \pm 5.7$ vs. 27.9 ± 5.3). A significant gender*sport interaction was identified from a two-way ANOVA ($F(2, 239) = 4.13, p = .017$). For well-being and psychological distress, no time-point*sports interaction was observed from a two-way ANOVA ($p > .05$). Significant gender*sport collective interaction across time-points collectively was identified for both well-being scores ($F (2, 246) = 4.03, p = .019$) and psychological distress scores ($F(2, 242) = 4.41, p = .013$). A Tukey's HSD *post-hoc* revealed significant differences were between Netball and Football for psychological distress scores.

Table 4.4

Well-being and psychological distress scores by sport, Means ± SD

	Time-Point 1	Time-Point 2
	Mean ± SD	Mean ± SD
Well-being		
American Football	45.0 ± 8.6	45.0 ± 8.2
Football	47.5 ± 8.4	48.3 ± 8.0
Female Hockey	45.1 ± 5.2	46.5 ± 6.7
Male Hockey	46. 1 ± 5.9	41.9 ± 4.7
Netball	44.5 ± 7.7	44.5 ± 10.9
Female Rugby Union	41.0 ± 6.3	37.6 ± 8.7
Male Rugby Union	46.9 ± 10.4	50.5 ± 9.7
Female Swimming	46.8 ± 7.0	40.5 ± 1.7
Male Swimming	46.2 ± 3.9	43.1 ± 3.3
Psychological Distress		
American Football	22.7 ± 7.3	22.0 ± 7.4
Football	18.5 ± 5.5	20.1 ± 5.9
Female Hockey	22.5 ± 5.3	22.3 ± 4.7
Male Hockey	20.8 ± 6.3	27.6 ± 4.7
Netball	24.8 ± 7.4	24.7 ± 10.3
Female Rugby Union	28.6 ± 4.8	25.8 ± 7.6
Male Rugby Union	22.4 ± 7.2	18.9 ± 7.0
Female Swimming	22.7 ± 6.4	27.75 ± 1.0
Male Swimming	22.4 ± 8.2	20.1 ± 4.8

COVID-19

Across the 2020/21 academic year, by creating percentages from responses, 39.4% of the high-performance student-athletes perceived their well-being to have declined, with 12.1% reporting low well-being at the end of semester 2. At time-point 1 (middle to end of semester 1), COVID-19 had negatively affected competitions and training for 98.1% and 66.0% of the high-performance student-athlete participants, respectively. In turn, the effects of training and competitions were perceived to lower well-being for 66.0% and 70.2% of participants, respectively.

Answers from an open-ended qualitative question and the subsequent theme analysis allowed for self-reported indications and explanations for why COVID-19 had or had not affected their well-being at time-point 1 (see Table 4.5) and time-point 2 (see Table 4.6). At time-point 1, theme analysis showed adverse effects on well-being centred around the 'lack' of training and competition (Table 4.5). Student-athletes outlined that they were missing the sport they had previously dedicated time and effort to, and this loss lowered their well-being. A particular influencing factor was the lack of in-person 'social interaction' with teammates and friends. The student-athletes also highlighted that pre-COVID-19 their sport had played an essential role in maintaining their mental health, as it was part of 'an escape' and a mental health outlet. Hence, the abrupt stop and loss of sport led to lowered well-being for those of the participants. While a return to training was allowed at the start of semester 1, the COVID-19 restrictions and rules surrounding the return increased some student-athletes' worry about breaking the rules.

At time-point 2, at the end of the academic year, 83.8% of participants highlighted still not having access to competition, with 48.5% reporting declined access to training. With the ever-changing COVID-19 situation across the academic year and between the time-points, theme analysis revealed participants outlined at time-point 2 that issues to their well-being were

due to the 'lack of consistency' caused by the pandemic's restrictions (Table 4.6). Many of the participants outlined still being unable to have a 'normal life' and were frustrated with constant altering restrictions. A lack of competition and training 'structure' was identified to have lowered the participant's well-being, with them continuing to be unable to have the same 'access' to sports as in previous years. Decreases in training and competition reduced student-athletes' exercise and physical activity, in turn affecting their fitness and well-being levels. COVID-19 restrictions meant limited 'opportunities to socialise' for many student-athletes and an inability to see teammates during the academic year, which negatively impacted well-being. The reduction of sport subsequently caused a loss of opportunity to relax mentally, which had been previously achieved through 'playing sport or seeing teammates'. Likewise, participants described having increased stress from university workload at the end of the academic year from assignments and exams with 'no sport to distract' and support their mental health.

Across the academic year, perceived well-being increased or remained high for 14.1% of high-performance student-athlete participants, with 34.3% indicating moderate well-being. At the beginning of the academic year (time-point 1), COVID-19's negative effects on training improved 10.5% of participants' well-being, with 29.6% of participants perceiving to have been unaffected. Likewise, COVID-19's impact on competition (i.e., preventing or limiting competition) improved 2.5% of student-athlete participants' well-being, with 27.3% of participants unaffected. Reasons for the positive self-perceived well-being included reports of using coping strategies and taking the forced time off as a break from the pressured high-performance sports environment, enabling recovery. Others described being unaffected by the pandemic for reasons including: 'the decision has been taken out of my hands', 'focused on what I can control', and 'I've found other activities to do'.

Table 4.5

Qualitative response's themes, time-point 1

Themes	Example Quote
Training and Competition Loss	"The inability to compete or train at something that takes so much time and effort to prepare for just gets you down constantly"
	"'There's no competitive side to sport and no contact at training"
Loss of social connections	"Less opportunity to see friends and interact with others"
Positive COVID-19 Experience	"Just got to take what you got and find the positives in everything"
	"Because I took this opportunity to make myself fitter/stronger for the water without the pressure of competing."
Rules	"Not having the freedom to do as you want; having to constantly worry about small things that get you into trouble"
No Escape from the Student Life	"'less distraction from stressful uni work"
	"Swimming has always been there to de-stress from academic"
Loss of Mental health Benefits of Sport	"Being stuck inside allows for a lot of downtime that isnt beneficial as it means im left alone with my thoughts a lot and they arent usually positive a lot of the time"
	"'Competition was a way for me to release any stress or anger"

Note. A complete qualitative data set can be found in Appendix E

Table 4.6

Qualitative response's themes, time-point 2

Themes	Example Quote
Training and Competition	"There's been no competition which is the reason I play Football. Therefore motivation has lowered in training."
Effect	"Because having no access to training makes my mental health worsen"
Positive effects	"With everything slowly opening up and weather improving, well-being has improved over the academic year"
Lockdown	"Because I wasn't able to do my normal life"
	"Lack of consistency"
Mental and Physical effects	"Prolonged length of feeling isolated and stuck at home has challenged me mentally and physically"
No Escape from the Student Life	"I'm in my 3rd year of uni so the workload has been huge, and with no sport to distract from it I've spent almost every day doing work in the house over the academic year'
	"With increasing levels of stress from university and the lack of being able to go out and train or see friends"

Note. A complete qualitative data set can be found in Appendix E

Interaction of Well-Being, Psychological Distress, Self-Stigma and Help-Seeking Behaviours

Well-being scores were significantly strongly negatively correlated with psychological distress scores at time-point 1 ($r = -.67$) and 2 ($r = -.75$) as identified from a Pearson's product-moment correlation (see Table 4.7 and Table 4.8). Regardless of time-point, self-stigma scores were significantly negatively correlated with well-being score, and at time-point 1 was significantly positively correlated with psychological distress score ($p < .001$). No significant relationships were observed between psychological distress and self-stigma at time-point 2 (r (95)= .14, $p = .171$). Help-seeking was significantly positively correlated with self-stigma, irrespective of question and time-point (see Table 4.7 and Table 4.8).

Table 4.7

Pearson's product-moment correlation for the variables, time-point 1

Time-point 1 Measures	n	1	2	3	4	5	6	7
1. Well-being	158	–						
2. Psychological Distress	155	-.67**	–					
3. Self-stigma	153	-.34**	.30**	–				
General Help-Seeking Question 1								
4. Family	149	.30**	-.37**	-.35** [a]	–			
5. External	149	.12	-.11	-.29** [a]	.21*	–		
General Help-Seeking Question 2								
6. Family	141	.34**	-.40**	-.36**	.75**	.26**	–	
7. External	141	.26*	-.21*	-.35**	.28**	.68**	.47**	–

Note. * $p < .01$, ** $p < .001$

[a] $n = 148$

Table 4.8

Pearson's product-moment correlation for the variables, time-point 2

Time-point 2 Measures	*n*	1	2	3	4	5	6	7
1. Well-being	97	–						
2. Psychological Distress	96	-.75**	–					
3. Self-stigma	95	-.24*	.14	–				
General Help-Seeking Question 1								
4. Family	94	.47**	-.40**	-.43**	–			
5. External	94	.04	.08	-.31*	.23**	–		
General Help-Seeking Question 2								
6. Family	93	.48**	-.38**	-.42**	.76**	.29**	–	
7. External	93	.29*	-0.16	-.32**	.41**	.69**	.48**	–

Note. * *p* < .01, ** *p* < .001

Two multiple regression models revealed that time-point, gender, sports, self-stigma, personal or emotional problem, and suicidal ideations help-seeking accounted for 22.7% of the variance in well-being and 24.0% of the variance in psychological distress. Both models revealed in an ANOVA there was a collective significance effect from the 8 variables in predicting well-being ($F(8, 225) = 8.24$, $p < .001$) and psychological distress ($F(8, 225) = 8.90$, $p < .001$). The multiple regression model equations for well-being and psychological distress are:

Well-being = 41.101 - (0.484 x time-point) - (0.151 x sport) + (1.154 x Gender) - (0.191 x self-stigma) + (0.185 x Personal or emotional problems family source) - (0.384 x Personal or emotional problems external source) + (0.206 x Suicidal ideation help-seeking family sources) + (0.268 x Suicidal ideation help-seeking external source)

Psychological distress = 32.259 + (0.488 x time-point) + (0.171 x Sport) - (2.945 x Gender) + (0.069 x Self-stigma) − (0.263 x Personal or emotional problems family sources) + (0.343 x Personal or emotional problems external sources) − (0.172 x Suicidal ideation help-seeking family sources) − (0.150 x Suicidal ideation help-seeking external sources).

The individual predictors were further examined and indicated self-stigma ($\beta = -.16$, $p = .08$), external sources of help-seeking for personal or emotional problems ($\beta = -.23$, $p = .006$) and suicidal ideation ($\beta = .23$, $p = .011$) significantly predicted well-being. For psychological distress the variables gender ($\beta = -.20$, $p = .004$), personal or emotional problem help-seeking

from a family source (β = -.23, p = .014) and external sources (β = .23, p = .004) added statistically significantly to the model.

Chapter 5: Discussion

The purpose of this study was to ascertain the levels of well-being, psychological distress, self-stigma, and help-seeking behaviours in a sample of United Kingdom (UK) based university student-athletes in the 2020/21 coronavirus (COVID-19) affected year. The study aimed to answer the following questions: What are the levels of well-being, psychological distress, stigma, and help-seeking behaviours across the sample? Are well-being and psychological distress levels in student-athletes affected by: gender, sport, or COVID-19? Do the levels of stigma and/or help-seeking behaviour affect well-being and psychological distress in student-athletes?

Interaction of Well-Being, Psychological Distress, Self-Stigma and Help-Seeking

The first research question aimed to understand the levels of well-being, psychological distress, self-stigma, and help-seeking behaviours across the sample. Subsequently, the first hypothesis stated that performance student-athletes, on average, would have medium well-being and moderate psychological distress. Using Stranges et al. (2014) well-being WEMWBS classification, the high-performance student-athletes recorded medium well-being levels (45.7 vs. 45.2). Using a similar methodology, research found higher well-being levels in athletes than identified in this study's student-athlete sample (Rice et al., 2020). However, university students have comparable levels of well-being in both the UK (Gorczynski et al., 2017) and worldwide literature (Ryan et al., 2018; Chow et al., 2020; Knowles et al., 2021). Reasons posed within the literature for the level relate to balancing and maintaining their dual lifestyle, which causes stressors including time-management worry, injury, burnout, athletic, and academic success (Cosh & Tully, 2015; Bissett & Tamminen, 2020; Lopes Dos Santos et al., 2020). Contradictory, not all evidence agrees, with some studies suggesting that student-

athletes have less stress and higher well-being than their non-student-athlete counterparts (Wilson & Pritchard, 2005). The current study's findings potentially differ from those found by Wilson and Pritchard (2005) due to the samples used. More specifically, Wilson and Pritchard used a sample of first-year college students (52 student-athletes and 310 non-athletes) from a private American university. Also, in this study and elsewhere, the COVID-19 pandemic has been found to negatively impact well-being associated with the unique stressors, including shifts to online learning and access reductions to both training and competition (Condello et al., 2019; Chow et al., 2020; Lopes Dos Santos et al., 2020; Hagiwara et al., 2021). Consequently, the medium well-being reported within this study should be considered compatible with what was expected in UK university student-athletes.

Against Andrew and Slade's (2001) classifications of psychological distress, the student-athletes recorded moderate to high psychological distress at time-points 1 and 2, respectively (21.9 vs. 22.3). Gorczynski et al. (2017) identified similar levels of psychological distress in their UK university student sample. As with well-being levels, student-athletes psychological distress appears to match their non-student-athlete counterparts (Ryan et al., 2018; Chow et al., 2020). Potential reasons for their psychological distress are associated with the stress and stressor experienced by student-athletes in maintaining their dual-lifestyle with pressures to perform academically and athletically (Cosh & Tully, 2015; Condello et al., 2019; Steele et al., 2020). Furthermore, the shift from moderate to high psychological distress across the academic year could be linked to the restriction and continuous lifestyle changes during the COVID-19 pandemic. During the pandemic's initial phases, the UK's general population's psychological distress increased compared to a baseline norm (Xiong et al., 2020). Although slightly higher than anticipated, the finding aligns with the hypothesis, with the sample reporting an average of moderate to high psychological distress.

Overall, supporting available research, the high-performance student-athletes sample reported medium well-being and moderate to high psychological distress. Thus, the first hypothesis stating the student-athletes, on average, would have medium well-being and moderate psychological distress, is partially accepted due to the high psychological distress at time-point 2. As such, and alongside the strengths and limitations of self-reported data (Althubaiti, 2016), more research is required. More specifically, additional research is needed to understand the objective levels of well-being and psychological distress reported within this sample and the wider UK student-athlete population. Likewise, a comparison between student-athletes and non-student-athletes is required to understand the finding further.

Self-stigma and Help-seeking Behaviours

The second hypothesis stated that student-athletes have medium self-stigma and negative attitudes towards help-seeking. This study found the high-performance student-athlete participants had medium self-stigma (25.2 vs. 25.6, time-point 1 and 2, respectively). Similar self-stigma levels using Self-Stigma of Seeking Help (SSOSH) have been identified in student-athletes (Bird et al., 2018) and college students (Cheng et al., 2018). Such levels of self-stigma found are likely to be explained by the perception that some student-athletes and athletes can hold negative attitudes and judgements on themselves for seeking help (Corrigan & Watson, 2002; Ryan et al., 2018). Such attitudes are possibly associated with a lack of mental health literacy (MHL), mental health awareness or understanding (Purcell et al., 2019; Kola-Palmer et al., 2020). The levels of self-stigma identified within this study demonstrate a need to potentially increase mental health awareness within student-athletes to break down any self-stigma held.

Moderate help-seeking behaviours were reported by the student-athlete sample and appear to be more favourable than the norm found in students (Wilson et al., 2005; Gorczynski et al., 2017) and elite athletes (Gulliver et al., 2012c). Conflictingly to the study's findings, there is evidence that student-athletes hold negative attitudes toward help-seeking, seeming unwilling to seek assistance for any well-being or mental health matters (Wahto et al., 2016: Ryan et al., 2018). Barriers to help-seeking in student-athletes are believed to stem from stigma (Gulliver et al., 2012a; Bauman, 2016) and fears of appearing weak (Gucciardi et al., 2017; Kola-Palmer et al., 2020). A possible explanation for the level of help-seeking behaviour could be associated with many UK universities increasing mental health awareness and where to access mental health support for their students under the current circumstances of COVID-19. With medium self-stigma and help-seeking intention scores, the hypothesis that student-athletes would have medium self-stigma and negative help-seeking intentions is partially accepted. The levels of help-seeking behaviour scores, however, do not represent actual help-seeking (Gulliver et al., 2012b); further research is required to focus on actual help-seeking behaviours, not only intentions.

Within this current study, for both personal or emotional concerns (GHSQ question 1) and suicidal thoughts (GHSQ question 2), it was indicated that student-athletes would choose to seek help from an intimate partner and parent over mental health professionals and doctors/general practitioners (GPs). This finding is consistent with existing literature where student-athletes and students appear reluctant to access professional help-seeking services (Gorczynski et al., 2017; Ryan et al., 2018). A reluctance to seek help from a professional psychologist and receive a diagnosis is believed to be stigmatised within the sporting environment and viewed as negative (Gulliver et al., 2012a; Bauman, 2016; Wahto et al., 2016). Seeking help from a family member may provide athletes with comfort (Wahto et al., 2016) and while showing any intention to help-seek is positive, seeking help from external

sources, particularly mental health professionals, is advisable. Mental health professionals can potentially offer student-athletes bespoke, targeted and evidenced-based treatment, medications, and programmes (American Psychological Association, 2013). Therefore, it would be beneficial to the university to target increasing intentions to help-seek from external sources and educate family sources with student-athletes showing a willingness to seek help from them. MHL in coaches efficiently targets help-seeking behaviour and self-stigma in both coaches and athletes (Longshore & Sachs, 2015; Breslin & Haughey et al., 2017; Breslin & Shannon et al., 2017).

Well-Being and Psychological Distress Levels regarding Gender, Sports, and COVID-19

Gender

The second research question asked if the well-being and psychological distress levels in student-athletes would be affected by gender, sport, or COVID-19. Female student-athletes were hypothesised to have lower well-being and higher psychological distress than their male counterparts. Within this study, the hypothesis was accurate with lower well-being and higher psychological distress in female student-athletes, matching findings elsewhere in the student-athletes, athlete, and student literature (e.g., Sundgot-Borgen et al., 2004; Schaal et al., 2011; Gorczynski et al., 2017; Ryan et al., 2018; Rice et al., 2020; Håkansson et al., 2020). Compared to male athletes and students, females are often considered more susceptible to distress, decreased well-being (Gorczynski et al., 2017), and more frequently receive a mental ill-health diagnosis (Schaal et al., 2011). Gender differences are associated with environmental influences, including gender social patterns reinforcement, and social culture influence, alongside genetic and physiological factors (Vamvakopoulos, 1995; McLean & Anderson, 2009; Schaal et al., 2011). Thus, as further highlighted by this study, females are an at-risk

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population, emphasising the need for gender-focused intervention to support female student-athletes well-being and mental health. The hypothesis that females have lower well-being and higher psychological distress than their male student-athlete counterparts is accepted.

An unexpected finding from this study was that the female high-performance student-athletes held higher self-stigma levels than their male counterparts (a combined time-point average mean of 26.7 vs. 25.0, respectively). Conflictingly, evidence elsewhere has broadly established that male student-athletes commonly hold greater stigma than their female counterparts (Ryan et al., 2018). It is suggested by Ryan et al. (2018) that male student-athletes, compared to females, are more influenced by the sporting environments which encourage masculinity and mental toughness; the findings within this current study, consequently, contradict the majority of the available evidence.

As with self-stigma, another unforeseen finding was that help-seeking intention scores between the two genders did not differ. The absence of a gender difference in help-seeking behaviours opposes research that has outlined that male student-athletes, athletes, and students hold lower help-seeking intentions and less positive attitudes than their female counterparts (Ryan et al., 2018). A potential explanation for the gender difference identified in this study could be linked to females reporting lower average well-being and high psychological distress scores than their male counterparts. More specifically, Tahtinen and Kristjansdottir (2019) found individual female athletes with clinical mental ill-health levels were less willing than their male counterparts to seek help from a psychologist. Alongside Tahtinen and Kristjansdottir's research, the findings from this study demonstrate the gender difference in athletes and student-athletes help-seeking intentions and stigma may not be as straightforward as previously suggested.

Although previous research has found males to hold greater stigma and lowered help-seeking than their female counterparts, this study indicated that this was not the case within the student-athlete sample. The finding, therefore, offers new insights into gender differences between female and male student-athletes self-stigma and help-seeking behaviours levels. Both male and female student-athlete participants appear to be at-risk for low help-seeking intentions, with females at-risk of higher self-stigma surrounding mental ill-health than males. Combined with females being an at-risk group for well-being and mental health concerns, the unique finding highlights the need for targeted interventions. More specifically, there is a need to increase access to MHL and mental health specialists for at-risk groups to ensure all student-athletes are well supported.

Sports

It was hypothesised that there would be no differences in well-being or psychological distress levels between the university's high-performance sports. No statistical differences were discovered in well-being scores between the sports. While not significant from the other sports, high-performance swimmers were the only team, as a collective, to report low well-being at either time-point (42.3 ± 3.0). Swimmers are renowned for well-being issues due to the lonely nature of the sport and the countless hours required to train at an elite level (Uzzell et al., 2021). This finding may also be because swimming was the only individual sport within the study. In elite sports, individual athletes often report higher anxiety and depression rates than team sports athletes (Weigand et al., 2013; Gulliver et al., 2015; Rice et al., 2016) associated with focusing on their singular pathway to success, participating for goal-oriented reasons rather than fun (Pluhar et al., 2019). It is also suggested that team sports athletes have greater socialisation and social interaction, supporting athletes' well-being and mental health. Nevertheless, with only

one individual sport out of six high-performance sports used, further qualitative research is required to understand whether the difference noted within this study were due to the individual nature of swimming. Moreover, with swimmers pre-COVID-19 renowned for well-being issues (Uzzell et al., 2021), questions are raised as to why no statistical differences were observed between swimming and the other sports. With no baseline data collected, further research is needed into the pandemic effects on different sports well-being, with different potential reasons for the well-being levels recorded.

In terms of psychological distress, an unusual, unexpected finding was a significant difference in scores between Netball (high distress) and Football (moderate distress). The difference could potentially be explained through the gender variation in the two teams. Football solely comprised of male athletes, while Netball consisted only of females. It has been established in elite athlete literature that gender differences in psychological distress are evident (e.g., Sullivan et al., 2019), with male athletes having lower psychological distress than their female athlete counterparts. Although gender differences could partially explain the difference between the two sports, gender differences were not observed between the other sports across the sample. However, it must be noted that the findings could have been affected by the size discrepancies between the sports, with 12 netball players and 35 footballers at time-point 1, reducing to 7 netball players and 20 footballers at time-point 2.

Overall, this study found that the sport played does not significantly affect student-athletes well-being and only causes some significant variations in psychological distress scores. Therefore, the hypothesis stating no differences in well-being or psychological distress levels between the university's high-performance sports is partially accepted. Additional research is needed to identify whether swimming is an at-risk high-performance sport within the university and further understand the difference in psychological distress scores, specifically between Netball and Football.

COVID-19

The hypothesis stated COVID-19 would negatively affect the samples' well-being and, subsequently, mental health across an academic year. By the end of semester 1, COVID-19 restrictions on training lowered self-perceived well-being for 59.9% of the participants. Restrictions to competition decreased 70.2% of student-athlete participants' self-perceived well-being at time-point 1. At the end of semester 2, 39.4% of student-athlete participants highlighted a self-perceived decline in their well-being levels across the academic year. Likewise, on average, objective psychological distress heightened throughout the academic year. As with the current study, emerging research has outlined lowered well-being and heightened psychological distress throughout the initial phases of the COVID-19 pandemic (Gouttebarge et al., 2019; Graupensperger et al., 2020; Reardon et al., 2021). Likewise, adverse effects from COVID-19 have also been observed in athletes (Håkansson et al., 2020), students (Waselewski et al., 2020), and the general population (White & Van Der Boor, 2020; Xiong et al., 2020).

An open-ended qualitative question within this study provided an insight into the reasons for the perceived lowered well-being and the high levels of psychological distress. The participants identified at both time-points that their well-being levels were associated with decreased training and competition, the loss of social interaction within the sport, decreased mental release, no escape through sport from the student life, and lockdowns. These themes add to the existing factors found to have affected student-athlete and athlete well-being during the pandemic, including a loss of identity (Graupensperger et al., 2020; Reardon et al., 2021), helplessness (Hagiwara et al., 2021), and changes to training during and post COVID-19 lockdowns (Izzicupo et al., 2021). The current findings reflect existing COVID-19 student-athlete research, which has indicated that the ongoing pandemic has affected student-athletes' well-being and mental health. With the unique factors identified in this study, there is a need

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to increase the awareness among coaches and for the university to provide tailored support such as long-term GP services to student-athletes.

A small number (14.1%) of participants identified that the COVID-19 restrictions on training and competition positively affected their well-being across the year, mirroring some emerging evidence in some university student-athletes worldwide (e.g., Abenza-Cano et al., 2020; Graupensperger et al., 2020; Hagiwara et al., 2021; Şenışık et al., 2021). Reasons offered in this study included using coping strategies, taking the time away from sports to focus on studies and having the opportunity to have a mental break from their sport. Participants within this current study further outlined that maintaining social connections through technology across the pandemic held the potential to affect their well-being positively. As found in other research (Graupensperger et al., 2020; Şenışık et al., 2021), maintaining communication with teammates supposedly counteracted the effect of COVID-19 athletic identity loss and subsequent well-being in some student-athletes and athletes. Of note, however, most student-athletes have access to technology or means for maintaining social connections, but only several of the student-athletes well-being benefited from it during the pandemic. While essential to understand both positive and negative effects on well-being during the pandemic, those who experienced positive effects on well-being and mental health are in the minority.

This study supports the hypothesis that COVID-19 negatively affected well-being and psychological distress across the 2020/21 academic year. Thus, the hypothesis is accepted. With pre-pandemic levels not measured within this study, it was not possible to establish the extent of the impact of the COVID-19 pandemic on this sample. This study cannot conclude that COVID-19 solely negatively affected well-being and mental health with no baseline measures. Nevertheless, these findings add to the emerging evidence by identifying factors that have led to self-perceived positive and negative effects on well-being and mental health from the COVID-19 restrictions.

Interaction of Well-Being, Psychological Distress, Self-Stigma and Help-Seeking Behaviour

The final research question asked if the levels of stigma and or help-seeking behaviours affected well-being and psychological distress. It was hypothesised that student-athletes with lower stigma and or higher help-seeking intentions would have increased well-being and lower psychological distress. The data demonstrated that individuals within this study were more likely to hold lower well-being if they had higher self-stigma scores and lower help-seeking intentions. Likewise, student-athletes with higher psychological distress likely held higher self-stigma scores and lower help-seeking intentions. Existing research by Gorczynski et al. (2017), as with the current study, found a clear trend in their UK student sample that help-seeking behaviours improve students' well-being and psychological distress. It has been established elsewhere in the general literature that both stigma and help-seeking are moderators of well-being and mental health (Aguirre Velasco et al., 2020). The student-athletes demonstrated that those with lower well-being and higher psychological distress had less favourable attitudes towards help-seeking.

Within this study, as a sample, individuals with higher self-stigma scores had lower help-seeking behaviours and intentions ($-.43 < r < -.29$, $p < .05$). Hence, the finding supports the proposal that self-stigma can create a barrier to help-seeking within the student-athlete population (Cheng et al., 2018; Kola-palmer et al., 2020). Evidence outlines an inability for some student-athletes to exhibit any weakness due to stigma, thereby prompting an unwillingness to seek help for well-being and mental health concerns (Gulliver et al., 2012a; Bauman, 2016). The relationship shows there is a need for self-stigma and help-seeking interventions to improve well-being and psychological distress. MHL training has been found

in student-athletes to increase mental health knowledge and enhance referral information (Van Raalte et al., 2015; Breslin et al., 2018). The State of Mind Ireland (SOMI) Pilot Program on a student-athlete sample promoted mental health awareness (Breslin et al., 2018). The finding, therefore, suggests the student-athlete samples' self-stigma creates a barrier for help-seeking, with both, in turn, being moderators of well-being and psychological distress.

The Multiple Linear Regression Models

Multiple regression models on the data showed time-point, gender, sports, self-stigma, personal or emotional concerns and suicidal thoughts help-seeking significantly predicted well-being and psychological distress. This study, unlike previous research, investigated the relationship between eight variables in predicting the student-athletes samples' well-being and psychological distress scores. Nevertheless, aspects of the model reflect findings established elsewhere in well-being and mental health research, such as the gender differences in well-being and psychological distress levels (e.g., Schaal et al., 2011; Ryan et al., 2018; Sullivan et al., 2019; Håkansson et al., 2020). Likewise, the relationship between stigma, help-seeking with well-being and psychological distress has been previously acknowledged (e.g., Gorczynski et al., 2017).

The results of the well-being multiple regressions showed that while all the variables together added significance to the model, only self-stigma, seeking help from external sources (e.g., Doctors/GP and mental health professionals) significantly and uniquely explained the model. After controlling for the other models' variables, self-stigma scores had a significant negative regression weight to the model, indicating that student-athletes with higher self-stigma would have lower well-being. Likewise, external help-seeking sources for personal or emotional concerns scores had significant negative regression, suggesting those with higher

self-stigma would have lower well-being. In contrast, external help-seeking sources for suicidal thoughts scores had significant positive regression weight to the model. This indicated that student-athletes with higher external help-seeking sources for suicidal thoughts would have higher well-being after controlling for the other models' variables.

The findings that self-stigma and intentions to seek help from an external individual for suicidal thoughts added significance to the well-being model align with evidence that self-stigma and helps-seeking are moderators of well-being (Gorczynski et al., 2017; Aguirre Velasco et al., 2020). Thus, tailored structured programs (e.g., MHL) to this specific population are needed and proven to address the areas identified within the model that needs particular attention to improve well-being in the sample (Breslin et al., 2018; Chow et al., 2020). Chow et al. (2020) found a tailored MHL program to improve attitudes towards professional help and decrease stigma levels considerably. While the university offers a range of mental health support, they need to develop and deliver sport-specific interventions for student-athletes to improve help-seeking and break down the stigma surrounding it to improve well-being.

Regarding the psychological distress model, time-point, sport, self-stigma, and suicidal thoughts help-seeking did not significantly contribute to the model. In contrast, gender and personal or emotional concerns help-seeking (both family and external sources) significantly contributed to psychological distress. After controlling for the other models' variables, gender (coded 1 for female and 2 for male) held a significant negative regression weight, thus changing from female to male lowered psychological distress. Intention to help-seek from a family source for a personal or emotional concern had significant negative regression weight indicating that student-athletes with higher intentions to help-seek would hold lower psychological distress. Help-seeking from an external source for a personal or emotional concern had significant positive regression, suggesting that student-athletes with high intentions held higher psychological distress.

Genders' influence on distress scores and help-seek from a family source for a personal or emotional concern can be supported by existing research. Evidence elsewhere shows females to have higher psychological distress than their male counterparts (Sullivan et al., 2019). Consequently, the model further highlighted that gender-focused interventions for female student-athletes are needed to improve their psychological distress. As with gender, the finding that help-seeking from a family source for a personal or emotional concern negatively affected psychological distress mirrors existing research. Such research includes Gorczynski et al. (2017), where the study identified a similar relationship between help-seeking and psychological distress in students. Family sources of help-seeking can prove critical with student-athletes appearing willing to seek professional help when referred by a family member or a coach (Wahto et al., 2016).

An unexpected finding in both models was the relationship of help-seeking intentions for personal or emotional concern from an external source (e.g., Mental health professionals, Phone helpline, and Doctor/GP). This finding implies that those exhibiting lowered well-being and higher psychological distress would demonstrate higher help-seeking intention for personal or emotional concern from an external source, but it was identified in the model that they would not seek help from family sources. This finding conflicts with the suggestion that most student-athletes and students hold negative attitudes toward seeking help from professionals, reluctant to seek help with barriers including beliefs it won't help and previous negative experiences (Gorczynski et al., 2017; Ryan et al., 2018). The reliability of this finding requires further investigation due to external sources for a personal or emotional concern reporting a questionable Cronbach alpha (Cortina, 1993).

The hypothesis that student-athletes with lower stigma and or higher help-seeking intentions would have increased well-being and lower psychological distress is accepted. Both models highlight the importance of tackling each element to aid well-being and psychological

distress in the student-athlete participants. The models demonstrate that all the factors (time-point, gender, sports, self-stigma, personal or emotional problem help-seeing, and suicidal ideations help-seeking) must be considered to implement target interventions, with a specific need to aid at-risk groups of genders and sports. Further investigations using similar populations, frameworks and models are needed to confirm or conflict with the findings of this study to investigate the norms within the student-athlete population regarding well-being, psychological distress, stigma, and help-seeking.

Chapter 6: Conclusion

Summary

The thesis aimed to identify the levels of well-being and mental health through psychological distress, in a sample of United Kingdom (UK) student-athletes during a coronavirus (COVID-19) affected year. More specifically, through a primary quantitative methodology, the purpose of the study was to ascertain well-being and psychological distress levels in the sample, alongside factors that affect well-being and psychological distress, particularly gender, sport, and COVID-19. The study also used regression to understand if the levels of stigma and or help-seeking behaviour affected well-being and psychological distress in student-athletes. An online questionnaire was completed at two-time-points across an academic year with questions that included background information, COVID-19's impact of self-perceived well-being, WEMWBS and K10 questionnaire. The survey was distributed at each time-point to the student-athletes via emails to the Performance Directors'. The results from the data collection showed, on average, the student-athletes sample held medium well-being, self-stigma, and help-seeking with medium to high psychological distress. All levels reported were in line with the existing athlete, student, and student-athlete literature. Self-perceived well-being lowered across the academic year due to the COVID-19 pandemic. The female student-athletes had lower well-being and higher psychological distress compared to their male counterparts, although no gender differences were observed in help-seeking behaviours. Multiple regression models showed gender, time-point, self-stigma, sport, and help-seeking intentions significantly contributed to the well-being and psychological distress levels.

Overall, across the academic year of 2020/21, the well-being and psychological distress of the student-athlete sample lowered, affected by several factors including gender, self-stigma,

help-seeking and the COVID-19 pandemic with changes to their dual-lifestyles. Further research is needed to understand UK university student-athletes well-being and mental health levels, the effects of the ongoing COVID-19 pandemic, and help-seeking behaviours. The study highlights the need to support student-athletes well-being and psychological distress, with strategies required to increase help-seeking and break down the stigma surrounding mental ill-health.

Practical Implications

The findings from this study can be integrated immediately into the efforts the university is currently undertaking to support the student-athlete samples' well-being and mental health. Universities are responsible for their student's welfare and should play an active role in promoting and aiding their students' well-being and mental health, with risks of reputation damage if they choose not to. Moreover, coaches and support staff, keen for athletes to achieve high performance, need to improve and optimise both physical and psychological performance. The findings, therefore, emphasise a need for universities and sporting staff, particularly the coach, to take their student-athletes' well-being and mental health more seriously and increase their support. There is a need to target specific at-risk populations (i.e., females), self-stigma and help-seeking behaviours. Moreover, the low percentage of minority groups within the demographics emphasises that universities need to review the safety and participation within a high-performance sporting environment.

The university should develop and deliver targeted, structured, and tailored specific programs for the student-athletes and their surrounding support staff. An implication based on the results would be the introduction of mental health literacy (MHL) programs, which would break down the stigma and increase mental health knowledge and awareness. Importantly MHL

would aid in normalising help-seeking within the sporting environment. Evidence of implications of MHL programs have been proven to be effective in targeting self-stigma and help-seeking behaviours in both student-athletes (Van Raalte et al., 2015; Breslin et al., 2018), and athletes (Gulliver et al., 2012b; Breslin & Haughey et al., 2017; Breslin & Shannon et al., 2017; Bu et al., 2020). Of note, however, improving MHL does not necessarily translate into actual help-seeking (Gulliver et al., 2012b).

The results from the study highlight a need for closer attention to at-risk populations to provide programs for the athletes themselves and the support staff around them to aid their well-being and mental health. Specifically, there is a need to focus on the at-risk groups, which this study identified as female student-athletes, swimmers, and netball players. Tailored targeted interventions have been proven effective in improving student-athletes' help-seeking intentions and mental health knowledge. Interventions demonstrated as effective, have been run in the style of scheduled classes with mental health content and skill enhancement (e.g., the SOMI program; Breslin et al., 2018) or web-based MHL, with exercises and interactive activities (Van Raalte et al., 2015). Additionally, with many student-athletes demonstrating a desire to seek help from family and close sources, there is a need to use interventions that support parent and staff in the sporting environment. MHL programs have been shown to be effective in improving coach's mental health knowledge (Longshore & Sachs, 2015; Breslin & Haughey et al., 2017; Breslin & Shannon et al., 2017). Target programs for coaches and the support staff would better place them to identify warning signs of mental ill-health and aid student-athletes' willingness to seek help.

Alongside MHL interventions, upskilling coping strategies in the student-athlete population would benefit their well-being and psychological distress. As highlighted through the COVID-19 qualitative results with some student-athletes benefiting using coping strategies, another implication to take from the current study's findings is the education on and

implementation of coping strategies. Coping strategies are an important modifiable factor for improving mental health outcomes and would help student-athletes deal with the dual demands encountered. Through talks and lectures, upskilling areas such as goal setting, proactive communication, and enhancing self-efficacy could reduce an individual's stressors and stress levels by better managing the demands faced across their academic and sporting demands (Brown et al., 2015; Cosh & Tully, 2015). Cosh and Tully (2015) also outline support from coaches and parents to be of utmost importance in coping, thus emphasising the opportunity that coaches and family have to play a role in successfully integrating the dual lifestyle.

Strengths

A number of strengths of this research should be mentioned. The first strength of this study is that it is the first to investigate levels of well-being, psychological distress, self-stigma, and help-seeking within UK student-athletes and during a COVID-19 affected academic year. The study met its aim to ascertain well-being and psychological distress levels, alongside establishing the factors, including help-seeking and COVID-19, affecting well-being and psychological distress. As such, the study offers a unique insight and extends the available literature, which can provide implications for UK-based high-performance student-athlete populations. Although the findings should not be generalised for all UK university student-athletes, the results from this study may offer a baseline for future research (e.g., cross-sectional or intervention).

Another strength of this study is that it overcame and adapted obstacles, including lockdowns and social distancing measures that the COVID-19 pandemic caused while still obtaining a substantial data set. The study collected data from a range of high-performance sports across an academic year (two-time-points) which provided a longitudinal understanding

of an informational rich sample. Additionally, a strength of the study was the chosen data collection (online survey) and methodology (e.g., making connections with the Performance Directors). During the uncertain times caused by the COVID-19 pandemic, the chosen data collection could still occur no matter the restrictions.

Finally, another strength is the Warwick-Edinburgh Mental Well-being Scale (WEMWBS), Kessler Psychological Distress Scale 10 (K10), and Self-Stigma of Seeking Psychology Help (SSOSH) scale indicated good or excellent internal consistency within this current study. Holding good or excellent internal consistency means items within each test are highly correlated, with each item measuring the same concept (i.e., well-being or psychological distress; Tavakol & Dennick, 2011). The GHSQ had previously been shown to have a good test-retest reliability and proved to be significantly correlated with seeking counselling access ($p < .05$; Wilson et al., 2005).

Limitations

Not undermining the strengths of the current study, the study had a few limitations. Firstly, it was noted that self-perception of well-being lowered across the academic year, average well-being scores from WEMWBS did not statistically differ. While WEMWBS contains high internal consistency and reliability, the scale has previously been criticised for not thoroughly assessing the ability to detect changes in mental well-being at individual, and population levels post significant life events (Tennant et al., 2007). It, nonetheless, remained within the study to provide objective levels of well-being. Moreover, there is concern over classifying measures (i.e., moderate psychological distress). The score classifications (i.e., low, medium, high) are set and standardised values (i.e., Andrews & Slade, 2001; Stranges et al., 2014), allowing for comparison of athlete, student, and student-athletes scores across the

literature. The classification, however, is open to limitation by forcing an individual into a category, which is a particular concern when a score is on the edge (i.e., very low 'medium' well-being). The classifications could result in missing at-risk individuals; though, to counter this limitation, the average score alongside categories were provided.

A decision made within this study was that the assumptions for both the independent t-test and ANOVAs were largely disregarded. The assumptions were ignored due to the robustness of both the t-test and one-way ANOVA (Kim, 2013; Blanca Mena et al., 2017). However, with only a maximum of 12 netball players available and varying sample sizes, to increase the robustness of the One-way ANVOA for the sports analysis, time-point scores were combined to assess the levels as a whole sample. Furthermore, significant differences in ANOVAs were observed during the sports analysis, but no differences were witnessed between variable groups in a Tukey's HSD *post-hoc.* Interactions may have occurred between the variables but were likely underpowered to detect where; thus, further research is needed to examine the differences to understand where the difference may have occurred to implement interventions for at-risk populations.

Using questionnaires for data collection contains several limitations, including rating scales, skipped questions, survey fatigue, and dishonest answers, with survey questions open to personal interpretation and can be subjective. With such trust in the participant to be honest many issues were accounted for when designing the questionnaire, including ensuring the survey was not overly long to maintain interest. Additionally, in the settings, all questions needed answering to move on. It must be noted that no participant identification (ID) was collected to compare participants' data across the time-point due to the studies' aim to look at the entire population rather than on an individual level. A critical flaw of using questionnaires is self-reported data. Self-reported data collections have been previously criticised, with threats to reliability and validity, alongside response biases (Althubaiti, 2016). Criticism particularly

occurs due to responses dependent on the subjective feeling of what each individual perceived to constitute the component being measured (Field, 2018). Even though there are limitations, self-reported measures possess numerous strengths, including the versatility and generalisability of questionnaires. Any limitation that self-reported data could have caused were attempted to be overcome by using valid and reliable questionnaires, testing the Cronbach alphas priory to analysis.

Moreover, the majority (96.8% and 89.5%, respectively) of the high-performance student-athletes identified as heterosexual and white. The homogeneous nature of the sample meant there was no ability to perform statistical analysis on either sexual orientation, racial and ethnic group. The inability to perform statistical analysis raises concern over the cultural diversity in high-performance sport at the university in question and whether the high-performance sport is a safe space for minority groups. Other demographic information could have been collected for analysis including year of study, age, location, and disability (Hughes et al., 2016). More demographic information would be needed to investigate further demographic differences in well-being and psychological distress among student-athletes, and other at-risk groups.

Finally, COVID-19's ongoing nature means research on the impact of COVID-19 on various populations' well-being and mental health is constantly emerging. Where possible, with COVID-19 research continuously being released, it was attempted to ensure all aspects of the study used the most current literature (December 2021). Furthermore, the data collection posed many challenges due to COVID-19's restrictions, with the recruitment and data collection process having to take place entirely online. The online data collection could have meant participants took multiple days to complete the survey, at which time they may have accessed sources of poor mental health information. Therefore, the data collection method may have somewhat affected the robustness of the research process. However, under the circumstances

of COVID-19, it was the most appropriate methodology, and the results favourably align with the research in this field.

Further Direction

Being the first study to measure well-being and mental health, alongside help-seeking and self-stigma in a sample of UK student-athletes, further research is needed to investigate if the levels found are the norm within this population. Likewise, with the short-term nature of this current study spanning one academic year, future research should consider the long-term effects on well-being and psychological distress levels over the course of the three to four years at university. Furthermore, although the chosen questions were found reliable and valid, there is a need to complete the findings in conjunction with qualitative research methods. A mixed or qualitative methodology would enable an explanation of the current study's findings, with further understanding of the well-being and psychological distress levels.

Help-seeking behaviours and stigma levels were found to affect the well-being and psychological distress within the sample of student-athletes. Thus, there is a need to reduce mental ill-health stigma to improve well-being and psychological distress. With limited existing literature, exploring further effective ways to enhance student-athletes' help-seeking behaviours and lower their self-stigma is necessary. Likewise, understanding the levels would allow for nationwide implementation of interventions, MHL, and mental health awareness programmes within the student-athlete population. The COVID-19 pandemic is ongoing with research ever-emerging and while the global pandemic restriction ease, a longitudinal study would enable further assessment and monitoring of well-being and psychological levels, measuring any changes. Post-pandemic or longitudinal research is made even more crucial with

studies into past natural disasters and pandemics having identified long-term mental ill-health symptoms post-event (Wu et al., 2009; Maunder, 2009).

Conclusion

While research on COVID-19 is ever emerging, this study provides a unique investigation into the levels of well-being, psychological distress, self-stigma, help-seeking within a group of UK university high-performance student-athletes across a 2020/21 COVID-19 academic year. The student-athlete participants reported medium well-being, self-stigma, and help-seeking behaviours, with medium to high psychological distress across an academic year. Self-stigma level and help-seeking behaviour were found to moderate well-being and psychological distress levels. The findings indicated COVID-19 affected the student-athlete population with changes to their dual lifestyles with the loss of training and competition particularly impacted student-athletes self-perceived well-being and psychological distress. As there are a limited number of studies to examine the well-being and mental health of student-athletes within the UK, this study has attempted to fill that gap and provide meaningful insights which can be used to support those UK-based performance student-athletes.

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Appendix A

Participant Consent

A.1 Participant Consent Form

PARTICIPANT CONSENT FORM

(Version 1.1: 14/10/2020)

Project Title: The level of wellbeing and mental health symptoms among student-athletes across a COVID-19 affected academic year

Contact Details

Project Lead Contacts: Jo Chrismas: ███████████████

Dr Denise M Hill: ██████████████████

Student Union Contact: Georgia Smith (Sports Officer): ████████████████ ██████████

Please initial the box

1) I confirm that I have read and understood the information sheet dated 06/10/20 (version number ……………) for the above study and have had the opportunity to ask questions.	
2) I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.	
3) I understand that sections of any of data obtained may be looked at by responsible individuals from the Swansea University or from regulatory authorities where it is relevant to my taking part in research. I give permission for these individuals to have access to these records.	
4) I understand that data I provide may be used in reports and academic publications in anonymous fashion	
5) I agree to take part in the above study.	

....
Name of Participant   Date   Signature

....
Researcher   Date   Signature

A.2 Information Sheet

PARTICIPANT INFORMATION SHEET
(DH_JC_21-10-20)

Project Title: The level of wellbeing and mental health among student-athletes during a COVID-19 affected academic year.

Project Contacts:

Project Lead: Miss Joanne Chrismas

Postgraduate Research Student, School of Sport and Exercise Science, Swansea University (Email: ███████████████████)

Project Co-Lead: Dr Denise Hill

Senior Lecturer of Sport and Exercise Psychology, School of Sport and Exercise

Science, Swansea University (Email: ███████████████████)

_____

Introduction to the project:

You have been invited to take part in this project that will identify the levels of wellbeing and mental health among high-performance student-athletes at Swansea University - during a COVID-19 affected academic year.

What is the purpose of the project?

To examine the levels of wellbeing and mental health among Swansea University highperformance student-athletes, and to consider specifically, the impact of the COVID19 restrictions

The overall intention is to use these findings (alongside those gained from a parallel project) to devise recommendations that can be adopted to maintain / enhance the wellbeing and mental health of student-athletes at the University.

Why have I been asked to take part in the project?

Because you are a high-performance student-athlete at Swansea University.

What will happen to me if I take part?

You will be asked to complete an online survey twice during the academic year. The first data collection point will be prior to the end of 2020, while the second, will be during April 2021. The survey will measure levels of wellbeing and mental health, and identify the perceived impact of COVID-19 restrictions. The survey will take approximately 15 minutes to complete each time.

Will my taking part in the project be kept confidential?

Yes. The survey will be completed online and you will not be asked for any personal details. Therefore, it will not be known to anyone whether you have / haven't taken part in the project. Your anonymised data will be stored on a password protected computer, and will be destroyed once the project is completed.

What are the possible benefits of taking part?

From participating in this project, we will be able to recommend an evidence-based intervention which can enhance the wellbeing and mental health of student-athletes at Swansea University.

What are the possible disadvantages of taking part?

There are no anticipated disadvantages or risks from taking part in this study. However, there is a small possibility of psychological distress when reflecting on your wellbeing and mental health. If this occurs, you may wish to speak to someone in confidence (please see below for contact details):

- The Samaritans - 08457 90 90 90 www.samaritans.org
- Mind - 0300 123 3393 www.mind.org.uk/help/advice_lines
- The research lead (see details above)

Please also note that taking part in this study in entirely voluntary, so you do not have to complete the survey if you choose not to.

What if I have any questions?
If there are any questions, please contact the research leads (details provided above).

_____

This project has been approved by the College of Engineering Research Ethics Committee at Swansea University. If you have any questions regarding this, any complaint, or concerns about the ethics of this research please contact Dr Shane Heffernan, Chair of the College of Engineering Research Ethics Committee, Swansea University (coe-researchethics@swansea.ac.uk).

Survey Questions

B.1 Demographic Questions including COVID-19 questions at Time-point 1

What is your age:

………………………………………..

Which Sports Club/Sport are you a member of?

………………………………………..

What is your gender:
- Female
- Male
- Prefer not to Say

What ethnic group to you identify with:
- White
- Asian / Asian British
- Black / African / Caribbean / Black British
- Mixed / Multiple ethnic groups
- Other ethnic group
- Prefer not to say

In terms of your sexual orientation. Do you identify as:
- Heterosexual/straight
- Gay/lesbian
- Bisexual
- Other
- Prefer not to say
- Other

Are you currently injured:
- Yes
- No

COVID-19 question:

Choose the most appropriate statement to you and your sport:

1a) To what extent has your training been affected by COVID-19 restrictions?

Not affected at all / not affected much / affected a little / affected a lot / we are not able to train at all due to restriction

1b)To what extent has your ability / inability to train as normal affected your wellbeing?

It has improved my wellbeing / not affected my wellbeing at all / it has lowered my wellbeing

2a) To what extent has your competition schedule been affected by COVID-19 restrictions?

Not affected at all / not affected much / affected a little / affected a lot / we are not able to compete at all due to restriction

2b)To what extent has your ability / inability to compete as normal affected your wellbeing?

It has improved my wellbeing / not affected my wellbeing at all / it has lowered my wellbeing

3) Please indicate briefly below why COVID-19 restrictions have / have not affected your wellbeing?

B.2 Demographic Questions including COVID-19 questions at Time-point 2

Did you complete the initial version of this survey in November/December 2020?

- Yes
- No

Which Sports Club/Sport are you a member of?

…………………………………..

What is your gender:

- Female
- Male
- Prefer not to Say

What ethnic group to you identify with:

- White
- Asian / Asian British
- Black / African / Caribbean / Black British
- Mixed / Multiple ethnic groups
- Other ethnic group
- Prefer not to say

In terms of your sexual orientation. Do you identify as:

- Heterosexual/straight
- Gay/lesbian
- Bisexual
- Other
- Prefer not to say
- Other

COVID-19 question:

Choose the most appropriate statement to you and your sport:

1a. As the pandemic and academic year has progressed, how has your access to training for your sport been affected?

I still have no access to training/ Access to training has lowered as the academic year has progressed/ Access to training has increased as the academic year has progressed/ I still have full access to training

1b. As the pandemic and academic year has progressed, how has your access to competition in your sport been affected?

I still have no access to Competition/ Access to Competition has lowered as the academic year has progressed/ Access to Competition has increased as the academic year has progressed/ I still have full access to Competition

2a. As the pandemic and academic year has progressed, to what extent do you think your well-being has been affected?

My well-being has remained consistently low throughout the academic year/ My well-being has lowered as the academic year has progressed/ My wellbeing has remained moderate ('middling') throughout the academic year/ My wellbeing had increased has the academic year has progressed/ My wellbeing has remained high throughout the academic year

2b. Can you explain why your well-being has been affected in this way?

B.3 The Warwick-Edinburgh Mental Well-Being Scale

The Warwick-Edinburgh Mental Well-Being Scale (Tennant et al., 2007)

(WEMWBS)

Below are some statements about feelings and thoughts.

Please tick the box that best describes your experience of each over the last 2 weeks

Statements	None of the time	Rarely	Some of the time	Often	All the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

B.4 Kessler Psychological Distress Scale (K10)

Kessler Psychological Distress Scale (Kessler *et al.,* 2002)

These questions concern how you have been feeling over the past 30 days. Tick a

box below each question that best represents how you have been

1.During the last 30 days, about how often did you feel tired out for no good reason?				
None of the time	A little of the time	Some of the time	Most of the time	All of the time
2.During the last 30 days, about how often did you feel nervous?				
None of the time	A little of the time	Some of the time	Most of the time	All of the time
3.During the last 30 days, about how often did you feel so nervous that nothing could calm you down?				
None of the time	A little of the time	Some of the time	Most of the time	All of the time
4.During the last 30 days, about how often did you feel hopeless?				
None of the time	A little of the time	Some of the time	Most of the time	All of the time
5.During the last 30 days, about how often did you feel restless or fidgety?				
None of the time	A little of the time	Some of the time	Most of the time	All of the time
6.During the last 30 days, about how often did you feel so restless you could not sit still?				
None of the time	A little of the time	Some of the time	Most of the time	All of the time
7.During the last 30 days, about how often did you feel depressed?				
None of the time	A little of the time	Some of the time	Most of the time	All of the time
8.During the last 30 days, about how often did you feel that everything was an effort?				
None of the time	A little of the time	Some of the time	Most of the time	All of the time
9.During the last 30 days, about how often did you feel so sad that nothing could cheer you up?				
None of the time	A little of the time	Some of the time	Most of the time	All of the time
10.During the last 30 days, about how often did you feel worthless?				
None of the time	A little of the time	Some of the time	Most of the time	All of the time

B.5 Self-Stigma of Seeking Help (SSOSH)

<u>Self-Stigma of Seeking Help (SSOSH) scale (Vogel et al., 2006)</u>

People at times find that they face problems that they consider seeking help for. This can bring up reactions about what seeking help would mean. Please use the 5-point scale to rate the degree to which each item describes how you might react in this situation

1 = Strongly Disagree   2 = Disagree   3 = Agree & Disagree Equally   4 = Agree   5 = Strongly Agree

1. I would feel inadequate if I went to a therapist for psychological help.

2. My self-confidence would NOT be threatened if I sought professional help.

3. Seeking psychological help would make me feel less intelligent.

4. My self-esteem would increase if I talked to a therapist.

5. My view of myself would not change just because I made the choice to see a therapist.

6. It would make me feel inferior to ask a therapist for help.

7. I would feel okay about myself if I made the choice to seek professional help.

8. If I went to a therapist, I would be less satisfied with myself.

9. My self-confidence would remain the same if I sought professional help for a problem I could not solve.

10. I would feel worse about myself if I could not solve my own problems.

Items 2, 4, 5, 7, and 9 are reverse scored

B.6 General Help-Seeking Questionnaire (GHSQ)

General Help-Seeking Questionnaire (Wilson et al., 2007).

1.If you were having a personal or emotional problem, how likely is that you would seek help from the following people?

Please indicate your response selecting the number that best describes your intention to seek help from each help source that is listed.

1= Extremely Unlikely   3= Unlikely   5= Likely   7= Extremely Likely

Intimate partner (e.g. girlfriend, boyfriend, husband, wife)	1	2	3	4	5	6	7
Friend (not related to you)	1	2	3	4	5	6	7
Parent	1	2	3	4	5	6	7
Other relative/ family member	1	2	3	4	5	6	7
Mental health professional (e.g., psychologist, social worker, counsellor)	1	2	3	4	5	6	7
Phone helpline (e.g. lifeline)	1	2	3	4	5	6	7
Doctor/GP	1	2	3	4	5	6	7
Minister or religious leader (e.g. Priest, Rabbi, Chaplain)	1	2	3	4	5	6	7
I would not seek help from anyone	1	2	3	4	5	6	7
I would seek help from another not listed above (please list in the space provided, e.g. work colleague) If no, leave blank ---	1	2	3	4	5	6	7

2. If you were experiencing suicidal thoughts, how likely is it that you would seek help from the following people?

Please indicate your response by putting a line through the number that best describes your intention to seek help from each help source that is listed.

1= Extremely Unlikely   3= Unlikely   5= Likely   7= Extremely Likely

Intimate partner (e.g. girlfriend, boyfriend, husband, wife)	1	2	3	4	5	6	7
Friend (not related to you)	1	2	3	4	5	6	7
Parent	1	2	3	4	5	6	7
Other relative/ family member	1	2	3	4	5	6	7
Mental health professional (e.g., psychologist, social worker, counsellor)	1	2	3	4	5	6	7

Phone helpline (e.g. lifeline)	1	2	3	4	5	6	7
Doctor/GP	1	2	3	4	5	6	7
Minister or religious leader (e.g. Priest, Rabbi, Chaplain)	1	2	3	4	5	6	7
I would not seek help from anyone	1	2	3	4	5	6	7
I would seek help from another not listed above (please list in the space provided, e.g. work colleague) If no, leave blank ---	1	2	3	4	5	6	7

Demographic Information Table

Table C.1

Demographic Information in Full

	TP 1		TP 2	
	n	*%*	*n*	*%*
Total Number	171		107	
Female	49	28.7%	26	24.3%
Male	122	71.3%	81	75.7%
Sports				
American Football	42	24.6%	35	32.7%
Football	35	20.5%	20	18.7%
Hockey	31	18.2%	17	15.9%
Female	18		9	
Male	13		8	
Netball	12	7.0%	7	6.5%
Rugby Union	30	17.5%	15	14.1%
Female	10		5	
Male	20		10	
Swimming	21	12.3%	13	12.1%
Female	9		5	
Male	12		8	
Sexuality				
Bisexual	3	1.8%	3	2.8%
Other	1	0.6%	1	0.9%
Prefer not to say	2	1.1%	0	0%
Heterosexual/Straight	165	96%	103	96.3%
Ethnicity				
Asian or Asian British	7	4.1%	4	3.7%
Black, African, or Caribbean or Black British	6	3.5%	5	4.7%
White	152	88.9%	96	89.7%

Mixed or Multiple Ethnic Group	3	1.8%	1	0.9%
Other	3	1.8%	1	0.9%

Appendix D

Cronbach's alpha

Table D.1

Cronbach's alpha for each questionnaire

	Time-point 1	Time-point 2
WEMWBS	.894	.882
K10	.874	.896
SSOSH	.857	.865
GHSQ1	.397	.511
Family	.747	.713
External	.647	.682
GHSQ2	.736	.706
Family	.769	.788
External	.751	.767

Appendix E

COVID-19 Questions

E.1 Time-point 1 COVID-19 Closed-Ended Question 1a and 2a Response Numbers

Table E.1

Time-point 1 COVID-19 Closed-Ended Question 1a and 2a Response Numbers

	To what extent has your training been affected by COVID-19 restrictions? N =162		To what extent has your competition schedule been affected by COVID-19 restrictions? N =162	
	Number	Percentage (%)	Number	Percentage (%)
Not being affected at all	1	0.617	1	0.617
Not affected much	0	0	1	0.617
Affected a little	48	29.630	2	1.235
Affected a lot	107	66.049	70	43.210
We are not able to train/compete at all due to restriction	7	4.321	89	54.938

E.2 Time-point 1 COVID-19 Closed-Ended Question 1b and 2b Response Numbers

Table E.2

Time-point 1 COVID-19 Closed-Ended Question 1b and 2b Response Numbers

	To what extent has your ability/inability to train as normal affected your well-being? *N = 162*		To what extent has your ability/inability to compete as normal affected your well-being? *N = 161*	
	Number	Percentage (%)	Number	Percentage (%)
It has improved my wellbeing	17	10.494	4	2.484
Not affected my wellbeing at all	48	29.630	44	27.329
It has lowered my well-being	97	59.877	113	70.186

E.3 Time-point 1 COVID-19 Open-Ended Question Responses

Please indicate briefly below why COVID-19 restrictions have / have not affected your wellbeing

competitive games play a big part in keeping me well. Not having these games is detrimental for sure

I have enjoyed a break from the pool and am actually now enjoying it more being back and not taking it for granted

Not being able to do what I have routinely done for years has had an affect on my wellbeing

The ability to use football as a "release" from uni work and a job (just everyday life really) has been eradicated due to there being no games and limited training numbers because of Covid.

Na

I haven't been able to train so my mental health has lowered as well as my physical well-being and such put on weight and lost muscle

Because I am still able to train

Hasn't really affected my well being just miss hitting people on the field

The COVID restrictions have still allowed me to play sport which has a massive impact on my well-being. It was good it made possible under the current circumstances

Not been able to do activities I want

N/A

Just got to take what you got and find the positives in everything

The inability to compete or train at something that takes so much time and effort to prepare for just gets you down constantly

Not being able to train has affected my mental well-being. It's a period of time I get to do something I like, engaging in high performance activities. It makes me feel good about myself but now that I'm usually stuck in my room it's a little harder

Sport is a huge part of maintaining my mental health so being limited was hard at points

Unable to meet friends/teammates Unable to keep fit

competitive

Certain aspects of the sport have been taken out due to Covid 19 restrictions which has lowered the interest a little. Although I'm glad there is still some aspects we can do in training

N/a

It hasn't because the training environment is very encouraging and keeps us going and it's helping keep spirits up .

The inability to train means that I can't go to the gym as often which I was going to calm down

There's no competitive side to sport and no contact at training

Obviously we can't do anything about it, but the lack of gameplay will affect a lot of us

Hasn't affected well-being but not being able to compete this year, especially as it is my last is very disappointing

Because I'm still able to work out in the gym

Difficult to find things to do to get me out and do stuff that will help my mental health

The inability to train properly has affected my mental health negatively as it is the one thing that gets me out my house and not being able to properly be with the team and socialise makes it feel less useful getting out

Although restrictions have made it so that I can't see my friends as often as I'd like, with today's technology we can still communicate online with eachother

Can't get to know my team that much better because of coronavirus

Find training and games a good way to release built up pressures of life and no competition due to covid is frustrating as no release from that.   However I would say it has allowed me to focus more time on assignments which has been useful.

Due to not getting the in a physical & social environment it's been tough. Found myself running a lot on my own where I often found myself asking why am I doing this, what's the point. But things are getting better for us being allowed to train in bigger groups which is definitely lifting spirits

Football is pretty much my only consistent hobby, my main way of staying physically healthy and also socialising and enjoying time with friends. Therefore all aspects of my wellbeing have been affected a bit from not being able to play as much as I am used to.

Lack of competition hinder my development as a player

It has removed a big part of my everyday life and adapting has been somewhat difficult

Inability to be with my peers

Not able to do the thing I love.

The lack of sport and competition has left me bored and often finding myself struggling to sleep and a lack of motivation means I have become less productive.

Playing matches at a competitive level gives you a drive and gives you things to look forward to

The changes within the system have applied more pressure to players

At least for me football practice was one of the few times that all my problems were gone and without that I've been feeling a bit down

Restricting time physically exercising which is proven to enhance mental health through release of endorphins. Also, minimising social time that training and competition brings with teammates who are often close friends. Finally, the Covid restrictions have in a way taken away a sense of purpose, as performing sport at a high level requires dedication and then all of a sudden to have that taken away leaves an athlete with a challenge of filling time when unable to train.

They haven't affected my wellbeing as I'm still doing sports to stay in shape

We are still able to train, exercise and socialise therefore my mental and physical health are both good.

Not knowing when the season is going to restart and dates continually being pushed back has lead to a lot of frustration. As it's very difficult to maintain fitness/prepare for a season when you've got no official start date. Also, initially being confined to my house can get very boring as there are only a limited amount of challenges to address

Less opportunity to see friends and interact with others, less distraction from stressful uni work

Training has allowed me to get out an exercise which I feel is needed in these times. However, the lack of matches has meant I experienced less anxious emotions due to pre match nerves etc

I consider sport as an essential thing in my life so because of COVID we were un allowed to practice for several weeks/months and I felt physically and mentally weak.

Takes away my normal life

Less time spent with mates Less time playing the sport I love Less sense of accomplishment as no competition

Sport is a huge part of my social life, whether it's participating or spectating a large majority it based around sport. With no sport being played for a while in the first lockdown I found it a massive change

As I've still had interaction with my team through training sessions. We've been able to keep fit and still work hard.

Not affected my wellbeing as I train a lot outside football anyway

It has affect my wellbeing because Life isn't the same thing, football isn't the same

Harder to train which has made me less fit and bored . Doing football splits up the day so without it i cant keep myself busy.

Not being able to play football competitively has been tough, as it's something I've been doing for years. It has made me feel down at times

No games/ competitive fixtures have meant nothing really to train for, started losing interest a bit and in general not as happy

Haven't had the mental benefits of playing sport

The inability to play matches has lowered my wellbeing because it is such a highlight and something to look forward to.

I haven't been able to train as frequently and then we haven't been able to play matches. Hard to train at high intensity without something to aim for

I am still able to exercise outside of my sport which has helped to keep my well-being normal

Not being able to participate in league and BUCs has affected my well-being slightly. Not being able to train and Non-contact training was difficult, however this is now not the case.

It's annoying not being able to play matches and sport that I love

Being in a team I am used to my sport not only being a way to stay fit and healthy but also a way to socialise and make friends especially when we train/play together almost 6 times a week. Covid restricting that time together and also increasing the risks involved with playing has had very detrimental consequences to my mental health.

It's not affected me because I've been lucky to compete in a few games and to train in a full time professional environment.

Because I took this opportunity to make myself fitter/stronger for the water without the pressure of competing.

Swimming is the only exercise I enjoy so I struggled to enjoy exercise without it

We've not been able to train alot

Less training mental declined

Given me a mental rest from the sport

the same

can't distract myself from other things

I cant exercise as often, leading to a lowered self esteem, lower mental and physical health

It's part of my lifestyle, I love waking up and playing matches every week. Everything is just weird without it

Can still train in gym

Less competitions to look forward to.

I can't do anything

Being stuck inside allows for a lot of downtime that isnt beneficial as it means im left alone with my thoughts a lot and they arent usually positive a lot of the time.

Inability to train properly and play has effected my enjoyment of my uni experience as it was such a big part of my uni life last year.

I am competitive and enjoy playing

because i love playing games and travelling to away games with the team so that not happening is sad

Sport is a good outlet for energy and a good place to spend time with friends. Not having that has been difficult

Reduces the amount of people I can see at training and for how long. Competition was a way for me to release any stress or anger I help in, I am no longer able to do that.

Less time playing sport has lowered my well-being

It is hard to train without being able to compete as normal, as your goals are blurred, and it's hard to develop as a team without proper games

I really enjoy training and when it wasn't on in lockdown it was hard because it got me active and out of the house

N/A

More stress around training and the risk of having to isolate if someone play with tests positive.

Less drive to stay motivated. Staying active and competing helps me, academically, concentrate more

As netball is an escape and an outlet for mental health and not having that has been hard

I have missed my daily release from work stress by seeing friends and getting daily exercise! Trying to keep on top of things at home is difficult and you do t want to see your progress deteriorate

It has affected my well-being as I feel a slightly lower sense of purpose being unable to compete, and I also get a great sense of happiness and enjoyment from competing which has been missing for several months

Have not had the opportunity to train/socialise and spend time doing what I enjoy.

Lost motivation When training not on, lost only chance to socialise   Fitness levels decreased

It has effected my well being as netball is what I excel at and I use training as a release, reducing stress, allowing me to make friends, allows me to push myself and make me healthier

We still train in the shed to that helps

Training and matches keep me driven and motivated and allow me to let off some steam, not having it is causing me to really struggle

Training and matches are where I can get away from uni work and have fun, can't do that anymore

Not being able to swim, has made me bored, stay up later which has made me more tired during the day. No routine has made me feel a bit lost in what to do sometimes.

Games is something we always look forward to as a way to relieve stress and have some fun; we could still do gym sessions at home when the COVID-19 lockdown was happening but without the purpose of preparing for a game you feel a little demotivated

Things have been very different so far and has involved adaptation to different training environments.

We train all season from September to June aiming to be our quickest for certain times of the year. We had trained for 6 months for competitions which all got cancelled so it was quite hard to move past that and not feel like the season was wasted

I am still the same as I was before

Not having the freedom to do as you want; having to constantly worry about small things that get you into trouble eg going through the wrong door to get in or out, using showers. Travelling home to train over the lockdown and panicking the entire 2 weeks you wont be able to get back. Worries around if you can/ can't /should go to socials

It's out of my control so no need to stress about it

At first I thought that having a break from racing would benefit me but the break was way too long

I am obviously frustrated with not being able to train fully and compete however I understand that it is necessary to improve the situation of COVID-19 and hopefully get back training and competing as soon as possible.

All training was cancelled as well as matches and access to a gym. Confusion, lack of confidence and minimal access to green space lower my overall wellbeing.

I use hockey as a way to de-stress. So not being able to play has removed my outlet

I am not able to socialise with my friends as much, also not being able to play hockey has impacted my mood as it is my favourite way to keep fit and gets me out the house

Lack of meaningful physical activity

having to isolate when one person on the pitch tests positive for Covid that you weren't within the exposure distance from is awful. I can't describe how lonely it is. Travelling as a team to games, playing games and training with full contact properly without the ability to properly be in contact with people is not fun and is very much missed.

been unable to train/play for long periods of time. missing not only the physical aspect but the social interaction with teammates and friends.

They have improved my well-being as rugby at a competitive level is sometimes very stressful and demanding. Therefore it's allowed me to have a break and get some good training done without getting injured.

If you truly want to keep on top of your game then nothing should stop you

Don't have anything to aim for with no games, just training for the sake of trainjng rather than focusing on a game at the end of the week etc

Enjoy the matches and the buzz with the boys after the game too, not having that has affected me

We were not able to train due to restrictions. Being allowed to train now has improved my well-being.

Boosting endorphins, playing with mates and being physically and mentally fit.

Being able train has improved my well-being as it means I'm forced to leave my room and socialise. Exercise itself also improves my well being.

Exercising makes me happier

Not as motivated as there are no competitions to look forward

Not been able to participate in the sport I love

Lowered levels of interactions, a lot of alone time leading to overthinking and doubt

Because I can't perform in the sport that I love s

Initially - trainings were cancelled completely as are games still now   Now- even though we can train we cant train the elements of rugby we enjoy

Lack of contact with other people, inability to train properly due to covid result in rise of levels of frustration

Can't live my normal life from the past 3 seasons. Losing the motivation to train and get up early, focus is moving more towards my work

It's completely changed my routine and training and playing bring me such joy now it's a chore to train because there's no games to train for

Na

Playing actual games with contact is one of my only forms of escaping from everyday stresses and not having that means that those stressful elements of life are on my mind most of not every hour of the day

Less chances to preform

Less opportunities to take part in a team and relieve stress

Due to COVID restrictions sport is the best way to socialise

With the lack of competiton and contact training it has meant I spend more time away from friends and spend more time on my own.

As a person I like to have a regimented schedule. It helps me perform at a higher level both in sports and at university. The more I have to do, the less I slack off

Less social interaction with friends

We are allowed to train however there seems to be no point to it without games and competition

Not being able to play and not being able to see all my teammates

Not been able to do as much

They have lowered my well being as I enjoy playing and COVID restrictions have meant there have been long periods where I was not allowed to play

A lack of being able to train and play, means that I lose something that I look forward to most days (training / matches). Which lowers my mood.

No training meaning more time to do uni work therefore get less anxiety.

Plants a seed of thought in the back of mind questioning what is the point of turning up to training on a cold wet night. It hasn't affected me regarding where I stand in team selection etc as I simply don't care that much, but has affected my mental health because I want to prove myself to team mates in the big games on a bigger stage than a training match. My main mental health aspect has been affected by going in and out of lockdown and my fitness also peaking and troughing.

Lack of outdoor time, especially in a enjoyable competitive environment, builds up stress and anxiety at home with less ways of reducing and reliving stress

With the inability to play, I am unable to motivate myself to stay active and maintain fitness

Completely disenchanted with the sport, no motivation to train or play and having a knock back effect on overall well-being

I've found other activities to do

Can't play the sport I know and love to the standard we normally play

Interacting with the team helped me with social anxiety

I enjoy training and playing the games with teammates and not being able to has been frustrating and I have missed it a lot.

Sport is a big part of my mental health and not being able to compete makes it difficult

Not exercising as much and therefore struggling to maintain a good routine and sleep schedule

I expected not to be able to do certain things so was not disappointed when the restrictions were put in place

Competing improves my wellbeing

I enjoy training and competing at a high level. Covid restrictions have made it difficult to keep a regular active rhythm. This in turn has affected my energy levels, which affects my appetite and all-round fitness. This has brought me anxiety and frustration as I feel my progress as an athlete is in fact in retrograde.

I really enjoy racing and I am limited on how much of that I can do at the moment. It makes it more difficult to set goals and motivate yourself as you don't know when you will be racing next.

Change of routine, has given me more time to recover

Going from almost 20 hours a week to nothing and now to limited hours means don't see friends, change of sleep routines and fitness

Have not affected my well-being as I have been given training programs to complete at home and away from netball so I have been keeping active and busy.

As the pools where shut for the first few months so we weren't able to swim but I live in quite a rural area at home so was still able to get out and exercise and be out in nature which helped my mental well-being

Swimming has always been there to de-stress from academic and never had a big period of time off

E.4 Time-point 1 COVID-19 Open-Ended Question Responses Themes

Figure E.4

Time-point 1 COVID-19 Open-Ended Question Responses Themes

1st order Themes	2nd order themes	Final Theme
Lockdown / Decrease in Normal Life / Rules affecting sport / Lacking Motivation		Lockdown
No academic escape / Normal routine affected	Disrupted Life	Disrupted sport
No competition / Not normal training / Can't keep fit	Decrease in training/Competition	
No mental escape / No mental release	No escape	Mental ill Health from no sport
Mentally Weak / No sport to help out mentally	Negative mental health experience	
Lack of socialisation / Loneliness		Social Life Affected
Accepted it / Unaffected / Coping	No bothered by the effect of COVID-19	Positive COVID-19 Experience
Increased sport		
Positive outcomes from the pandemic / Positive effects on academics / Allowed a mental break	Positive side to COVID-19	

E.5 Time-point 2 COVID-19 Closed-Ended Question 1a and 1b Response Numbers

Table E.5

Time-point 2 COVID-19 Closed-Ended Question 1a and 1b Response Numbers

	As the pandemic and academic year has progressed - how has your access to training for your sport been affected? *N* = 99		As the pandemic and academic year has progressed - how has your access to competition in your sport been affected? *N* = 99	
	Number	Percentage (%)	Number	Percentage (%)
I still have no access to training/ competition	29	29.293	83	83.838
Access to training/ competition has lowered as the academic year has progressed	48	48.485	12	12.121
Access to training/competition has increased as the academic year has progress	19	19.192	4	4.444
I still have full access to training/competition	3	3.333	0	0

E.6 Time-point 2 COVID-19 Closed-Ended Question 2a Response Numbers

Table E.6

Time-point 2 COVID-19 Closed-Ended Question 2a Response Numbers

	As the pandemic and academic year has progressed - to what extent do you think your wellbeing has been affected?	
	N = 99	
	Number	Percentage (%)
My well-being has remained consistently low throughout the academic year	12	12.121
My well-being has lowered as the academic year has progressed	39	39.394
My wellbeing has remained moderate ('middling') throughout the academic year	34	34.343
My wellbeing had increased has the academic year has progressed	8	8.889
My wellbeing has remained high throughout the academic year	6	6.667

E.7 Time-point 2 COVID-19 Open-Ended Question Responses

Can you explain why your wellbeing has been affected in this way?

Things have started opening, people have returned to uni, sport has increased

Has increased because I have made new friends which has boosted my morale.

You get used to lockdown and group sports not happening, making you then create new routines in place of what you would have done previously.

At the beginning of the year, the COVID-19 situation was worse and therefore there were more restrictions. Now that the year has almost ended there are barely any restrictions so my wellbeing has improved.

Training has come back and gyms reopened

Things opening up, reason to go outside, seeing friends and training again has helped massively.

With everything slowly opening up and weather improving, well-being has improved over the academic year

A reduction in training has released pressure from work and able to socialise more

Things I would usually do to keep my mental health at a good standard were not always accessible

Loneliness and isolation mixed with the anxiety of getting covid and letting the team down

No practice no fun

Fewer training sessions and opportunities to socialise, have lead to a reduction in the quality of my mental health.

I enjoy training and competing and feel very cooped up at the moment with the "stay at home" and "stay local" schemes. Training is used as an escape for me from other aspects of my life n now as that's been taken away I've found it more difficult to handle stress and other problems.

Not being able to train meant I wasn't doing much with my days or seeing anyone

Lack of a schedule, my friends, sports and in person teaching brought a lack of motivation, increased procrastination and stress-related anxiety

Not being able to train caused mental stress and no way to reduce it

Lockdown

Lack of social interaction

Training and experience other social activities stopped and I was not able to see friends as often. Also increasing workload for my degree

Lack of stress relief from sport, lack of social aspect with sport. Loss of a friend

The inability to take part in my sport and other alternative exercise has negatively impacted me physically which in has began to effect me mentally

With increasing levels of stress from university and the lack of being able to go out and train or see friends

Isolated and not able to compete

Nothing to be excited for. Repetitive days.

Lack of competition and participating in sport

Nowhere near as fit as I was a few months ago, mainly to a loss of interest in physical well being due to a lack of involvement in sport

I've been prevented of competition therefore I haven't been able to release any stress

Can't train or see anyone - no structure

Not being able to train with others has been tough, as the social aspect has been taken away.

I have struggled with not regularly attending training and competition which has been a source of relaxation and enjoyment   I've struggled not being able to go into university campus and have found it hard being confined to single room to do everything   Not being able to do things I usually would like going out to various places has really played havoc with my well-being as I feel as if I haven't done anything with my life   I haven't met a lot of friends at university so my circle is very small and this can be challenging

Nothing to look forward to

Because I wasn't able to do my normal life

Loss of somewhere to depressed and being i side attending v lectures in o e room all day doesn't allow me to escape my surroundings or myself

Playing sports is a stress relief

No opportunity for mental relaxation through playing sport or seeing teammates

Being unable to train or go to the gym has drastically reduced my fitness level and in turn affected my mental health.

Trying to keep fit by running but not the same as kitting up with ur mates 2/3 times a week for high intensity competitive exercise.

Being unable to train in the gym and train with the team makes me feel lost and takes purpose away from my life

Limited opportunity to socialize

Because it's harder to step away from studies, football is a 90 minute distraction from the pressure of uni work

Sport has a major impact in my life, not being able to train or compete was a really big deal for my mental health

It was the repetitive preparation for a season followed by disappointment that became really draining, to the point where I was relieved for the season to be cancelled after an almost 12 month preseason. I knew I could draw a line underneath it and focus on uni work without having to sustain discipline with training and nutrition as I was burning out.

I haven't been able to see my friends, play the sport I use to de-stress.

Not seeing friends, lecturers, teammates and coaches is why my well-being has been affected in this way

Sport let's you see your friends and to exercise

Because I cannot do the things I like and currently getting anxious about covid never ending.

Prolonged length of feeling isolated and stuck at home has challenged me mentally and physically

Lack of social interaction due to pandemic

Nothing to get excited for

I have found it extremely difficult trying to undertake University from home. Not leaving the house has impacted upon my usual health and fitness levels and actually made me anxious about going out to train or socialise when in the past this was never an issue. I have felt down a lot more this last year than I have in the past.

The lack of socialising has impacted my mental health

Lack of consistency

Lack of sporting and social activity

I'm in my 3rd year of uni so the workload has been huge, and with no sport to distract from it I've spent almost every day doing work in the house over the academic year

No sports so feel worse about myself

Unable to exercise effectively and no a lot of social interaction

Inability to exercise, social and enjoy myself due to covid restrictions

Can't play sport properly

It's depressing not being able to do anything. Fed up of the same four walls

Regular exercise/ healthy lifestyle/ diet have kept my well-being great

No

Always been a positive person

I've had a good bunch of mates whilst at university and also spent most of my time at home during term 2 due to the pandemic.

I bought gym equipment and had access to a pitch to practice on so that helped my well being remain high

Stayed consistent

I can't see the end of this lockdown

Lonely, bored and repetitive

I enjoyed my first term at university even with the covid guidelines and rules in place due to access to a great group of swimmers, however accomodation environment on campus was poor and resulted in me struggling alot mentally to deal with it resulting in not returning to university until the start of second year.

Was expected that there would be a lack of sport so did not have high hopes to get disappointed with

Motivation, lack of sport

Sad that lockdown stopped training and games

don't get to see the guys and push eachother on the field

There's been no competition which is the reason I play football. Therefore motivation has lowered in training.

No motivation to put in the extra work for lectures and seminars

Because having no access to training makes my mental health worsen

It has stayed the same.

Because I am internally motivated so what does or doesn't happen with sports doesn't affect my mentality much.

Just been an average year

I am very used to being in a team as I have been doing some sort of team training all my life, and not being able to even train has made me feel detached not only from the team but from most of my other relationships.

Doing less exercise has made me unfit and less flexible. Not doing consistent exercise has taken it's toll mentally a bit

Had people in my flat to spend time with, so haven't felt the loneliness and boredom others have during lockdown

I have made sure to train myself regularly during months where we have been unable to train over the year.

Everything I was doing before the pandemic, I can still do during the pandemic, other than having less training sessions

Luckily have a good home environment but from a sporting perspective very disappointing to miss out on a year and not be able to socialise with teammates

Some things get to you more as time goes on

Miss the structure of competing and training, as well as the social aspect to my sport, my mental health is generally lower when I don't have access to training and competition

Some good days, some bad. Since facilities have been shut, I have found it hard to stay motivated.

Not being able to compete and see mates

I've accepted the situation and learned to live with it.

Because we have had no definitive races to look forward to, or prepare for.

Not being able to train greatly affects

Mood is dampened due to not being able to do much

It was hard to be consistent

Football is everything

No effect

Lack of sport has made me less organized because I have a lot more free time, and it's become a lot harder to keep myself in shape, and do what I love.

There's been definite ups and downs with the introduction and removal of restrictions

Not being able to do the sport i love where i am able to control and get rid of any stresses along with keeping fit and healthy

Because the decision has been taken out of my hands, so I've focused on what I can control so in that respect it's been pretty stable

E.8 Time-point 2 COVID-19 Open-Ended Question Responses Themes

Figure E.8

Time-point 2 COVID-19 Open-Ended Question Responses Themes

1st order Themes   **2nd order themes**   **Final Theme**

Increased Sport / Increased Socialisation / Increase or maintained training	→	Increased normality	↘	
Coping strategies and new routines / Mental health	→	Coped and unaffected by COVID-19	↗	No/Positive Effect
Lack of socialisation / Loneliness	→			Social Impact
Routine description / Training decreased	→	Daily disruption	↘	
No Competition	→		→	Sporting impact
Negative Physical impacts	→		↗	
No mental release / No means of escape	→	No escape	↘	Mental Ill-health consequences outlined
Mental health problems increased	→		↗	
Rules / Lack of Motivation	→			Lockdown

Appendix F

Scores By Gender

Table F.1

Gender independent t-test results

	Female	Male			
	Mean ± SD	Mean ± SD	*Df*	*t*	*p*
Well-being					
Time-point 1	44.4 ± 7.0	46.2 ± 8.1	-1.32	156	.188
Time point 2	43.0 ± 8.1	45.9 ± 7.9	-1.5	95	.136
Psychological Distress					
Time point 1	24.5 ± 6.3	20.9 ± 6.6	3.12	153	.002*
Time point 2	24.6 ± 6.8	21.6 ± 6.8	1.87	94	.064
Self-Stigma					
Time point 1	26.3 ± 5.8	24.7 ± 6.1	1.42	151	.157
Time point 2	27.0 ± 8.2	25.2 ± 6.4	1.09	93	.277
GHSQ1 Family					
Time point 1	23.9 ± 5.9	22.7 ± 6.0	1.10	147	.271
Time point 2	22.1 ± 6.9	22.0 ± 5.6	0.09	92	.927
GHSQ1 External					
Time point 1	11.5 ± 4.0	13.3 ± 4.8	-2.21	147	.029
Time point 2	11.7 ± 3.8	11.9 ± 4.6	-0.23	92	.816
GHSQ2 Family					
Time point 1	23.8 ± 6.6	23.9 ± 6.8	-0.09	139	.927
Time point 2	20.1 ± 7.3	23.0 ± 7.1	-1.68	91	.096
GHSQ2 External					
Time point 1	15.4 ± 7.2	16.4 ± 6.3	-0.82	139	.413
Time point 2	15.8 ± 7.1	27.0 ± 8.2	-1.16	91	.251

Scores by Sport

G.1 Sports Mean and Standard Deviation

Table G.1

Sports Mean and Standard Deviation

	Time-Point 1	Time-Point 2
	Mean ± SD	Mean ± SD
Well-being		
American Football	45.0 ± 8.6	45.0 ± 8.2
Football	47.5 ± 8.4	48.3 ± 8.0
Hockey	45.5 ± 6.3	44.3 ± 6.1
Netball	44.5 ± 7.7	44.5 ± 10.9
Rugby Union	44.6 ± 9.3	45.5 ± 11.1
Swimming	46.5 ± 5.3	42.2 ± 3.0
Psychological Distress		
American Football	22.7 ± 7.2	22.0 ± 7.4
Football	18.5 ± 5.5	20.1 ± 5.9
Hockey	21.7 ± 5.7	24.7 ± 5.3
Netball	24.8 ± 7.4	24.7 ± 10.2
Rugby Union	23.5 ± 7.6	21.5 ± 7.7
Swimming	22.5 ± 5.7	22.9 ± 5.4
Self-Stigma		
American Football	25.2 ± 7.2	26.0 ± 6.9
Football	25.0 ± 4.2	25.1 ± 5.1
Hockey	25.3 ± 7.0	23.6 ± 8.3
Netball	25.9 ± 7.0	25.5 ± 8.5
Rugby Union	25.2 ± 6.0	26.0 ± 8.2
Swimming	24.9 ± 5.7	27.9 ± 5.3
GHSQ1 Family		
American Football	20.8 ± 5.9	20.9 ± 6.0
Football	25.6 ± 4.3	22.9 ± 5.6
Hockey	22.6 ± 6.4	22.7 ± 5.6
Netball	26.0 ± 6.3	25.2 ± 7.7
Rugby Union	22.3 ± 7.2	21.9 ± 7.2

Swimming	23.1 ± 4.6	21.5 ± 3.6
GHSQ1 External		
American Football	13.4 ± 4.7	12.7 ± 4.8
Football	13.4 ± 4.7	11.2 ± 4.4
Hockey	11.7 ± 4.4	12.4 ± 4.0
Netball	12.4 ± 4.8	13.8 ± 3.8
Rugby Union	11.7 ± 5.2	10.0 ± 4.5
Swimming	12.8 ± 2.6	10.2 ± 3.3
GHSQ2 Family		
American Football	21.9 ± 6.4	22.6 ± 6.8
Football	27.2 ± 5.2	22.7 ± 8.4
Hockey	23.2 ± 7.6	21.3 ± 6.7
Netball	28.2 ± 7.4	23.5 ± 7.7
Rugby Union	28.2 ± 6.2	21.8 ± 9.0
Swimming	22.0 ± 6.5	21.4 ± 5.9
GHSQ2 External		
American Football	17.0 ± 7.4	17.1 ± 8.3
Football	16.4 ± 5.4	13.6 ± 6.1
Hockey	15.0 ± 7.6	14.4 ± 5.0
Netball	18.1 ± 6.4	17.2 ± 4.7
Rugby Union	14.4 ± 6.2	14.1 ± 7.4
Swimming	14.4 ± 4.8	13.7 ± 4.3

G.2 Sports One-way ANOVA

Table G.2

Time-points Combined Sports One-way ANOVA

	Mean ± SD	*Df*	F	*p*
Well-being				
American Football	45.0 ± 8.3	5,249	1.006	0.415
Football	47.8 ± 8.2			
Hockey	45.1 ± 6.2			
Netball	44.5 ± 8.3			
Rugby Union	44.9 ± 9.8			
Swimming	44.9 ± 5.0			
Psychological Distress				
American Football	22.3 ± 7.3	5,245	2.801	0.018
Football	19.1 ± 5.6			
Hockey	22.8 ± 5.7			
Netball	24.7 ± 8.2			
Rugby Union	22.8 ± 7.6			
Swimming	22.6 ± 5.5			
Self-Stigma				
American Football	25.6 ± 7.0	5,244	0.358	0.877
Football	25.0 ± 4.5			
Hockey	24.2 ± 8.3			
Netball	25.8 ± 7.3			
Rugby Union	25.5 ± 6.8			
Swimming	25.8 ± 5.8			
GHSQ1 Family				
American Football	20.9 ± 5.9	5,237	3.498	0.005
Football	24.7 ± 4.9			
Hockey	22.7 ± 6.1			
Netball	25.7 ± 6.6			
Rugby Union	22.2 ± 7.1			
Swimming	22.6 ± 4.3			
GHSQ1 External				
American Football	13.3 ± 5.0	5,237	1.304	0.263
Football	12.6 ± 4.7			
Hockey	12.0 ± 4.2			
Netball	12.9 ± 4.4			
Rugby Union	11.1 ± 5.0			
Swimming	11.9 ± 3.1			

GHSQ2 Family				
American Football	22.3 ± 6.6	5,228	2.611	0.026
Football	25.6 ± 6.9			
Hockey	22.5 ± 7.3			
Netball	26.5 ± 7.6			
Rugby Union	21.8 ± 7.2			
Swimming	22.3 ± 5.8			
GHSQ2 External				
American Football	17.2 ± 7.8	5,228	1.594	0.163
Football	15.6 ± 5.7			
Hockey	14.8 ± 6.7			
Netball	17.8 ± 5.7			
Rugby Union	14.3 ± 6.6			
Swimming	14.7 ± 4.3			

G.3 Sports Broken Down by Gender One-way ANOVA

Table G.3

Time-points Combined Sports Broken Down by Gender One-way ANOVA

	Mean ± SD	Df	F	*p*
Well-being				
American Football	45.0 ± 8.3	8,246	2	0.051
Football	47.8 ± 8.2			
Female Hockey	45.6 ± 6.6			
Male Hockey	44.6 ± 5.7			
Netball	44.5 ± 8.3			
Female Rugby Union	44.6 ± 6.5			
Male Rugby Union	48.2 ± 10.1			
Female Swimming	44.8 ± 5.7			
Male Swimming	44.9 ± 3.9			
Psychological Distress				
American Football	22.3 ± 7.3	8,242	2	0.041
Football	19.1 ± 5.6			
Female Hockey	21.4 ± 6.1			
Male Hockey	24.4 ± 4.9			
Netball	24.7 ± 8.2			
Female Rugby Union	23.7 ± 6.7			
Male Rugby Union	22.3 ± 8.2			
Female Swimming	22.7 ± 5.9			
Male Swimming	22.6 ± 5.4			
Self-Stigma				
American Football	25.6 ± 7.0	8,240	2	0.065
Football	25.0 ± 4.5			
Female Hockey	25.0 ± 8.3			
Male Hockey	24.5 ± 6.5			
Netball	25.8 ± 7.3			
Female Rugby Union	30.5 ± 4.8			

Male Rugby Union	22.4 ± 6.0
Female Swimming	26.2 ± 4.8
Male Swimming	25.6 ± 6.4

Appendix H

Two-Way ANOVA Results

H.1 Well-being Two-Way ANOVA Results

Table H.1

Well-being Two-Way ANOVA Results

	df	MS	F	p
Gender	1	247.1	4.00	.046
Time-point	1	35.9	0.58	.447
Gender*Time-point	1	13.1	0.21	.645
Error	251	61.7	−	−
Sport	5	67.8	1.08	.373
Time-point	1	17.2	0.27	.602
Sport*Time-point	5	30.3	0.48	.790
Error	243	62.9	−	−
Sport	5	51.9	0.86	.507
Gender	1	165.9	2.76	.098
Sport*Gender	2	242.4	4.03	.019
Error	246	60.2	−	−
Sports Broken Down	8	138.1	2.27	.024
Time-point	1	66.7	1.09	.297
Sports Broken Down*Time-point	8	43.1	0.71	.686
Error	237	61.0	−	−

H.2 Psychological Distress Two-Way ANOVA Results

Table H.2

Psychological Distress Two-Way ANOVA Results

	df	MS	*F*	*p*
Gender	1	499.2	11.32	<.001
Time-point	1	8.1	0.18	.669
Gender*Time-point	1	2.3	0.08	.785
Error	247	44.0	−	−
Sport	5	104.4	2.34	.043
Time-point	1	7.0	0.16	.693
Sport*Time-point	5	31.0	0.69	.629
Error	239	44.7	−	−
Sport	5	67.4	1.60	.161
Gender	1	296.7	7.04	.009
Sport*Gender	2	186.1	4.41	.013
Error	242	42.2	−	−
SportsBrokenDown	8	84.6	1.90	.061
Time-point	1	7.8	0.18	.676
SportsBrokenDown*Time-point	8	45.0	1.01	.427
Error	233	44.5	−	−

H.3 Self-Stigma Two-Way ANOVA Results

Table H.3

Self-Stigma Two-Way ANOVA Results

	df	MS	*F*	*p*
Gender	1	127.7	3.06	0.012
Time-point	1	15.4	0.37	0.002
Gender*Time-point	1	0.6	0.02	0
Error	244	41.8	−	−
Sport	5	13.5	0.31	0.905
Time-point	1	9.6	0.22	0.638
Sport*Time-point	5	20.7	0.48	0.791
Error	236	43.2	−	−
Sport	5	28.5	0.70	0.623
Gender	1	231.5	5.69	0.018
Sport*Gender	2	168	4.13	0.017
Error	239	40.7	−	−
Sports Broken Down	8	79.7	1.90	0.058
Time-point	1	10.9	0.26	0.609
Sports Broken Down*Time-point	8	18.1	0.44	0.899
Error	231	41.5	−	−

Three-Way ANOVA Results

I.1 Well-being Three-Way ANOVA Results

Table I.1

Well-being Three-Way ANOVA Results

	df	MS	*F*	*p*
Sport	5	54.5	0.89	.486
Gender	1	200.4	3.29	.071
Time-point	1	53.3	0.87	.351
Sport*Gender	2	295.5	4.85	.009
Sport*Time-point	5	26.3	0.43	.826
Gender*Time-point	1	14.3	0.23	.629
Sport*Gender*Time-point	2	94.5	1.55	.214
Error	237	61	–	–

I.2 Psychological Distress Three-Way ANOVA Results

Table I.2

Psychological Distress Three-Way ANOVA Results

	df	MS	F	p
Sport	5	51.7	1.22	.298
Gender	1	260.2	6.17	.014
Time-point	1	15.8	0.38	.541
Sport*Gender	2	203.7	4.83	.009
Sport*Time-point	5	34.5	0.82	.538
Gender*Time-point	1	1.2	0.03	.868
Sport*Gender*Time-point	2	103.0	2.44	.089
Error	233	42.2	–	–

I.3 Self-Stigma Three-Way ANOVA Results

Table I.3

Self-Stigma Three-Way ANOVA Results

	df	MS	*F*	*p*
Sport	5	36.4	0.87	0.499
Gender	1	238.6	5.73	0.017
Time-point	1	11.7	0.28	0.600
Sport*Gender	2	157.4	3.8	0.024
Sport*Time-point	5	21.17	0.51	0.770
Gender*Time-point	1	9.2	0.22	0.639
Sport*Gender*Time-point	2	13.3	0.319	0.727
Error	230	41.6	–	–

Multiple Regression Model

Table J.1

Multiple Regression Model Coefficients Table

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	41.101	4.905		8.400	0.000
	Time-Point	-0.484	0.955	-0.030	-0.500	0.613
	Sport	-0.151	0.304	-0.033	0.500	0.621
	Gender	1.154	1.183	0.066	0.975	0.331
	SSOSH	-0.191	0.080	-0.158	-2.375	0.018
	GHSQ1Fam	0.185	0.124	0.139	1.492	0.137
	GHSQ1Ex	-3.840	0.139	-0.226	-2.764	0.006
	GHSQ2Fam	0.206	0.111	0.183	1.862	0.064
	GHSQ2Ex	0.268	0.104	0.228	2.570	0.011
2	(Constant)	32.259	4.200		7.681	0.000
	Time-Point	0.488	0.818	0.035	0.597	0.551
	Sport	0.171	0.260	0.044	0.658	0.511
	Gender	-2.945	1.013	-0.195	-2.907	0.004
	SSOSH	0.069	0.069	0.066	1.006	0.315
	GHSQ1Fam	-0.263	0.106	-0.229	-2.482	0.004
	GHSQ1Ex	0.343	0.119	0.234	2.885	0.004
	GHSQ2Fam	-0.172	0.095	-0.179	-1.812	0.071
	GHSQ2Ex	-0.150	0.089	0.147	-1.677	0.095

Model 1 = Well-being (WEMWBS), Model 2 = Psychological Distress (K10)