MENTAL HEALTH IN SPORT:

THE ROLE OF AUTHENTIC LEADERSHIP, COMPETITION LEVEL, AND SPORT TYPE

Tom Mackman

Supervisor: Maria Kavussanu

School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham, Birmingham, B15 2TT

[redacted]

Abstract:

Introduction

Mental health is an important part of an individual's overall health. It is a complex topic and can be examined in terms of a combination of subjective wellbeing and mental illness. Factors can influence one's mental health either positively or negatively, and these can be described as protective or risk factors. Authentic leadership is a leadership style has been related to positive outcomes in sport. Competition level has been shown to relate to mental health as elite athletes often demonstrate a greater prevalence of mental illness than others. Sport type is another factor that influences mental health as individual sports athletes often demonstrate greater levels of mental illness and lower wellbeing due to a lack of social nature compared to team sports. The purposes of this study were to identify the relationship between authentic leadership and mental health, to identify whether competition level or sport type moderate the relationship between authentic leadership and mental health, and understand the process in which this relationship occurs.

Method

647 athletes (n=281 female) from a variety of sports (n=194 individual sports athletes) and competition levels (n=104 elite) responded to a short online questionnaire measuring demographics, authentic leadership, psychological capital, teammate behaviours, subjective wellbeing, and mental illness. Athletes were recruited via social media platforms, through university lectures and emails, and local sports clubs and colleges. Amazon vouchers were offered as prizes as an incentive to increase response rate. Data was collected using Jisc Survey and analysed on IBM SPSS Statistics.

Results

Authentic leadership was positively correlated with subjective wellbeing and negatively correlated with mental illness. There were no significant differences across competition level on subjective wellbeing or mental illness. There was a difference in sport type on mental illness: individual athletes had higher scores on mental illness; but there was no significant difference for subjective wellbeing. Neither sport type nor competition level

moderated the relationship between authentic leadership and subjective wellbeing or mental illness. Gender moderated the relationship between authentic leadership and mental illness, as authentic leadership was not related to a decrease in mental illness in females, but it was in males. Psychological capital partially mediated the relationship between authentic leadership and both subjective wellbeing and mental illness. Prosocial teammate behaviours partially mediated the relationship between authentic leadership and subjective wellbeing, and antisocial teammate behaviours did not mediate either relationship between authentic leadership and subjective wellbeing or mental illness.

Acknowledgements

I would like to thank my lead supervisor Professor Maria Kavussanu, and co-supervisor Dr Jennifer Cumming for helping me in the completion of this research and the direction they have provided me throughout my MSc by Research. I would also like to thank Elanor Beaty, Hannah Cook, Cain Fairley, Jonathan Fleck, Aaron Grahamslaw, George Leigh, Nathan Meskell, and Taylor Yates-Smith, the third-year undergraduate students at the University of Birmingham who helped with data collection.

I would also like to thank my family for providing both emotional and financial support throughout my studies to keep me in a good head space. Finally, I would like to thank my housemates and other close friends who have helped in terms of this by providing a good and sociable environment.

Table of Contents

Introduction 1
Overview 1
Mental health 3
Prevalence of mental health 3
Keyes' model of mental health 4
Athlete mental health: Protective and risk factors 7
Authentic Leadership 9
Development and current conceptualisation 9
Authentic leadership research 12
Competition level, Sport type, Authentic Leadership and Mental health 15
Competition level 15
Competition level moderating the link between authentic leadership and mental health 16
Sport type 18
Sport type moderating the link between authentic leadership and mental health 20
The process by which authentic leadership may act on mental health 23
Psychological capital 23
Teammate behaviour 24
Overall Summary 28
Research purposes and hypotheses 30
Method 32
Participants 32
Measures 36
Mental health 36
Authentic Leadership 37
Psychological Capital 38
Prosocial and antisocial teammate behaviour in sport 40
Procedure 40
Data Analysis 41
Results 42
Preliminary Analyses 42
Main Analyses 46
Moderation of the relationship between authentic leadership and mental health 46
Mediation of the relationship between authentic leadership and mental health 48

Exploratory Analyses 55
Discussion 58
Athlete mental health 59
Authentic leadership and mental health 59
Authentic leadership and mental health relationship: Moderation by competition and sport type 61
Competition level as a moderator 61
Sport type as a moderator 63
Gender as a moderator 65
Authentic leadership and mental health: Potential Mediating Variables 66
Psychological capital 66
Prosocial teammate behaviour 68
Antisocial teammate behaviour 69
Parallel mediation 70
Practical implications and potential interventions 71
Limitations and future research 74
References 77
Appendices 91

Introduction

Overview

Mental health is part of overall health (World Health Organization, 1948) and is vital to the functioning of an individual in everyday life (World Health Organization, 2005a). Mental health has been conceptualised as consisting of both subjective wellbeing and mental illness (Keyes, 2002). Examples of common mental illnesses include anxiety, depression, bipolar disorder, eating disorders, post-traumatic stress disorder (PTSD) etc. Wellbeing and mental illness can be influenced by multiple factors from work-life balance to amount and quality of sleep to alcohol consumption or smoking. Following the COVID-19 pandemic, mental health has had greater limelight due to increases in mental illnesses because of a lack of social interactions and feelings of isolation. This highlights that the topic of mental health needs to be understood and proposals to aid it should be proposed.

In sport, over the last decade, we have seen an increase of the number of athletes speaking up about mental health. Examples include:

- Naomi Osaka, a former Women's Tennis Association ranked 1 tennis player, who has avoided press conferences stating "I've often felt that people have no regard for athletes' mental health, and this rings very true whenever I see a press conference or partake in one" (Twitter statement explaining her decision to avoid press at 2021 French Open).
- Michael Phelps, the most decorated Olympian of all time, "I remember sitting in my room for four or five days not wanting to be alive, not talking to anybody. That was a struggle for me…I reached that point where I finally realized I couldn't do it alone" (Speaking on National Children's Mental Health Awareness Day at USA Today Sports in 2017).
- Tyson Fury, a heavyweight champion, "If mental health can bring somebody as big and strong as me to my knees, then it could bring anybody to their knees" (Interview with Showtime Sports in 2018).

Each of these athletes demonstrate the most extreme of an elite population and all compete in individual sports. Despite these all being individual athletes, there are some cases of team sports athletes suffering mental health issues for example Solomon Thomas, an NFL player for the San Francisco 49ers, said "I was numb to all feelings, numb to all

emotions. I really didn't care about anything in the day. I didn't care about waking up or going to sleep. I was just going through the motions. It's not like I wasn't working hard or trying hard, it was just like everything was just blah" (During a one-to-one interview in 2020 discussing his experience following his sister's suicide). In this research we will be examining the influence team or individual sport participation have on mental health. These quotes have come from some of the greatest athletes of all time, demonstrating an extremely elite population. This and past research have identified that participating in an individual sport and competing at an elite level can lead to lower mental health than team and non-elite sport. When an athlete is both performing in an individual sport and competing at an elite level, they become more at risk to mental health problems.

As a result of an increased frequency of athletes speaking up about mental health, there has been a rise on academic research examining mental health, particularly in sporting settings. Researchers have come up with conceptualisations of mental health which will be discussed and has identified factors that have positive and negative relationships with mental health, also known as protective and risk factors (Küttel & Larsen, 2020). In this research we will be examining the relationship of between a protective factor and mental health, and whether this relationship is moderated by two different variables which include risk factors. The protective factor, which is theorised to be positively related to mental health, is authentic leadership, a leadership style that simply put is where a coach acts in accordance with their true values and morals. While examining this relationship between authentic leadership and mental health, we examine potential mediators of this relationship. The mediators we examined are psychological capital, a positive psychological state, and teammate behaviour, which we analyse in terms of both prosocial and antisocial behaviours.

In this review we will firstly discuss mental health as a concept in more detail, providing a model in which we will assess athlete mental health by throughout. Then we will discuss the leadership style 'authentic leadership' and review research relating this to mental health. Competition level and sport type are two other factors that may relate to mental health we then discuss and propose whether these variables potentially moderate the relationships between authentic leadership and mental health. Finally, we discuss the process in which authentic leadership has relation to mental health by reviewing and examining variables that may mediate this relationship.

Mental health

Health is critical to the functioning of an individual. Positive health is likely to increase life span, reduce the rates of mental illnesses, distress, and pain, and provide a better overall mental headspace. A healthy individual is likely to demonstrate characteristics associated with positive wellbeing such as self-confidence, and are less likely to experience illnesses, both physical and mental, such as depression or anxiety (Seligman, 2008). Health therefore consists of multiple factors as explained in its definition of "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (World Health Organization, 1948). Therefore, when examining the health of individuals, the mental aspect is very important. Mental health has been defined on many occasions, one of which is as "a state of well-being in which the individual realizes 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 Organization, 2005a, p.2).

Prevalence of mental health

In 2001, mental or neurological disorders were estimated to affect 450 million people globally and have been stated to affect approximately 20-25% of all people within their lifespan (World Health Organization, 2001). In 2001, mental or neurological disorders accounted for 12% of the total disability-adjusted life years lost as a result of either injury or disease (World Health Organization, 2001), but by 2005 this figure had already risen to 19.5%, being only second behind cardiovascular diseases (World Health Organization, 2005b). Neuropsychiatric disorders have also been shown to account for almost half of chronic diseases, with depression being the most important cause when examining years lived with disability (World Health Organization, 2005b).

When investigating this issue around mental illnesses within England, 1 in every 6 adults (1 in 5 females; 1 in 8 males) have a common mental disorder, with the most common of which being mixed anxiety and depressive disorder (McManus et al., 2009; 2016). Other common mental health disorders include generalised anxiety disorder, panic disorder, obsessive-compulsive disorder (OCD), post-traumatic stress disorder (PTSD) and social anxiety disorder. These common mental disorders can affect approximately 15% of the population at a given moment (Kendrick & Pilling, 2012). In a very recent publication using data from 2014, the UK population had a prevalence for depressive symptoms of

11.3% which is affecting 1 in 9 people at any given moment (de la Torre et al., 2021). When referring to all common mental disorders such as depression and anxiety it is reported that approximately 1 in every 6 people have experienced feelings of these in the last week in England (Baker, 2020).

Another recent publication has shown a dramatic increase in the prevalence of depression of approximately 7 times greater in studies during Coronavirus disease 2019 (COVID-19), with an approximate prevalence of 25% (Bueno-Notivol et al., 2021). This figure was generated using data from 12 different studies that examined the prevalence of depression in various countries such as the UK, China, Italy, Denmark, Vietnam, and India. The studies within the meta-analysis demonstrated large differences as the lowest prevalence was 7% and the greatest prevalence was 48%. The study from this review based within the UK which had 2000-person sample found 22.1% of people had depressive symptoms (Shevlin et al., 2020). One explanation for these differences between studies is the use of different measures to generate a score for depression in each study which can result in differences between scores. Another explanation is due to various other factors that require consideration when examining differences between countries such as quality of life that is affected by social and environmental factors.

When examining the positive side of mental health which is often referred to as mental wellbeing, the UK population from a sample of 31,970 people were found to have an estimated mental wellbeing score of 24.3 out of 35 in December 2019. More recent data from June 2022 but the same publication has found that an estimate of 32.3% of the UK rate their happiness as very high and an estimated 26% perceive their overall life satisfaction to be very high (Ons, 2022).

Keyes' model of mental health

In academic conceptualisations, mental health has been described using a two-continuum model (Keyes, 2002). In this model, one continuum refers to the absence or presence of mental illness, for example depression, anxiety, stress etc., while the other relates to subjective wellbeing such as feelings of happiness, satisfaction, fulfillment etc. Subjective wellbeing is a term that encompasses the way an individual feels about their life when considering their affective states alongside social and psychological functioning (Keyes & Waterman, 2003). This model advances upon previous conceptualisations by

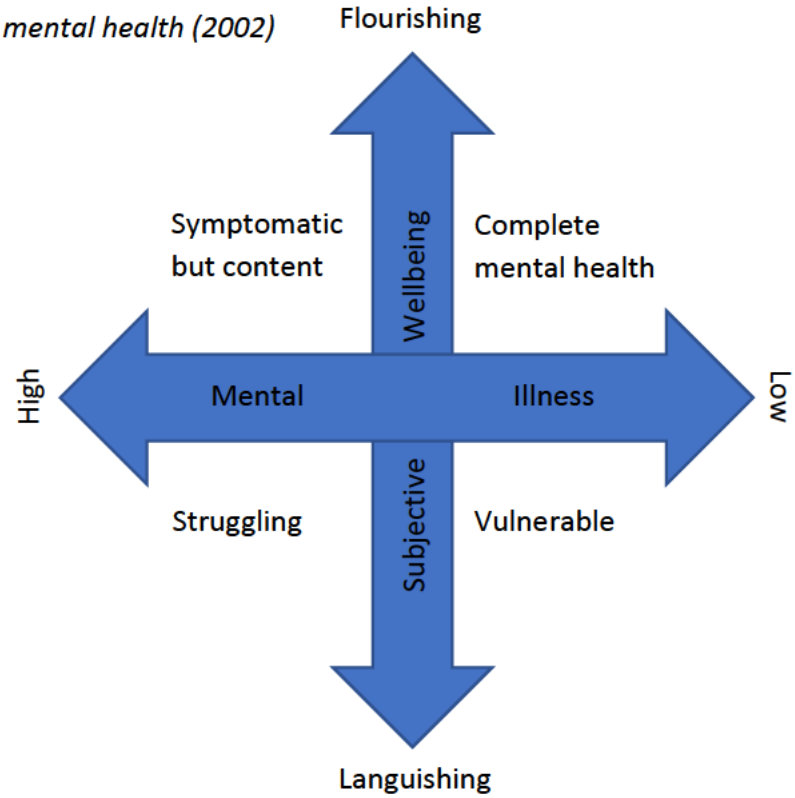
including both the aspect of wellbeing alongside mental illness, whereas previously mental health would be examined solely as either mental illness or subjective wellbeing. This is an important improvement as it is argued that an individual can have high levels of wellbeing but still have a mental illness or vice versa, which suggests that to get a better picture of overall mental health, one must consider both continua.

When referring to subjective wellbeing, the terms flourishing and languishing are commonly used. Flourishing refers to when an individual scores highly on wellbeing measures as this describes the presence of mental health, whereas languishing is when they have low scores for their wellbeing, describing an absence of mental health (Keyes, 2002). An individual who can be considered as flourishing is one who is “filled with positive emotion and to be functioning well psychologically and socially” (Keyes, 2002, p.210). Meanwhile languishing is a state that could be described as “emptiness and stagnation, constituting a life of quiet despair that parallels accounts of individuals, who describe themselves and life as "hollow," "empty," "a shell," and "a void"” (Keyes, 2002, p.210).

According to this model the two continua are distinct but together they better describe overall mental health. This model explains that athletes could have a mental illness but still have positive mental health or vice versa, therefore both must be understood (Uphill et al., 2016). Due to the two continua indicating one’s overall mental health, profiles have been produced to group individuals. The profiles are shown in Figure 1 and include flourishing with illness (symptomatic but content), flourishing without illness (complete mental health), languishing with illness (struggling), and languishing without illness (vulnerable) (Keyes, 2002). Individuals are grouped into one of these profiles based upon their responses for both subjective wellbeing and mental illness, where they would produce a total score which would be valued against cut-off scores to group them. Complete mental health is the most desirable of these profiles due to allowing the individual to be better functioning than if they were either of moderate mental health or solely flourishing (Keyes, 2005).

Figure 1.

Keyes model of mental health (2002)



This proposal has been supported by a systematic review of 83 studies supporting a dual-continua model of model health, examining studies from multiple countries, on a range of age groups from children to the elderly. This review demonstrated that high levels of mental health are attainable in members of the general population despite having mental illnesses, which is the flourishing with illness profile (Iasiello & Van Agteren, 2020). Despite profiles having previously been used and being important to consider, we will examine both subjective wellbeing and mental illness but do so separately. We are analysing subjective wellbeing and mental illness separately as opposed to categoric grouping of athletes in line with mental health profiles as very few athletes would score highly enough in mental illness to be in either the symptomatic but content or struggling categories where severe or extreme mental illness are present. Therefore, the sample would contain too few athletes in either of these mental health profiles to allow for reliable and accurate comparisons between athletes based upon their mental health profile.

Athlete mental health: Protective and risk factors

As previously mentioned, factors can affect an individual's mental health particularly social or environmental factors. Küttel and Larsen (2020) reviewed 52 studies which investigated associations between a variety of factors, both personal and environmental, and athlete mental health. Factors were either labelled as protective if they aided the subjective wellbeing of an athlete or reduced the likelihood of a mental illness, and risk factors if they were negatively related to the athlete's subjective wellbeing or positively related to an increased susceptibility to mental illness. Examples of personal protective factors include protective behaviours such as problem-solving skills, self-efficacy, and assertiveness (Parto, 2011), as well as innate resiliency (Kelley, 2005). Examples of environmental protective factors include positive sporting and social relationships, encouragement, and mental health literacy (Gulliver et al., 2012), which includes knowledge and beliefs about mental health so that it can aid identification, management, and prevention (Jorm et al., 1997). On the other hand, examples of personal risk factors include maladaptive personality traits, ineffective coping, and injury or overtraining. Overtraining is a frequent in sports athletes, especially those who are at or are striving to be at an elite level due to the high demands required to get there. However, this overtraining can result in overtraining syndrome which has the potential to detrimentally affect the athlete both physically and mentally (Haghighat & Stull, 2022). Sport-environmental risk factors found included sport-specific stressors, individual and aesthetic sport features, and a lack of social support from teammates and coaches (Küttel & Larsen, 2020).

One factor that can influence athlete mental health is gender. There are mixed findings when examining mental health differences across males and females. In a sample of 523 elite Australian athletes, females were found to have greater levels of mental illness and worse scores for wellbeing than males (Walton et al., 2021). Whereas, when examining athlete mental health in the UK, in a sample of 138 athletes there were no significant differences between genders for either anxiety or depression (Foskett & Longstaff, 2018). Due to mixed findings relating gender and athlete mental health, this needs to be further examined to understand potential relationships that may or may not exist.

An example of a social factor that can influence one's mental health is social support (Küttel et al., 2021). This research took place using a sample of 612 elite Danish athletes and examined the athlete's wellbeing, depression, and anxiety. They found that social support,

both private and relating to sport, had a significant effect on the athlete's mental health, with both aspects of social support being positively related to an athlete flourishing. Due to an elite sample the findings are limited to this competitive level; however, they did examine mental health in accordance with Keyes model by measuring both mental health and mental illness. A limitation of this research is that they did not use a measure for mental health that captured the social aspect as well as subjective and psychological.

As social support has been demonstrated as a protective factor (Küttel et al., 2021), it is important to identify other factors that relate to the social support an athlete feels and can therefore also act as a protective factor. One crucial factor that relates to the amount of perceived social support an individual experiences is the quality of leadership they experience (Van de Heijden et al., 2017). A coach can be viewed at either positively or negatively by their athletes due to their actions and characteristics, e.g., an abusive coach who embarrasses and instills fear in their athletes will harm the athlete and would be deemed a risk factor due to being related to depression and poor self-efficacy (Duffy et al., 2002; Tepper, 2000). Whereas a supportive and trustworthy coach will demonstrate higher levels of social support which would demonstrate a protective factor (Pankow et al., 2021). The importance of the coach possessing positive characteristics as a protective factor has been demonstrated in recent literature as part of a scoping review (Küttel & Larsen, 2020) and an examination of protective factors for flourishing student athletes (Pankow et al., 2021). Pankow et al. (2021) examined protective factors in flourishing student athletes consisted of 6 female Canadian students (n=4 team). Researchers collected data through semi-structured interviews and athletes written diaries at different time points within the season. To remain in a flourishing state during in-season, athletes frequently mentioned 'communication with coach' to be a vital protective factor (Pankow et al., 2021).

Researchers have also examined coaching behaviours in relation to athlete mental health measures such as anxiety, burnout, and self-confidence (Baker et al., 2000; Williams et al., 2003). For example, coaches with negative personal rapport which is the opposite of a close and meaningful relationship led to athletes having greater anxiety due to a lack of communication and understanding. Qualitative research has also examined the role coaches and others can have on athlete mental health in a study examining ex-professional cricket players (Ogden et al., 2022). Example quotes include "Coaches and players who have given me confidence are the ones that have told me that they are backing me…it's those coaches

and players that have had the biggest impact on me" and "I've had other coaches that really don't talk to you much you know and don't explain what's happening with selections…those are the difficult things to get through your head." These quotes demonstrate both the positive and negative influence a coach can have on an athlete regarding their thoughts and feelings (Ogden et al., 2022). Therefore, the relationship with the coach is important when investigating subjective wellbeing of athletes.

Authentic Leadership

Authentic leadership is a leadership style that has had growing attention in academia over recent years. It is a leadership style which influences the relationship the athlete has with their coach and therefore could influence the athlete's mental health which we will discuss. We will discuss the development and current conceptualisation, stating what each component of authentic leadership is, and how it can be related to mental health.

Development and current conceptualisation

Authentic leadership is a leadership theory built around the concept of authenticity, which has been defined as "the unobstructed operation of one's true, or core, self in one's daily enterprise" (Kernis, 2003, pp. 1). This means that an individual is true to themselves in their actions which reflect their feelings and ethics. If someone, in particular a leader, is acting in accordance with their ethics they are likely to display a high level of a 'moral compass' and then will positively influence people they interact with as they are aware of how their actions impact those around them (Derr, 2012). Therefore, when considering leadership, a leadership style that focuses on ethics is important so that followers can view their leader as a role model and someone they are likely to imitate and act in accordance with (Derr, 2012).

Authentic leadership was developed as a concept to help move away from the leadership crisis that was present before its development as leadership styles at that time were deemed inappropriate, failed to produce and develop leaders, and these leaders as a result were not acting as role models (McGill & Slocum, 1998). This was supported by a common citation of sporting dropouts being due to conflicts of interest, in particular with a coach (Weiss & Williams, 2004). Authentic leadership was first defined as leaders who "genuinely desire to serve others through their leadership. They are more interested in empowering the people they lead to make a difference than they are in power, money, or

prestige for themselves" (George, 2003, p. 12). From this definition, authentic leaders possessed five qualities which were understanding their purpose, practising solid values, leading with heart, establishing connected relationships, and demonstrating self-discipline (George, 2003).

A later model of authentic leadership was proposed by Avolio and Gardner (2005) which focused on self-awareness and self-regulation. In this model, there were four processes making up leader self-regulation and these were internalised regulation, balanced processing of information, relational transparency, and authentic behaviour. There were also three processes making up leader self-awareness and this included values, cognitions, and emotions. Positive moral perspective, positive psychological capital, and leadership behaviours and processes such as positive modelling, social and personal identification, emotional contagion, and positive social exchanges are all important aspects of authentic leadership (Avolio & Gardner, 2005).

In this thesis, the definition we are using when describing authentic leadership is "a pattern of leader behaviour that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development" (Walumbwa et al., 2008, p.94).

Based on this definition, the first component of authentic leadership is self-awareness. For a leader to demonstrate being self-aware, they must effectively understand their strengths, weaknesses, traits, and emotions (Neider & Schriesheim, 2011). Self-awareness also refers to their perception and view of meaning in the world, as this influences how someone views themselves (Walumbwa et al., 2008). When an individual demonstrates self-awareness, it is argued that they also focus on personality traits, preferences, goals, attitudes, perceptions, and sensations, on top of their emotions and thoughts about strengths and weaknesses (Morin, 2011). As a result of this, it has been argued to be the most important component when examining authentic leadership (Hughes, 2005). If a leader is demonstrating high levels of authenticity and self-awareness, then they are aware of how their actions affect those around them (Kernis, 2003) which means the leader will act in the best interest of their followers, which in turn should positively influence followers' wellbeing.

Internalised moral perspective is the second component of authentic leadership and refers to a type of self-regulation that is both internalised and integrated (Ryan & Deci, 2003). One's behaviour is influenced by the process of self-regulation as the individual acts accordingly in relation to their moral standards and values (Avolio & Gardner, 2005). As a result of a leader behaving in accordance with their values, their credibility increases to those around them (Kouzes & Posner, 2002). An example of a leader demonstrating an internalised moral perspective is resisting pressures from others if they go against their own moral standards and values and continuing to act in accordance with their own (Neider & Schriesheim, 2011). When a leader demonstrates an internalised moral perspective, they make decisions in accordance with their moral values (Walumbwa et al., 2008), and this should positively impact upon their follower's mental health so long as the leader possesses good values that benefit those around them.

Balanced processing is the third component of authentic leadership. It involves objectively analysing all relevant data and then choosing how to act or making a decision in the most appropriate way using the information provided. An example of how authentic leaders often increase their ability to process all information is to request feedback from those they are leading, to better understand the view of others in the follower perspective (Wong & Laschinger, 2013). If the leader is asking for frequent feedback about their followers' experiences and ways to improve this, it demonstrates inclusivity and is likely to lead to greater follower satisfaction and wellbeing.

Relational transparency is the final component of authentic leadership. It involves when a leader is open and honest with their followers by sharing how they feel and their thoughts (Walumbwa et al., 2010). When relational transparency is being demonstrated by an authentic leader, they clearly express their ideas and feelings, while also openly sharing all relevant information, which increases their credibility and trustworthiness (Avolio et al., 2004). As a result of an increase in credibility and trustworthiness, the athlete should have better communication with their coach which is a vital protective factor for mental health (Pankow et al., 2021), while also leading to greater levels of athlete enjoyment and commitment (Malloy et al., 2021a). Following an increase in positive outcomes such as enjoyment, athletes are likely to experience greater mental health (Swann et al., 2018).

Authentic leadership research

Authentic leadership has been examined in research that has aimed to identify what factors are likely to make a leader more authentic e.g., intelligence, and determine the influence that authentic leadership has on outcomes e.g., performance, satisfaction.

A meta-analysis of 214 studies on authentic leadership's antecedents and outcomes found a significant relationship between the leader's emotional intelligence and authentic leadership (Zhang et al., 2021). This relationship is largely argued to be because of the self-awareness component of authentic leadership that also is present when considering one's emotional intelligence (Goleman, 2020). If a leader possesses greater emotional intelligence, then they will be more aware of how their actions affect their followers, while improving their communication and empathy (Ioannidou & Konstantikaki, 2008).

Authentic leadership has been examined in relation to multiple outcomes such as performance, satisfaction, enjoyment, commitment, trust etc. It has also been examined in numerous settings such as a workplace for business application (Mehmood, 2016), healthcare settings with multiple studies on nurses e.g., Laschinger et al. (2015), and more recently in sporting environments for athlete and coach improvements (Kim et al., 2020). These outcomes can all be linked to mental health as either indicators or predictors which is why it is important to consider how authentic leadership can influence them.

Meta-analyses have shown authentic leadership to be significantly associated with performance and satisfaction (Zhang et al., 2021). Wong and Laschinger (2013) demonstrated these associations as they found a significant positive direct effect between authentic leadership and job satisfaction, and a significant indirect effect between authentic leadership and performance in a sample of 280 nurses. As authentic leadership is associated with improved performance and an increase in satisfaction, this would indicate greater subjective wellbeing which is one of two continua that make up mental health.

In sport, a similar overall finding exists as authentic leadership has been positively related to an athlete's enjoyment and commitment when examining a mixed gender sample of 435 athletes from both team and individual sports (Bandura & Kavussanu, 2018). Another cross-sectional study found authentic leadership to be positively related to athlete trust, commitment, team culture, positive affect, and perceptions of teammate prosocial behaviours when examining 366 team sports athletes (Malloy et al., 2021b). Authentic leadership has also been examined in an experimental study on 129 university athletes who

were randomly assigned into one of three conditions for authentic leadership: a low, neutral, or high group. Examples of statements provided to describe each groups assigned coach included this coach “Inaccurately describes their own capabilities, strengths and weaknesses. Does not speak to you honestly and does not admit when they have made a mistake” for the low authentic group; “is like most typical coaches” for the neutral condition; and “displays actions consistent with their moral beliefs, make decisions based on their core values, and asks that you do the same” for the high authentic leadership condition. Athletes then completed a questionnaire after reading these descriptions of the coach they had been assigned and they were assessed on authentic leadership, trust, enjoyment, commitment, intention to cheat, and aggression. Results demonstrated authentic leaders increased athlete’s trust, enjoyment, and commitment (Malloy et al., 2021a) which should all benefit the wellbeing and overall mental health of the athlete.

Authentic leadership and mental health have previously been looked at regarding nurses where authentic leadership positively affected areas of work life, resulting in greater self-efficacy and decreased burnout, subsequently reducing the likelihood of poor mental health as measured by depressive symptoms which demonstrates the mental illness aspect (Laschinger et al., 2015). Another study examining the role of authentic leadership in a healthcare setting found a significant relationship between authentic leadership and job satisfaction (Rahimnia & Sharifirad, 2015). In this research the researchers examined job satisfaction as a measure for employee wellbeing. They also examined work stress and overall stress symptoms as other indicators of mental health but found no significant direct relationships with authentic leadership. Although there were no significant direct relationships with either stress measure, there were significant indirect relationships through a mediating variable of attachment insecurity, which demonstrates authentic leadership relates to mental illness as well as subjective wellbeing (Rahimnia & Sharifirad, 2015).

Only very recent research has started to examine authentic leadership and mental health in a sporting domain. Kim et al. (2020) when examining within a sporting population of 224 United States Division 1 and 2 athletes, 61.2% females and a combination of team and individual sports, found that authentic leadership had a positive correlation with psychological wellbeing with a medium effect size. Another recent study examining 200 Chinese female team sports athletes supported this finding as authentic leadership again

had a significant indirect relationship with psychological wellbeing through psychological capital (Ruan & Liu, 2021). These studies examined psychological wellbeing which is conceptually similar to subjective wellbeing however it lacks the social and affective aspects of wellbeing which are included in subjective wellbeing. They also did not examine the other continuum of mental health which relates to mental illness.

Authentic leadership has been negatively related to depressive symptoms (Laschinger et al., 2015) which is an example of mental illness, albeit it a sample of nurses, and positively related to wellbeing in athletes (Kim et al., 2020; Ruan & Liu, 2021). Therefore, we want to demonstrate the relationship between authentic leadership and mental illness in a sporting population while also supporting previous research relating to athlete wellbeing.

Competition level, Sport type, Authentic Leadership and Mental health

In this section, we have identified two variables in competition level and sport type that could moderate the positive relationship between authentic leadership and mental health. Firstly, we shall discuss the differences in mental health between elite and non-elite athletes, and team and individual sports athletes. Then we will propose explanations for potential moderation that these variables could have on the relationship between authentic leadership and mental health.

Competition level

A potential risk factor for mental health that has been identified in previous research relates to the level of competition the athlete competes at, with elite sport posing a risk. A review examining mental health problems in elite athletes showed a prevalence of mental health problems such as depression and anxiety disorders, which are similar to that of the general population (Rice et al., 2016). This same finding was reported in a sample of 612 elite Danish athletes from both team (403) and individual sports (209) who displayed similar levels of anxiety and depression to the overall Danish population (Küttel et al., 2021). This suggests elite sport has greater risks associated with mental health when compared to non-elite sport. In the most extreme circumstances, elite athletes have a prevalence of almost half for mental health illnesses as found in a study of 224 elite Australian athletes, mostly from team sports, demonstrating the risk of elite competition irrespective of sport (Gulliver et al., 2015).

Possible explanations for these increased levels of mental health problems include excessive exercise/overtraining, muscle dysmorphia, and drug use (Peluso & Andrade, 2005) which are all more likely to be present in elite athletes. This is potentially due to elite athletes training more hours, being in the public eye resulting in a greater likelihood of hearing criticism which can result in self-criticism (Cassilo, 2022), and performance enhancing drugs to achieve higher standards of performance (Afolayan & Adegboyega, 2012). This has been supported by qualitative research (Schrom et al., 2021) examining elite tennis players where they reported being away from home was one of the hardest things as they are not able to see family, and in many cases, this resulted in symptoms of depression. It was also reported these elite athletes would find participation more stressful than enjoyable, while feeling “mentally fried” and experiencing burnout (Shrom et al., 2021). This

demonstrates that an athlete is in an even more at-risk group when examining mental health if they participate at an elite level in an individual sport.

One study that has previously compared differing abilities of swimmers was conducted by Hammond et al. (2013) on a sample of 50 varsity swimmers. The most elite 25% athletes of their study had double the prevalence of depression when compared against the remaining athletes, with one important reason being performance failures. As performance failures affect mental health and are more common in more elite athletes, this is one explanation for differences in mental health across competition levels. Despite this study involving comparison, those who were not in the most elite 25% were still varsity swimmers who were competing at a national level, so it is not an accurate comparison of competition level affecting mental health.

Research around the influence of competition level and athlete mental health has mixed findings which vary from elite athletes reporting similar levels of mental illness to the average population (Gouttebarge et al., 2019), up to almost half of elite athletes experiencing mental illnesses (Gulliver et al., 2019). To fully understand the influence of competition level on mental health, both elite and non-elite athletes should be considered. Elite athletes are more likely to experience the potential negative impacts and risks associated with sport than non-elite athletes such as those identified by Purcell et al. (2019) which include overtraining and injury which are sport related. They are also at risk of general risk factors such as low social support and sleep deprivation (Kotnik et al., 2012; Gupta et al., 2017).

We have identified that competition level impacts athlete mental health as elite athletes appear to suffer problems relating to mental health more frequently than non-elite athletes from both qualitative (Schrom et al., 2021) and quantitative research (Gulliver et al., 2015; Hammond et al., 2013). As a result of this, competition level can change the way in which authentic leadership acts on mental health.

Competition level moderating the link between authentic leadership and mental health

We have already discussed the positive relationship between authentic leadership and mental health, but now we are identifying whether this relationships strength could change based upon whether the athlete competes at an elite or a non-elite level. We expect moderation to occur so that the relationship between authentic leadership and mental health will strengthen in elite athletes compared to non-elite athletes.

The first reason we propose for potential moderation of the relationship between authentic leadership and mental health because of competition level is due to different baseline levels of mental health between elite and non-elite athletes. As elite athletes tend to score worse for mental health measures than non-elite athletes (Gulliver et al., 2015), there is more room for improvement of their mental health due to authentic leadership. Whereas non-elite athletes have better mental health and therefore authentic leadership would not be expected to improve their mental health as much. Thus, authentic relationship should have a stronger relationship with mental health in elite compared to non-elite athletes.

One reason elite athletes are more likely to suffer from mental illnesses than non-elite athletes is due to experiencing loneliness when travelling for competitions and spending time away from their family for extended periods of time. This finding is exaggerated when the athlete participates in an individual sport due to a lack of teammates around them as shown by professional tennis players (Schrom et al., 2021). An authentic leader has the potential to reduce these feelings as they are likely to travel with the athlete and authentic leaders have been shown to act as an effective support by instilling trust in athletes (Malloy et al., 2021a). Coaches who are not authentic leaders are unlikely to prevent their elite athlete suffering because of time away and travelling due to being less likely to have as strong a rapport with their athlete. This would negatively impact the athlete as they would not be able to confide in their coach.

Another reason and explanation for elite athletes experiencing greater levels of mental illness compared against non-elite relates to drug use (Peluso & Andrade, 2005). As elite athletes are more reliant on performing consistently at an extremely high level and it is their source of their income, they are more likely to consume performance enhancing drugs so that they can perform to a higher level (Afolayan & Adegboyega, 2012) than non-elite athletes. This has been supported as individuals who train more frequently, which is common in elite athletes, are more likely to use image or performance enhancing drugs (Shibata et al., 2021). As a result of performance enhancing drugs, the athlete is more susceptible to addictions or mental illnesses such as depression (Reardon & Creado, 2014). As authentic leaders encourage their followers to act morally and on high ethical standards, they are likely to prevent their athletes partaking on the consumption of performance

enhancing drugs and therefore this should prevent drug use being a reason for an increased likelihood of experiencing mental illnesses.

When authentic leadership is present in non-elite athletes, there should be the same benefits that occur. However, as we expect that non-elite athletes will have better mental health than elite athletes, the effect of authentic leadership should be greater when examining elite athletes as there is more room for improvement.

Sport type

Another variable which could influence an athlete's mental health relates to whether they participate in a team or individual sport. Research (e.g., Pluhar et al., 2019) has examined the differences in athlete's mental health and potential explanations for these differences which we will discuss.

When researching mental health in sport, some studies have attempted to examine the differences between whether team sports or individual sports in relation to mental health of athletes. Eime et al. (2013a) in their review found that team sport participation had a greater association with improved mental health among children because of the social environment and their nature which is different from individual sports. Dimech and Seiler (2011) when examining the influence of extra-curricular sports on 208 primary school children's anxiety found that children following a year of participation in an extra-curricular team sport manifested less symptoms of social anxiety than children who had been participating in an individual sport. Similar findings have been found when examining 11,000 children in USA between the ages of 9-13 years old (Hoffman et al., 2022). This study demonstrated that children who participated in team sports had significantly greater mental health than non-sports participation children, whereas individual sports athletes had significantly worse mental health than non-sports participation children in a range of measures such as anxiety, depression, social problems (Hoffman et al., 2022). Not only did this study highlight the positive aspects of team sport on mental health, but conversely identified the potential risk of individual sport on mental health. Boone and Leadbeater (2006) demonstrated the positive influence of team sport participation in 449 Canadian students in the 8^{th}-10^{th} grade. They found positive team sport involvement to be negatively related to depressive symptoms and partially mediated the relationships between body dissatisfaction and social acceptance with depressive symptoms.

When examining depression and anxiety in adolescents from individual sports and team sports, a greater percentage of athletes from individual (13%) sports reported anxiety or depression than athletes from team (7%) sports (Pluhar et al., 2019). In this study, it was not stated which level of competition the athletes competed at, however, the majority of athletes participated in sport for "fun" rather than "goal-oriented reasons" suggesting a lower level of competition, demonstrating individual sport to be a risk factor even in a non-elite population. Potential explanations other than sport type for these differences relates to that there were more individual sports athletes participating for goal-oriented reasons and trained more frequently so were at risk of overtraining and burnout. Eime et al. (2013b) found similar differences when examining an adult population.

Sabiston et al. (2016) examined the relationship between the number of years spent participating in team or individual sports during adolescence with depressive symptoms in early adulthood. This relationship was examined over a ten-year period on a sample of 860 adolescents and found that the number of years participating in team sports was significantly related to a reduced depression score, whereas in individual sport there was no significant relationship. The authors suggested that individual sport does not have the same benefits due to fewer social connections and less group cohesion than in a team which therefore decreases the increase in athletes' self-esteem associated with sports participation and the athlete can also experience feelings of isolation (Sabiston et al., 2016). A weakness of this study was that mental health was only examined in terms of depressive symptoms which is only one example of a mental illness and does not consider wellbeing.

Another longitudinal study was undertaken by Graupensperger et al. (2021) who examined sports participation and its effect on mental health indices in adolescents. The study measured anxiety symptoms, depressive symptoms, and behavioural and emotional difficulties as their mental health measures, all reflecting the mental illness aspect of mental health. The study consisted of 3089 Australians (final timepoint) with a mean age of 16.46 and an equal gender divide. Although the study doesn't state the level of competition that athletes competed at, we can assume a majority non-elite sample due to being a "representative national sample." The authors found that a greater participation in team sports significantly reduced the likelihood of depressive and anxiety symptoms over time, however, this same finding could not be replicated for individual sports participation. This suggests the benefits of team sport participation are greater when reducing the likelihood

of experiencing symptoms of a mental illness. A weakness they identified in their research related to not recording the competition level of athletes to examine how this would impact on relationships between variables.

Most research in this area has examined the influence of sport type on mental health in an adolescence population (Boone & Leadbeater, 2006; Dimech & Seiler, 2011; Graupensperger et al., 2021). However, Wolanin et al. (2016) compared specific sports rather than individual and team sports in an elite sample of adults, with 465 American Division 1 NCAA athletes. The results were similar to those found in adolescent populations as track and field athletes had the highest rate of depression, whereas lacrosse had the lowest. Possible reasons for these results include that individuals place an increased pressure to perform upon themselves, they experience loneliness if competing alone, and if they do not achieve their goals, they face the failure by themselves (Nixdorf et al., 2016; Pluhar et al., 2019).

It is evident from research that individual sports athletes suffer mental health problems more than team sports athletes. However, a frequent weakness in research is that only mental illness is examined when comparing sport type's influence on mental health such as Graupensperger et al. (2021) and Wolanin et al. (2016). Therefore, in this study we will address this weakness by examining both subjective wellbeing and mental illness to further knowledge about how the sport an athlete competes in influences their overall mental health. There is very limited research examining the influence of sport type and competition level on an athlete's mental health as an adult, and in terms of both subjective wellbeing and mental illness.

Sport type moderating the link between authentic leadership and mental health

Sport type can potentially moderate the relationship between authentic leadership and mental health. Individual sport participation was identified as a risk factor when examining mental health (Graupensperger et al., 2021; Pluhar et al., 2019). Reasons for individual sport being a risk factor when considering athlete mental health are similar to that of elite competition and include loneliness due to competing alone, increased pressure placed on themselves to perform, and feeling to blame if experiencing failure in competition due to not having teammates in competition who could share fault (Nixdorf et al., 2016; Pluhar et al., 2019; Sabiston et al., 2016). Authentic leadership can help in combating each of these reasons, therefore improving athlete mental health to a greater extent for

individual sports athletes as they possess worse baseline mental health compared to team sport athletes.

Firstly, one reason individual sport athletes suffer in terms of mental health more than team sports athletes is due to a lack of social connections that occur during their sporting experience (Sabiston et al., 2016). However, if authentic leadership is present then this lack of connections and resultant loneliness should be reduced. Reasons for this include that authentic leaders are likely to have a strong positive relationship with their athlete, as well as increasing the frequency of prosocial behaviours that take place within a group (Malloy & Kavussanu, 2021a). Although this study demonstrated the relationship between authentic leadership behaviour and prosocial behaviours in team sports athletes, it will be the same finding for individual sports athletes so long as they are part of a training group. Authentic leadership has been found to increase athlete's trust (Malloy et al., 2021) and as a result if an individual is able to have greater levels of trust in others and their coach, they should experience reduced levels of loneliness due to having an individual to confide in (Pankow et al., 2021).

Another reason the relationship between authentic leadership and mental health can be moderated by sport type relates to goal-orientation. There is a relationship between authentic leadership and a mastery goal orientation in their followers when examining Pakistani telecommunication and banking sectors (Mehmood, 2016). Although, this research was not in a sports environment, the social learning that occurred can be assumed to translate across environment. If an athlete is focusing on their own performance rather than the outcome of the performance in relation to others, an authentic leader can reduce negative feelings following competition due to encouraging the view their performance as an improvement rather than a failure. This can be argued to be because authentic leadership is related to an increase in psychological capital (Kim et al., 2020) which includes optimism. Optimism can help an athlete look past previous failures and uncontrollable situations so that they focus on their goals again (Peterson & Youssef-Morgan, 2018).

Mastery goal orientation as a result of authentic leadership is important when considering sport type because it should reduce the risk of individual sport on mental health when considering an outcome of performance. When analysing an outcome of performance, it can be attributed to different reasons due to the locus of causality and stability (Weiner, 2010). The 4 dimensions are labelled as internal stable (self-ability),

internal unstable (self-effort), external stable (task/opponent difficulty), and external unstable (luck). If an individual sports athlete experiences failure, they do so by themselves and are vulnerable to mental health issues due to being more likely to attribute this failure internally. Whereas team sports athletes compete in a group so there are more external factors to consider when examining a performance failure, such as teammate effort and performance, which do not exist for individual sports athletes. Authentic leadership can reduce this difference as it has been positively related to performance satisfaction (Kim et al., 2020). Therefore, it can be argued that an authentic leader effectively improves the way in which an athlete reacts to their performance which in turn should reduce the number and strength of negative feelings following unsuccessful performances.

For each of these reasons that authentic leadership should improve mental health for individual sports athletes, we expect the same to occur for team sports athletes. However, we expect a greater influence of authentic leadership on individual sports athletes' mental health than team sports athletes' mental health due to a worse starting baseline and being more vulnerable to these reasons.

The process by which authentic leadership may act on mental health

In this section we examine which potential variables we have identified may influence an athlete's mental health having previously being influenced by authentic leadership, making it a mediating variable. Therefore, authentic leadership can be related to mental health indirectly through mediating variables which explains the process of the relationship between authentic leadership and mental health in terms of wellbeing and mental illness. We will be examining three potential mediating variables: psychological capital, prosocial teammate behaviour, and antisocial teammate behaviour.

Research to date has found that authentic leadership indirectly has a relationship with psychological wellbeing through psychological capital (Kim et al., 2020; Ruan & Liu, 2021). Therefore, it is important to further understand the process by which this occurs, by aiming to support previous research in a different sample while also identifying which other variables mediate this relationship.

Psychological capital

Psychological capital has been defined as "an individual's positive psychological state of development that is characterized by (1) having confidence (efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resiliency) to attain success" (Luthans et al., 2015, pp.2). The construct of psychological capital has encompassed efficacy, hope, optimism, and resilience since its development (Luthans & Youssef, 2004).

We anticipate that authentic leadership will be positively related to psychological capital, which in turn should be positively related to an improved mental health. This reasoning is because authentic leadership could be positively related to psychological capital due to authentic leaders using positive psychological states such as the constructs of psychological capital in their own coaching (Gardner et al., 2005). If the leader is exhibiting high levels of efficacy, optimism, hope, and resilience, it is likely to be mirrored by their followers which is termed authentic followership and this occurs if positive modelling takes place (Gardner et al., 2015). Positive modelling allows the authentic leader to promote

positive values, emotions, and behaviours associated with psychological capital for their followers to emulate as a result of the leader "leading by example" and demonstrating high levels of credibility and trustworthiness (Gardner et al., 2005). Authentic leaders also promote positive states in their followers through emotional contagion, which is the spreading of emotions and subsequent behaviours, and positive social exchanges (Avolio & Gardner, 2005; Ilies et al., 2005). The relationship between authentic leadership and psychological capital has been supported by research as authentic leadership has been found to be a significant positive predictor of psychological capital in a mixed gender sample of 119 student athletes from NCAA Division 1 basketball teams in the United States (McDowell et al., 2018).

This research by McDowell et al. (2018) also demonstrated psychological capital to be positively related to subjective wellbeing of athletes and positive team attitudes. Although this study examined the positive relationship psychological capital has with mental wellbeing, it was on a relatively small sample size (119) athletes, who all participated at a high level of competition (NCAA Division 1), and all competed in basketball which is a team sport. Kim et al. (2020) also found this relationship when examining 224 student athletes belonging to either NCAA Division 1 or 2 universities. An explanation for these findings relates to the constructs that make up psychological capital. Efficacy, optimism, hope, and resilience are positive components which if all are scored positively, will likely result in a greater score for subjective wellbeing (Gardner et al., 2005). Despite psychological capital being examined in relation to mental health, Kim et al. (2020) and McDowell et al. (2018) only measured wellbeing and did not consider mental illness which is another important aspect of overall mental health. We will advance upon this by examining both aspects of mental health to include subjective wellbeing and mental illness to see the relationship and potential mediation that psychological capital has with mental illness, while also aiming to support previous findings relating to subjective wellbeing.

Teammate behaviour

Another mediating variable when examining the relationship between authentic leadership and athlete mental health is teammate behaviour. Teammate behaviours make up aspects of the athlete's social environment which has been identified as an important protective factor (Gulliver et al., 2012; Lundqvist & Sandkin, 2014). This includes both prosocial and antisocial teammate behaviours. Prosocial behaviour refers to behaviour

intended to help or benefit another individual, whereas antisocial behaviour refers to behaviours that are intended to harm or disadvantage another individual (Kavussanu et al., 2006). Both prosocial and antisocial behaviours are performed voluntarily. Examples of prosocial behaviours within a team or training group include congratulating one another for good plays or performances and offering encouragement, whereas examples of antisocial behaviour are swearing or abusing a teammate for a bad play or performance (Kavussanu & Boardley, 2009).

Research around teammate behaviour in sport has related prosocial behaviour and antisocial behaviour to enjoyment, anger, effort, and performance (Al-Yaaribi et al., 2016; Al-Yaaribi & Kavussanu, 2018). These variables could all indicate mental health, either positively in the case of enjoyment and performance, or negatively when considering anger. Al-Yaaribi et al. (2016) reported significant positive relationships between prosocial behaviours with enjoyment, effort, and performance which are all examples of positive outcomes for athlete mental health. This study had a sample of both male and female soccer and basketball players, and therefore is specific to team sports athletes, but they also found a significant positive relationship between antisocial behaviours and anger and a significant negative relationship between antisocial behaviours and effort. These findings have been supported in a sample of male soccer players (Al-Yaaribi & Kavussanu, 2018). This research also discovered a significant negative relationship between antisocial behaviour and performance (Al-Yaaribi & Kavussanu, 2018). Decreases in performance could potentially influence mental health as the athlete is more likely to experience negative feelings that occur due to losses and failures.

Authentic leadership may have the potential to increase prosocial behaviour in a team or training group while also reducing the amount of antisocial behaviour from an individual. Examples of these behaviours include offering encouragement or praise to a teammate for prosocial behaviours and swearing at or criticising a teammate for antisocial behaviours. These relationships are primarily because of the internalised moral perspective component of authentic leadership. As an authentic leader acts on their moral values and standards, and encourages their followers to do the same, it should increase the frequency of prosocial behaviours that occur within a team, while reducing the frequency of antisocial behaviour as it is deemed harmful rather than positive. This reasoning has been argued by

George (2003) and Ilies et al. (2005) who have stated authentic leaders positively influence followers' behaviours and these behaviours are ethical. This has been supported as a significant correlation of .32 between authentic leadership and prosocial behaviour has been found (Hannah et al., 2011). The same research discovered significant relationships between authentic leadership and prosocial behaviours and authentic leadership and ethical behaviour. This was from a sample of 162 mostly male US army school soldiers with a mean age of 18.8 years, showing a similar age sample to what we expect but not related to sport. In sport, authentic leadership has been significantly correlated to prosocial behaviour with a small-to-moderate positive strength when examining a mixed gender sample of 421 team sports athletes with a mean age of 20.3 years (Malloy & Kavussanu, 2021a). This research supports the link we have proposed between authentic leadership and teammate behaviours, but we shall also be examining this on a sample of individual sport athletes alongside team to produce more detailed findings for various athlete populations.

Prosocial teammate behaviour should be positively related to the subjective wellbeing of athletes due to being in a more positive environment where they feel the support and likely trust those around them, while also reducing the likelihood of experiencing mental illness symptoms as they are less likely to experience loneliness and depression that often is related to this. Prosocial behaviour could be motivated by compassion, kindness, empathy, love etc. (Gilbert et al., 2019). Research has found positive correlations between prosocial behaviour and positive mental health and wellbeing when examining a sample of Canadian adults during the COVID-19 pandemic (Shillington et al., 2021, 2022).

Meanwhile antisocial behaviour is likely to be positively related to the athlete experiencing negative consequences and therefore their risk of mental illness. Antisocial behaviour has been related to outcomes such as negative affect, burnout, and anger which if is not dealt with appropriately will result in negative and harmful behaviours (Al-Yaaribi & Kavussanu, 2017; 2018). All these outcomes can be deemed as indicators of developing or experiencing mental illness. Therefore, as authentic leadership is positively related to prosocial behaviour and negatively related to antisocial behaviour in a team or group, we expect that subjective wellbeing will be greater and risk of mental illness will be less when

authentic leadership is present. These relationships can be explained by prosocial and antisocial behaviour that takes place within the team.

Research to date has shown authentic leadership to be related and affects outcome variables such as enjoyment, an affective variable, as well as trust and commitment (Malloy et al., 2021a). These outcomes as well as other outcomes can be related to mental health because of the positive consequences that result from enjoyment, trust, and commitment. We will be examining the process in which authentic leadership affects mental health through psychological capital, which has been previously examined (Kim et al., 2020; McDowell et al., 2018), alongside prosocial and antisocial teammate behaviours to further the understanding. Through greater understanding of this process, mental health and specific variables that influence it will be known, meaning appropriate recommendations can be made for mental health and authentic leadership.

Overall Summary

Health is critical to daily functioning in life, and mental health largely contributes to an individual's overall health. Mental health has numerous definitions such as those from the World Health Organisation, but in this research, we are defining health in accordance with Keyes' (2002) model, which explains mental health as a dual continua of subjective wellbeing and mental illness.

Mental health can be affected by numerous factors which are either protective, if they aid an individual's mental health, or risk, if they harm an individual's mental health (Küttel & Larsen, 2020). In this research we have identified a key protective factor that relates to an athletes coach, which is authentic leadership. Authentic leadership is a leadership style that consists of four components which are self-awareness, balanced processing, internalised moral perspective, and relational transparency (Walumbwa et al., 2008). Authentic leadership has been positively related to wellbeing measures such as enjoyment and positive affect in athletes (Malloy et al., 2021a; 2021b) and psychological wellbeing (Kim et al., 2020; Ruan & Liu, 2021). Authentic leadership has also been found to have a negative relationship with the other aspect of mental health which is mental illness (Laschinger et al., 2015) as nurses demonstrated a reduced likelihood of depressive symptoms. However, authentic leadership and mental illness have not been examined in sports settings to date which is current gap in authentic leadership and mental health literature which we will address in this research.

Risk factors for mental health include elite sport and individual sport, which makeup two variables we examine in our research in competition level and sport type. Elite athletes appear to suffer from mental illness greater than non-elite athletes (Gulliver et al., 2015) and individual sports athletes have greater mental illness than team sports athletes (Graupensperger et al., 2021; Wolanin et al., 2016). These risk factors have highlighted the harmful affect they have on an athlete's mental illness. However, research has not examined the influence of either competition level or sport type on subjective wellbeing, despite arguments being made for potential relationships due to social isolation (Sabiston et al., 2016).

We will then combine research relating both the protective factor of authentic leadership with the risk factors of elite sport and individual sport by examining potential

moderation. Competition level and sport type both have the potential to moderate authentic leaderships relationships with subjective wellbeing and mental illness due to authentic leaders potentially being able to have a greater relationship with outcomes when athletes are either elite or individual sports athletes who are expected to have worse mental health than non-elite and team sports athletes, due to being associated with experiencing greater levels of loneliness (Sabiston et al., 2016; Schrom et al., 2021). Individual sports athletes are also more likely to have worse mental health due to experiencing performance failures alone (Nixdorf et al., 2016) which an authentic leader can protect against.

Another risk factor we are considering throughout our research relates to gender. Females report worse wellbeing and greater mental illness than males in the general population and in sport (Walton et al., 2021).

The final aspect of this research relates to the process in which authentic leadership acts on mental health. To date, authentic leadership has been related to variables such as athlete psychological capital (Kim et al., 2020), athlete prosocial behaviours (Malloy et al., 2021a), team cohesion (Ruan & Liu, 2021), however, little research has then related these outcomes of authentic leadership to mental health. Kim et al. (2020) have demonstrated psychological capital to mediate the relationship between authentic leadership and wellbeing in an athlete population, and Ruan and Liu (2021) have supported this mediation as well as team cohesion mediating the relationship between authentic leadership and wellbeing in female athletes.

Despite these studies, no research has examined potential mediators in relation to the other aspect of mental health which is mental illness. Therefore, research around authentic leadership and mental health has not provided a complete picture for overall athlete mental health, which we aim to advance upon. We will also examine prosocial and antisocial teammate behaviours in athletes to see the role they have in mediating authentic leaderships relationship with mental health. Previous research has only examined the relationship these behaviours have on outcomes related to mental health in athletes who participate in team sports (Al-Yaaribi et al., 2016; Al-Yaaribi & Kavussanu, 2018). In our research we will also examine individual sports athletes as this allows us to understand the

importance of prosocial and antisocial teammate behaviours across a wider variety sample of athletes, so findings are more generalisable.

Research purposes and hypotheses

The first purpose of this research was to examine the relationship between authentic leadership and mental health in athletes. Despite being examined previously (Kim et al., 2020; Laschinger et al., 2015; Rahimnia & Sharifirad, 2015), we wanted to examine both athlete mental illness and subjective wellbeing. The purpose of this was to assess mental health in accordance with Keyes' (2002) model. We will be assessing both in a sporting population which has yet to be done and will advance upon research solely examining wellbeing such as Kim et al. (2020) and Ruan and Liu (2021).

- *Hypothesis 1: Authentic leadership is positively related to subjective wellbeing and negatively related to mental illness.*

The second purpose of this research was to examine whether the relationship between authentic leadership and mental health is moderated by competition level or sport type. As elite athletes and individual sports athletes suffer mental health problems more than non-elite and team sports athletes, authentic leadership can influence the more vulnerable athlete populations to a greater extent.

- *Hypothesis 2a: Competition level moderates the relationship between authentic leadership and mental health. In elite athletes the positive relationship between authentic leadership and mental health will be significantly stronger than in non-elite athletes.*
- *Hypothesis 2b: Sport type moderates the relationship between authentic leadership and mental health. In individual sports athletes the positive relationship between authentic leadership and mental health will be significantly stronger than it will be in team sports athletes.*

The final purpose of this research was to examine the process in which authentic acts on mental health. In sport, Kim et al. (2020) and McDowell et al. (2018) have both examined psychological capital as a mediating variable for this relationship. Again, only wellbeing was examined as the measure for mental health which does not get an accurate picture of a complex topic that is overall mental health. In our research, we will also be

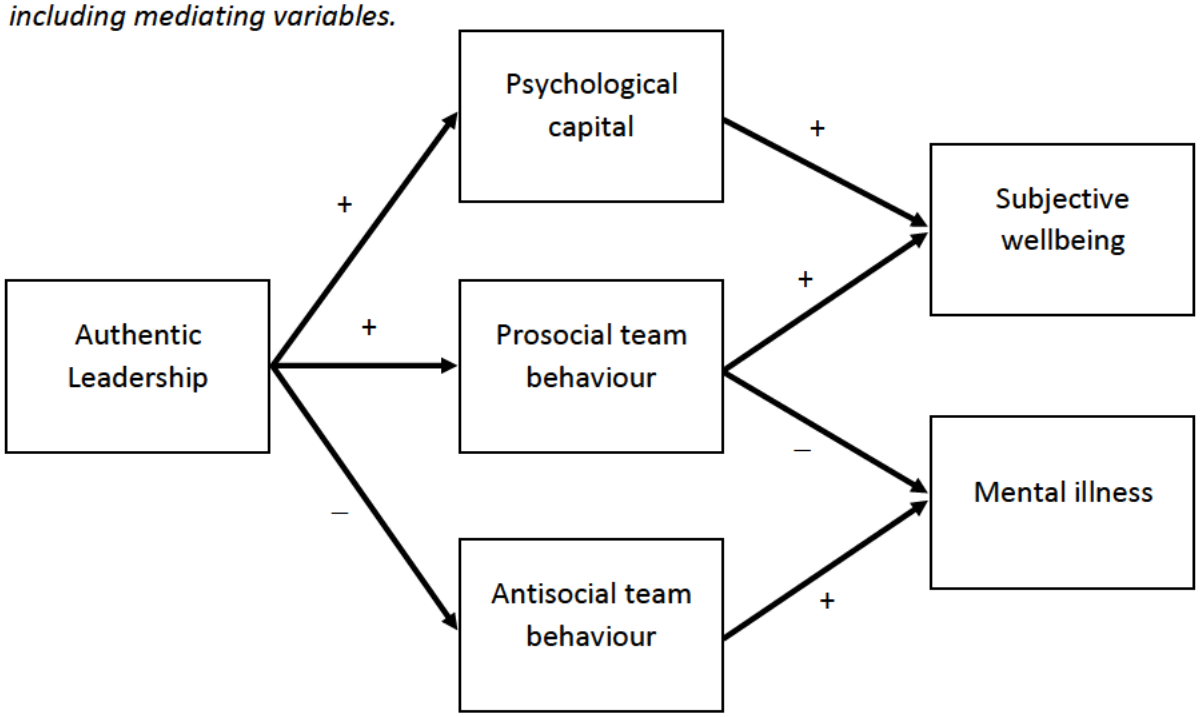
examining two potential other mediating variables relating to teammate behaviours, prosocial and antisocial.

- *Hypothesis 3a: Psychological capital and prosocial teammate behaviour positively mediate the positive relationship between authentic leadership and subjective wellbeing. Authentic leadership is positively related to psychological capital and prosocial teammate behaviour which are both positively related to subjective wellbeing.*
- *Hypothesis 3b: Prosocial teammate behaviour and antisocial teammate behaviour mediate the negative relationship between authentic leadership and mental illness. Authentic leadership is positively related to prosocial teammate behaviour and negatively related to antisocial teammate behaviour which are positively and negatively related to mental illness respectively.*

Hypothesis 3a and 3b are illustrated in Figure 2.

Figure 2.

Hypothesised relationship between authentic leadership and mental health outcomes, including mediating variables.



Method

Participants

Participants consisted of 647 athletes (56.3% male) with a mean age of 22.7 (SD=8.9) years. Most athletes were undergraduate students (62.0%) but there were also college students, part-time and full-time employees. There was a mix of team (70.0%) and individual (30.0%) sports athletes, with the most popular sports being hockey (18.4%), rugby union (15.3%), athletics (14.8%), and football (12.7%). Most participants were classed as non-elite but 16.1% were grouped as elite as they competed at either a national or international level. The most frequent responses for demographics relating to training and their coach were, 29.5% of athletes trained between 3-4 hours a week, 36.6% of athletes reported training with other athletes 1-2 times a week, 34.5% of athletes trained with their coach present 1-2 times a week, and 31.2% of athletes had been with their coach between 3-5 months, although 20.6% of athletes had been with their coach for over 2 years. This information, along with a more detailed breakdown of variables are presented in Table 1.

Table 1.

Detailed demographics, competition level, and sport type.

Variable(s)	Frequency (N)	Percentage (%)
Gender		
Male	364	56.3
Female	281	43.4
Other	2	0.3
Employment		
College student	55	8.5
College & part-time employment	3	0.5
Undergraduate student	401	62.0
Undergraduate & part-time employment	43	6.6
Undergraduate & full-time employment	2	0.3
Postgraduate student	33	5.1
Postgraduate & part-time employment	3	0.5
Postgraduate & full-time employment	5	0.8
Part-time employment	13	2.0
Full-time employment	81	12.5
Unemployed	8	1.2
Current competitive Level		
International*	36	5.6
National*	68	10.5
Regional	227	35.1
County	31	4.8
Club/Recreational	285	44.0
Sport		
American football	4	0.6
Archery*	3	0.5
Athletics*	96	14.8
Aussie rules	11	1.7
Badminton*	3	0.5
Basketball	47	7.3
Boxing*	3	0.5
Cheerleading	18	2.8
Climbing*	1	0.2
Cricket	14	2.2
Cycling*	4	0.6
Dance*	15	2.3
Dodgeball	4	0.6
Equestrian*	1	0.2
Fencing*	2	0.3
Football	82	12.7

Futsal	1	0.2
Golf*	5	0.8
Gymnastics*	7	1.1
Handball	2	0.3
Hockey	119	18.4
Ice hockey	3	0.5
Judo*	2	0.3
Karate*	1	0.2
Kickboxing*	1	0.2
Korfball	2	0.3
Lacrosse	3	0.5
Martial arts*	2	0.3
Netball	20	3.1
Netball and ballroom dance	1	0.2
Rowing	17	2.6
Rugby League	1	0.2
Rugby Union	99	15.3
Skateboarding*	2	0.3
Squash*	14	2.2
Squash and boxing*	1	0.2
Swimming*	10	1.5
Table tennis*	1	0.2
Tennis*	9	1.4
Trampolining*	3	0.5
Triathlon*	7	1.1
Ultimate frisbee	2	0.3
Volleyball	2	0.3
Waterpolo	1	0.2
Weightlifting*	1	0.2
Sport Type		
Team	453	70.0
Individual	194	30.0
Total	647	100.0

Note. * Indicates elite competition and individual sports.

Figure 3.
Athlete Gender

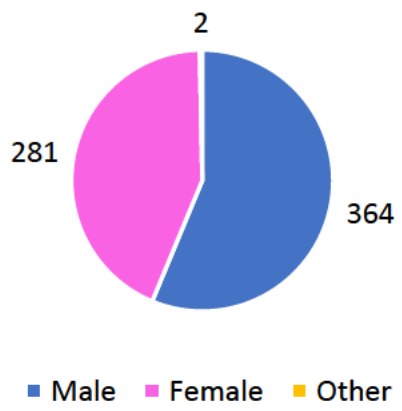
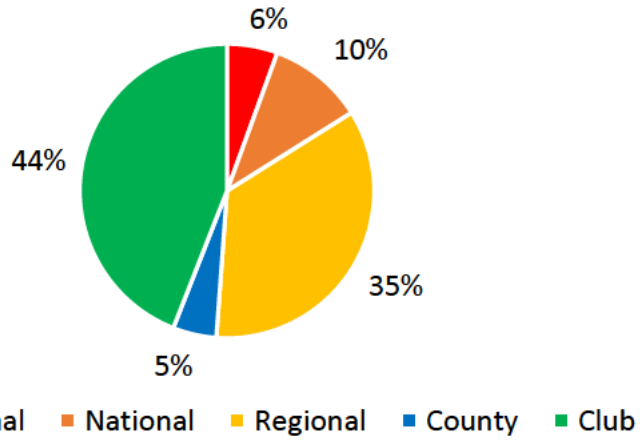


Figure 3 represents a visualisation of the frequency of each gender our sample consisted of. The majority of athletes who participated in our research were male (56.3%). The remainder of the sample were female (43.4%) apart from 2 athletes who responded as other (0.3%).

Figure 4.
Athlete competition level



The competition level at which athletes in our sample competed at is visualised in Figure 4. The most popular competition levels were club/recreational level at 44% and regional level at 35.1%. 16.1% of the sample were performing at an elite level as 5.6% of athletes competed internationally and 10.5% competed nationally.

Figure 5.
Athlete Sports

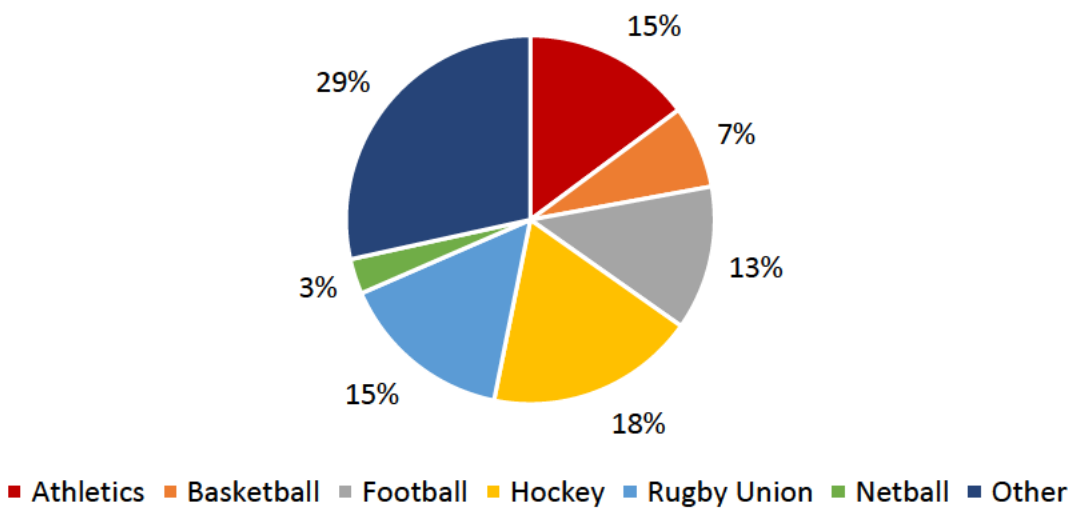


Figure 5 summarises the distribution of which sports athletes competed in. Large percentages of athletes competed in hockey, athletics, rugby union, and football, at 18%, 15%, 15%, and 13% respectively. Other popular sports included basketball and netball. The remaining 29% of athletes competed in other sports.

Measures

Mental health

To appropriately examine both aspects of the model, two measures for mental health were used in this study. Both measures were assessing the athlete's recent mental health as each measure started by asking the athlete to respond to each item while thinking "in the past month".

The first measure we are using to assess each athlete's mental health is the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS; Tennant et al., 2007). This scale consists of 14 items measuring mental well-being and recorded responses on a scale of 1-5 from "none of the time" to "all of the time". Although this scale is labelled to measure mental well-being it is conceptually similar to subjective wellbeing which is what we have been discussing. This measure has been used frequently in research due to demonstrating high levels of internal consistency (.89) and validity (Tennant et al., 2007). Example items included "I have been feeling confident", "I have been thinking clearly" and "I have been feeling close to other people". We chose this measure as we deemed it important to view

the social aspect of wellbeing rather than solely psychological as done in previous research (Kim et al., 2020; Ruan & Liu, 2021) due to Ryff and Keyes (1995) model of wellbeing stating that six components produce an overall wellbeing, which are: self-acceptance, personal growth, purpose in life, positive relations with others, environmental mastery, and autonomy. Due to items in the scale measuring multiple dimensions of this model, we deemed it an accurate measure for subjective wellbeing. When scoring each of our variables we computed an average for each individuals' responses per measure and used that.

To measure mental illness, we used the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) which is a 42-item questionnaire that measures each of these mental illnesses. The DASS-21 is a reduced 21-item questionnaire from the original 42 items with 7 items each for depression, anxiety, and stress which is the measure we decided to adopt. Example items include "I felt downhearted and blue" (depression), "I was worried about situations in which I might panic and make a fool of myself" (anxiety), and "I found it difficult to relax" (stress). Each response was recorded on a Likert scale of 1-5 from "none of the time" to "all of the time" when thinking about the past month. This scale has high levels of internal consistency with Cronbach's alphas between .78-.89 (Coker et al., 2018). Upon completion of the DASS-21, the athletes will get a total score produced for depression, anxiety, and stress from the summation of each response measuring these variables. These scores are also able to be used to place the athlete on a scale of "normal" to "extremely severe" for risk of depression, anxiety, and stress. These scores are produced by totalling their response scores for each item and multiplying it by 2 for DASS21 to then assess in line with scores for each mental illness grouping. As we expected most athletes to be in either "normal", "mild", or "moderate" and very few athletes to be in either "severe" or "extremely severe", we used mean scores and did not categorise athletes based upon these to allow for more effective comparisons. We also examined the three mental illnesses of depression, anxiety, and stress together to produce one overall score for athlete mental illness as opposed to having an individual score for each illness.

Authentic Leadership

Authentic leadership was measured using the Authentic Leadership Inventory (ALI; Neider & Schriesheim, 2011). The ALI is a 14-item questionnaire that was developed as an advancement upon the previously used Authentic Leadership Questionnaire (ALQ;

Walumbwa et al., 2008) following rigorous testing to ensure greater validity but examines authentic leadership using the same 4 dimensions (Neider & Schriesheim, 2011). The ALI is the measure we chose to use in this research due to this reason as well as demonstrating content and discriminant validity, reliability, factor structure, while also scoring greater internal consistencies than the ALQ due to having alphas in the range of .74-.85. This was found when examining both the ALI and ALQ in the same research (Fusco et al., 2016). We also chose to use the ALI rather than the ALQ due to being used in Kim et al.'s (2020) research that is similar to ours. Other recent research using the ALI is Schriesheim and Liu (2018) who found a Cronbach's alpha of .94 and subscales in the range of .80-.83. We measured responses from the ALI using a Likert scale of 1-5, from strongly disagree to strongly agree. We stated to athletes before measuring authentic leadership "This section is about your current coach, whom you interact most with. Please respond to each statement while thinking about how accurately it describes your current coach." Each item was measured started the stem "my coach…" and example items for each component of authentic leadership include "openly shares information with others" (relational transparency), "shows that they understand their strengths and weaknesses" (self-awareness), "shows consistency between their beliefs and values" (internalised moral perspective), and "carefully listens to alternative perspectives before reaching a conclusion" (balanced processing).

Psychological Capital

We used the PsyCap Questionnaire-12 (PCQ-12; Luthans et al., 2008; Avey et al., 2011) as our measure of psychological capital which consisted of measuring each subconstruct which are hope, efficacy, resilience, and optimism. The PCQ-12 was a development of the extended version PsyCap Questionnaire (PCQ; Luthans et al., 2007). The PCQ-12 reduced 24 items down to 12 items but still measured each subconstruct of psychological capital. The PCQ-12 has demonstrated acceptable levels of both reliability and construct validity in multiple samples (Luthans et al., 2008). The PCQ-12 is a measure for psychological capital that examines it in terms of business and management. As a result, we needed to adapt this measure to fit a sporting environment, this had previously been done by Kim et al. (2020) so we used aspects of their adaptation as well as our own changing

"work" to "sport", "colleagues" to "team or training group", and "meetings with management" to "speaking with my coach".

We produced a 13-item measure of psychological capital, primarily from the PCQ-12 but also some items that were suitably adaptable to a sporting environment from the original PCQ. We used 13 items instead of the original 12 in the PCQ-12 due to responses from a small group of undergraduate students during our pilot testing to make the questionnaire more relevant to athletes and clearer for a sporting context. The two items we removed from the original scale were "If I have a problem in my sport, I could think of many ways to get out of it" and "I can be 'on my own' during sport if I have to be" as pilot testing revealed these to be confusing and unclear for participants. As we wanted to keep at least the same number of items per subconstruct of psychological capital, we then added items to replace removed the items from hope and resilience. The items we included as a replacement came from the full scale PCQ and were "Nowadays, I try to achieve my sporting goals with great energy" as a measure of hope, and "I feel that I can handle many things at the same time in sport" as well as "In general, I can manage sport and its difficulties" to measure resilience. We made the decision to add two items instead of one for resilience due to feedback from the undergraduate students who completed the pilot testing, stating they preferred both items to the original version.

When measuring psychological capital, we asked athletes "Please think about your current experiences in your main sport and indicate how accurately the following statements describe you." Example items we produced for this that were not in the original PCQ-12 were "I can manage sport and its difficulties" and "I try to achieve my sporting goals with great energy". We measured these items using a Likert scale of 1-7 from strongly disagree to strongly agree. We used a scale of 1-7 when measuring the PCQ-12 items as previously done in other research in sport and physical activity (Lines et al., 2021). Example items include "I can see myself as being pretty successful in my sport" (hope), "I feel confident contributing when talking about sporting strategy" (efficacy), "I usually deal well with stressful sporting situations" (resilience), and "I always look on the bright side of things regarding my sport" (optimism). We had each item beginning with the stem "currently" so that it got a picture of their psychological capital at the moment they responded to the questionnaire and therefore was consistent with the mental health measures.

Prosocial and antisocial teammate behaviour in sport

When examining teammate behaviours, we wanted to consider both positive and negative behaviours which led us to the use two adapted subscales of the Prosocial and Antisocial Behaviours in Sport Scale (PABSS; Kavussanu & Boardley, 2009). The PABSS is a 20-item questionnaire that includes prosocial and antisocial behaviours referring to both teammates and opponents. All subscales within the PABSS have demonstrated acceptable internal consistency with alpha coefficients of .68-82 (Kavussanu et al., 2013). As our research does not include reference to opposition, we have excluded both the prosocial and antisocial behaviours towards opposition subscales when using this scale. This had resulted in our research using 10 of the items, measuring prosocial teammate behaviour and antisocial teammate behaviour. We adapted the items slightly so that they would also refer to training groups instead of teams for individual sports athletes as we used "This season, my teammates or training partners…" as the stem for this measure. Example items for prosocial teammate behaviours included "gave me positive feedback" and "encouraged me", whereas examples for antisocial teammate behaviour items were "argued with me" and "swore at me". Each item was measured in terms of frequency the athlete experienced these behaviours from their teammates or training partners and were measured on a Likert scale of 1-5 from "never" to "very often".

Procedure

After being granted ethical approval from the University of Birmingham, we pilot tested our research on a small sample of 8 athletes that would represent the majority of the sample of the final research due to consisting of elite and non-elite athletes, while also having team and individual sports athletes. Following this, we made small adjustments to the questionnaire to make it more easily understandable for example changing the wording of some items in the measures while keeping the same meaning e.g., "uses his/her core beliefs to make decisions" became "bases their decisions on their values". Then we started recruiting participants.

To recruit participants, contact letters (Appendix 1) were sent to both university and local coaches from a combination of both team and individual sports which asked them to inform their athletes of the questionnaire and whether they would be willing to participate. 4 local colleges were also contacted to increase the number of elite athletes we had in our

sample as we contacted sports colleges. After the initial point of contact, follow up procedures occurred to increase the likelihood of participation. Coaches and athletes were offered to hear the results of the study which investigated the effect of the coach on the athlete's mental health, increasing their likelihood to help in participation. Athletes were also recruited via their university email where they were sent a brief description of the study, with an attached information sheet, and were asked to email back if they were willing to participate. Local sports colleges were contacted as a way of increasing the sample of elite athletes we had participating in this study. Finally, athletes were recruited via social media platforms.

As an incentive for athletes to be willing to participate, they were informed about a raffle that would take place following the completion of the research where Amazon gift vouchers would be available. Prior to the athlete completing the questionnaire, they were sent or given an information sheet via email describing the research taking place and their involvement, this is shown in Appendix 2. The athlete completed the questionnaire online, where we used Jisc surveys to collect the data. Participants were informed about the confidentiality of their responses to reduce the effect of desirable answers and were asked to answer with complete honesty. Following the athlete completing the questionnaire, they were directed towards mental health support networks if they wished to view them, athletes who also scored as extreme in terms of risk for mental illness were also contacted to encourage them to reach out for support in alignment with our ethics.

Data Analysis

Data was collected on Jisc Surveys before then being input into IBM SPSS Statistics. Responses were coded before then being analysed. A multivariate linear model was used to examine the differences between gender, competition level, and sport type on mental health. PROCESS V4.0 (Hayes, 2017) SPSS macro (model 1) was used to examine potential moderation of the relationship between authentic leadership and mental health, examining competition level and sport type as moderators. Finally, SPSS macro (model 4) was used to identify the process in which authentic leadership influenced mental health, examining psychological capital, prosocial and antisocial teammate behaviours as mediators. We have used the term mediators, however, as this research was cross-sectional, these are potential mediators as causality cannot be established.

Results

Preliminary Analyses

To begin our analysis, we conducted preliminary analyses where we identified if there was missing data, skewness and kurtosis, outliers, and scale reliabilities. Due to our research taking place via an online questionnaire on Jisc Survey, we made each question compulsory and as a result we had no missing data. Skewness and kurtosis were found to be scored as low due to less than 2 for each variable measured (Tabachnick & Fidell, 2007) except for age. We examined outliers using boxplots, scatterplots, and stem and leaf diagrams, and identified 16 outliers in the data that were notably outside of the interquartile range, and therefore were removed from our main analysis. Finally, in our preliminary analyses, we examined each scale's reliability by computing a Cronbach's alpha score for each variable we measured. These reliability alphas are presented in the descriptive statistics table alongside, means, standard deviations, and bivariate correlations, in Table 2 and 3.

Table 2.

Cronbach's alphas, descriptive statistics, and scale range.

Variable	α	M	SD	Minimum	Maximum	Scale Range
Authentic Leadership	.89	3.83	.56	1.71	5.00	1-5
Subjective Wellbeing	.92	3.41	.71	1.14	5.00	1-5
Mental Illness	.94	2.00	.69	1.00	4.10	1-5
Psychological Capital	.91	5.35	.88	2.38	7.00	1-7
Prosocial Behaviour	.84	4.00	.63	1.80	5.00	1-5
Antisocial Behaviour	.84	2.01	.75	1.00	4.40	1-5

Table 2 indicates part of the preliminary analysis and demonstrates that all the measures we used in our research had high levels of internal consistency as shown by Cronbach's alphas in the range of .84 to .94. The mean authentic leadership was moderately high with a 3.83 score on a scale of 1-5, and subjective wellbeing was demonstrated to be moderate with a 3.41 mean on a scale of 1-5 which showed the average athlete was doing relatively well for wellbeing measures. The mean for mental illness was 2.00 out of a scale of 1-5 which showed a generally low trend for athletes suffering in terms of mental illness.

Mean scores for psychological capital and prosocial teammate behaviour were high with respective means of 5.35 and 4.00 on scales of 1-7 and 1-5. Finally, antisocial teammate behaviour was relatively low across the whole sample with a mean score of 2.01 which equated to athletes “rarely” experiencing antisocial teammate behaviour.

Table 3.
Pearson correlations

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Authentic Leadership													
2. Subjective Wellbeing	.23**												
3. Mental Illness	−.11**	−.62**											
4. Psychological Capital	.45**	.48**	−.35**										
5. Prosocial behaviour	.45**	.32**	−.19**	.42**									
6. Antisocial behaviour	−.23**	.01	.08	−.10*	−.15**								
7. Competition level	.10*	.04	−.02	.13**	.00	−.04							
8. Sport type	.12**	−.03	.13**	−.01	−.01	−.25**	.22**						
9. Gender	.04	−.12**	.18**	−.04	.08*	−.40**	.06	.17**					
10. Age	−.01	.07	−.09*	.10*	−.09*	−.05	.03	−.12**	.05				
11. Training hours	.09*	.09*	−.05	.14**	.07	−.09*	.38**	.32**	.06	−.14**			
12. Training with others	.10*	.06	−.03	.08	.10*	−.07	.32**	.20**	.04	−.23**	.70**		
13. Training with coach	.10*	.07	−.05	.12**	.11**	−.08*	.31**	.05	.03	−.23**	.64**	.69**	
14. Time with coach	−.03	.04	−.01	.07	−.01	.10**	.10*	.17**	.07	.11**	.10**	.08	.05

Note. *p<.05, **p<.01. Coding. Non-elite competition = 0, Elite competition = 1; Team sport = 0, Individual sport = 1; Male = 0, Female = 1

This descriptive statistics table and following correlation table have demonstrated potential relationships we may expect to find in our main analysis. The correlation table has also supported our hypothesis between authentic leadership and subjective wellbeing and mental illness. As can be seen in Table 3, authentic leadership has a small-to-medium positive correlation with subjective wellbeing (r = .23) and a small negative correlation with mental illness (r = −.11) in accordance with Cohen's (1988) effect sizes. These effect sizes are categorised as .10 as a "small" or weak correlation, .30 as a "medium" or moderate correlation, and .50 as a "large" correlation. Subjective wellbeing also had positive moderate correlations with psychological capital and prosocial teammate behaviour, and a weak negative correlation with gender demonstrating females to score lower for wellbeing than males. Mental illness had a moderate and weak negative correlation with psychological capital and prosocial teammate behaviour respectively. Mental illness also had a weak positive correlation with gender and sport type, demonstrating females and individual sports athletes scored greater for mental illness. As a result of these findings, we then ran a MANOVA to analyse competition level, sport type, and gender effects on mental health by analysing both subjective wellbeing and mental illness.

Firstly, we examined competition level on mental health, but the MANOVA demonstrated no significant effect for either subjective wellbeing or mental illness. When examining sport type and mental health, the MANOVA demonstrated that sport type had a significant effect $F(2,621) = 3.82$, p=.02, η_p^2 =.01. There was no significant effect on subjective wellbeing, however there was a significant effect when examining mental illness $F(1,622) = 5.45$, p=.02, η_p^2 =.01. Individual sports athletes (M=2.13, SD=.70) reported greater mental illness than team sports athletes (M=1.94, SD=.68). There was no significant interaction effect between sport type and competition level on mental health.

Finally, the MANOVA revealed a significant effect of gender on mental health $F(2,621) = 7.40$, $p<.01$, η_p^2 =.02. When examining subjective wellbeing gender had a significant effect $F(1,622) = 5.77$, p=.02, η_p^2 =.01 with males (M=3.48, SD=.69) having a greater subjective wellbeing than females (M=3.31, SD=.72). Gender also had a significant effect on mental illness $F(1,622) = 14.82$, $p<.01$, η_p^2 =.02. Females reported greater mental illness (M=2.13, SD=.69) than males (M=1.89, SD=.67). However, there was no significant interaction effect when examining gender with either sport type or competition level on mental health.

Main Analyses

In our main analysis we analyse the remaining aspects of our hypothesis such as the process in which authentic leadership and the potential moderation of the relationship between authentic leadership and mental health.

Our first research purpose was to examine the relationship between authentic leadership and mental health which we have examined through correlations. When discussing mental health, this consisted of examining both subjective wellbeing and mental illness. The second purpose of this research was to examine potential moderation of the relationship between authentic leadership and mental health by variables such as competition level and sport type. We did this by using PROCESS V4.0 (Hayes, 2017) SPSS macro (model 1).

Moderation of the relationship between authentic leadership and mental health

To examine moderation, we used PROCESS V4.0 (Hayes, 2017) SPSS macro (model 1). Firstly, we examined whether competition level moderated the relationship between authentic leadership and mental health.

Competition level as a moderator

Table 4.

Competition level as a moderator: Authentic leadership and subjective wellbeing

Pathways	Estimate	t	95% CI
Direct effects on Subjective wellbeing			
Authentic Leadership	.25**	4.66	.14, .36
Competition level	−.85	−1.61	−1.88, .18
Interaction	.22	1.68	−.04, .48

Note. Unstandardized coefficients are shown. CI = confidence interval. Coding: Non-elite = 0, Elite = 1. *p<.05, **p<.01.

Table 5.

Competition level as a moderator: Authentic leadership and mental illness

Pathways	Estimate	t	95% CI
Direct effects on Mental illness			
Authentic Leadership	−.12*	−2.29	−.23, −.02
Competition level	.31	.60	−.72, 1.34
Interaction	−.08	−.63	−.34, .18

Note. Unstandardized coefficients are shown. CI = confidence interval. Coding: Non-elite = 0, Elite = 1. *p<.05, **p<.01.

Sport type as a moderator

Table 6.

Sport type as a moderator: Authentic leadership and subjective wellbeing

Pathways	Estimate	t	95% CI
Direct effects on Subjective wellbeing			
Authentic Leadership	.29**	5.27	.18, .40
Sport type	−.13	−.29	−1.04, .77
Interaction	.01	.10	−.22, .24

Note. Unstandardized coefficients are shown. CI = confidence interval. Coding: Team sport = 0, Individual sport = 1. *p<.05, **p<.01.

Table 7.

Sport type as a moderator: Authentic leadership and mental illness

Pathways	Estimate	t	95% CI
Direct effects on Mental illness			
Authentic Leadership	−.18**	−3.34	−.29, −.08
Sport type	−.25	−.55	−1.15, .64
Interaction	.12	1.02	−.11, .35

Note. Unstandardized coefficients are shown. CI = confidence interval. Coding: Team sport = 0, Individual sport = 1. *p<.05, **p<.01.

Mediation of the relationship between authentic leadership and mental health

To test our third hypothesis of our mediating variables in these relationships we used PROCESS V4.0 (Hayes, 2017) SPSS macro (model 4). This examined both the direct effect of authentic leadership on subjective wellbeing and mental illness, and the indirect effects of authentic leadership on subjective wellbeing and mental illness via parallel mediating variables of psychological capital, prosocial behaviour, and antisocial behaviour. Bootstrapping was set to 10,000 samples, confidence intervals (CI) were based at 95%, and significant interactions were flagged at $p<.05$. Authentic leadership had a significant positive total effect on subjective wellbeing $b=.29$, 95% CI [.20, .37] and a significant negative total effect on mental illness $b=-.14$, 95% CI [−.23, −.05].

Mediation Analysis: Subjective Well-Being

To examine potential mediation of these relationships, we examined authentic leaderships relationship with the three mediating variables and then these variables relationships with subjective wellbeing. We examined the role of each mediating variable individually for subjective wellbeing and then we examined all three mediating variables simultaneously in a parallel mediation to see their relative mediating effect.

Table 8.

Pathways between Authentic leadership and subjective wellbeing through psychological capital.

Pathways	Estimate	t	95% CI
Direct effects of Authentic Leadership on			
Psychological Capital	.69**	12.45	.58, .80
Subjective Wellbeing	.02	.46	−.07, .12
Direct effect of Psychological Capital on			
Subjective Wellbeing	.38**	12.20	.32, .45
Indirect effects of Authentic Leadership on Subjective Wellbeing via			
Psychological Capital	**.27**		.21, .33
Total effect of Authentic Leadership on Subjective Wellbeing	.29**	5.91	.19, .38

Note. Unstandardized coefficients are shown. CI = confidence interval. *$p<.05$, **$p<.01$.

The indirect effect of authentic leadership on subjective wellbeing via psychological capital was significant (*b*=.27, 95% CI [.21, .33]) as the confidence intervals did not include both positive and negative values.

Table 9.

Pathways between Authentic leadership and subjective wellbeing through prosocial teammate behaviour.

Pathways	Estimate	t	95% CI
Direct effects of Authentic Leadership on			
Prosocial Behaviour	.50**	12.56	.42, .58
Subjective Wellbeing	.13*	2.52	.03, .24
Direct effects of Prosocial Behaviour on			
Subjective Wellbeing	.31**	6.55	.22, .40
Indirect effects of Authentic Leadership on Subjective Wellbeing via			
Prosocial Behaviour	**.16**		.10, .21
Total effect of Authentic Leadership on Subjective Wellbeing	.29**	5.91	.19, .38

Note. Unstandardized coefficients are shown. CI = confidence interval. *p<.05, **p<.01.

Table 9 demonstrates that prosocial teammate behaviour partially mediated the relationship between authentic leadership and subjective wellbeing supporting our hypothesis.

Table 10.

Pathways between Authentic leadership and subjective wellbeing through antisocial teammate behaviour.

Pathways	Estimate	t	95% CI
Direct effects of Authentic Leadership on			
Antisocial Behaviour	−.30**	−5.82	−.40, −.20
Subjective Wellbeing	.31**	6.10	.21, .40
Direct effects of Antisocial Behaviour on			
Subjective Wellbeing	.06	1.50	−.02, .13
Indirect effects of Authentic Leadership on Subjective Wellbeing via			
Antisocial Behaviour	−.02		−.04, .01
Total effect of Authentic Leadership on Subjective Wellbeing	.29**	5.91	.19, .38

Note. Unstandardized coefficients are shown. CI = confidence interval. *p<.05, **p<.01.

After examining each potential mediating variable individually, we examined the three simultaneously to see their relative influence on the relationship between authentic leadership and subjective wellbeing. These results are shown in Table 11 and summarised in Figure 6.

Table 11.

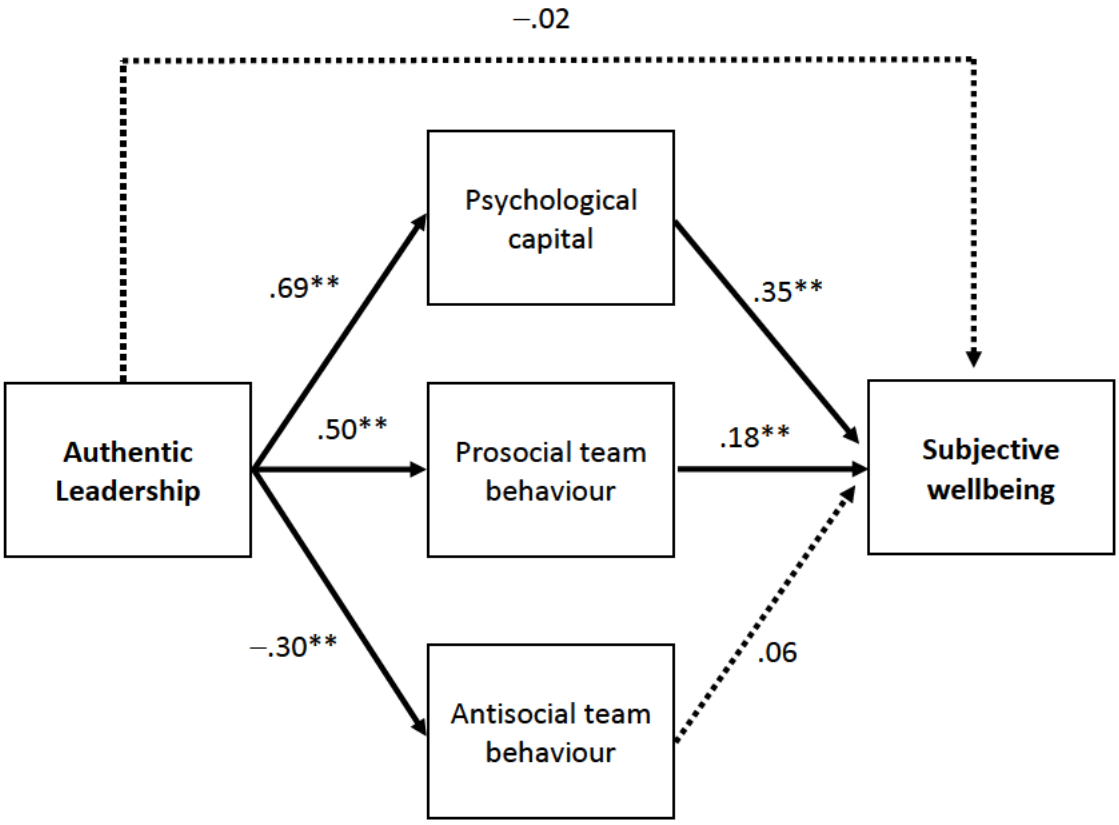
Direct and indirect pathways between Authentic Leadership, Psychological Capital, Prosocial Behaviour, and Antisocial Behaviour with Subjective Wellbeing.

Pathways	Estimate	t	95% CI
Direct effects of Authentic Leadership on			
Psychological Capital	.69**	12.45	.58, .80
Prosocial Behaviour	.50**	12.56	.42, .58
Antisocial Behaviour	−.30**	−5.82	−.40, −.20
Direct effects on Subjective Wellbeing of			
Authentic Leadership	−.02	−.46	−.13, .08
Psychological Capital	.35**	10.76	.28, .41
Prosocial Behaviour	.18**	3.96	.09, .27
Antisocial Behaviour	.06	1.85	−.00, .13
Indirect effects of Authentic Leadership on Subjective Wellbeing via			
Psychological Capital	**.24**		.18, .30
Prosocial Behaviour	**.09**		.04, .14
Antisocial Behaviour	−.02		−.04, .00
Total indirect	**.31**		.24, .39
Total effect of Authentic Leadership on Subjective Wellbeing	.29**	5.91	.19, .38

Note. Unstandardized coefficients are shown. CI = confidence interval. *p<.05, **p<.01.

Figure 6.

The effect of Authentic Leadership on Subjective Wellbeing, and the mediating roles of Psychological Capital, Prosocial Team Behaviour, and Antisocial Team Behaviour.



Note. The values demonstrate the unstandardised regression coefficients. Solid lines show significant pathways. **p*<.05, ***p*<.01.

Based on these results psychological capital could be argued to be the most important variable when explaining the relationship between authentic leadership and subjective wellbeing. This was supported by pairwise contrasts of indirect effects which demonstrated contrasts of C1: *b*=.15, 95% CI [.07, .24], C2: *b*=.26, 95% CI [.20, .33], and C3: *b*=.11, 95% CI [.05, .17]. C1 was psychological capital minus prosocial teammate behaviours, C2 was psychological capital minus antisocial teammate behaviours, and C3 was prosocial teammate behaviours minus antisocial teammate behaviours. C1 and C2 both had greater indirect effects than C3, showing psychological capitals importance.

Mediation Analysis: Mental Illness

In this section, we are examining the process in which authentic leadership relates to the other continua of mental health we are using, mental illness. Again, in this section, we will examine each mediating variable individually before analysing the three simultaneously in parallel mediation to identify their relative role.

Table 12.

Pathways between Authentic leadership and mental illness through psychological capital.

Pathways	Estimate	t	95% CI
Direct effects of Authentic Leadership on			
Psychological Capital	.69**	12.45	.58, .80
Mental Illness	.07	1.31	−.03, .17
Direct effects of Psychological Capital on			
Mental Illness	−.29**	−8.96	−.36, −.23
Indirect effects of Authentic Leadership on Mental Illness via			
Psychological Capital	**−.20**		−.27, −.15
Total effect of Authentic Leadership on Mental Illness	−.14**	−2.82	−.23, −.04

Note. Unstandardized coefficients are shown. CI = confidence interval. *p<.05, **p<.01.

Table 13.

Pathways between Authentic leadership and mental illness through prosocial teammate behaviour.

Pathways	Estimate	t	95% CI
Direct effects of Authentic Leadership on			
Prosocial Behaviour	.50**	12.56	.42, .58
Mental Illness	−.04	−.80	−.15, .06
Direct effects of Prosocial Behaviour on			
Mental Illness	−.19**	−3.89	−.28, −.09
Indirect effects of Authentic Leadership on Mental Illness via			
Prosocial Behaviour	**−.09**		−.15, −.06
Total effect of Authentic Leadership on Mental Illness	−.14**	−2.82	−.23, −.04

Note. Unstandardized coefficients are shown. CI = confidence interval. *p<.05, **p<.01.

Table 14.

Pathways between Authentic leadership and mental illness through antisocial teammate behaviour.

Pathways	Estimate	t	95% CI
Direct effects of Authentic Leadership on			
Antisocial Behaviour	−.30**	−5.82	−.40, −.20
Mental Illness	−.12*	−2.44	−.22, −.02
Direct effects of Antisocial Behaviour on			
Mental Illness	.05	1.37	−.02, .12
Indirect effects of Authentic Leadership on Mental Illness via			
Antisocial Behaviour	−.02		−.04, .01
Total effect of Authentic Leadership on Mental Illness	−.14**	−2.82	−.23, −.04

Note. Unstandardized coefficients are shown. CI = confidence interval. *p<.05, **p<.01.

Table 15.

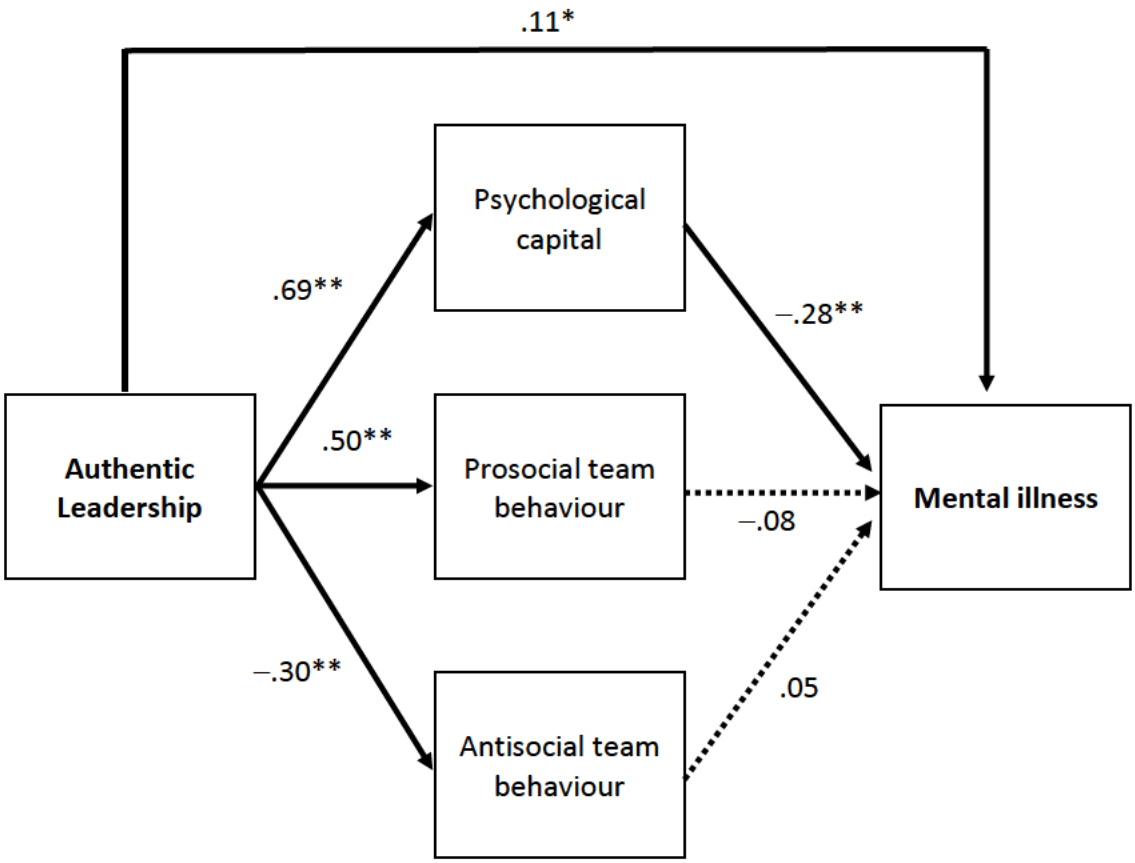
Direct and indirect pathways between Authentic Leadership, Psychological Capital, Prosocial Behaviour, and Antisocial Behaviour with Mental Illness.

Pathways	Estimate	t	95% CI
Direct effects of Authentic Leadership on			
Psychological Capital	.69**	12.45	.58, .80
Prosocial Behaviour	.50**	12.56	.42, .58
Antisocial Behaviour	−.30**	−5.82	−.40, −.20
Direct effects on Mental Illness of			
Authentic Leadership	.11*	2.00	.00, .22
Psychological Capital	−.28**	−8.19	−.35, −.21
Prosocial Behaviour	−.08	−1.58	−.17, .02
Antisocial Behaviour	.05	1.41	−.02, .12
Indirect effects of Authentic Leadership on Mental Illness via			
Psychological Capital	**−.19**		−.26, −.14
Prosocial Behaviour	−.04		−.09, .01
Antisocial Behaviour	−.01		−.04, .01
Total indirect	**−.25**		−.32, −.18
Total effect of Authentic Leadership on Mental Illness	−.14**	−2.82	−.23, −.04

Note. Unstandardized coefficients are shown. CI = confidence interval. *p<.05, **p<.01.

Figure 7.

The effect of Authentic Leadership on Mental Illness, and the mediating roles of Psychological Capital, Prosocial Team Behaviour, and Antisocial Team Behaviour.



Note. The values demonstrate the unstandardised regression coefficients. Solid lines show significant pathways. *p<.05, **p<.01.

Exploratory Analyses

One aspect of the main analyses we found interesting and not aligned with our hypotheses was relating to competition level and mental illness. We found no significant effect of competition level on mental illness $F(1,622) = 1.32$, $p=.25$, $\eta_p^2 = .00$. We examined whether there were significant differences in gender that could explain this finding but an ANOVA revealed no significant differences between gender and competition level $F(1, 628) = 2.23$, $p=.14$, $\eta_p^2 = .00$. As correlations existed between competition level and authentic leadership (r=.10) and psychological capital (r=.13) we examined potential mediation of the null relationship between competition level and mental illness. We did this using PROCESS Model 6 to examine serial mediation.

Table 16.

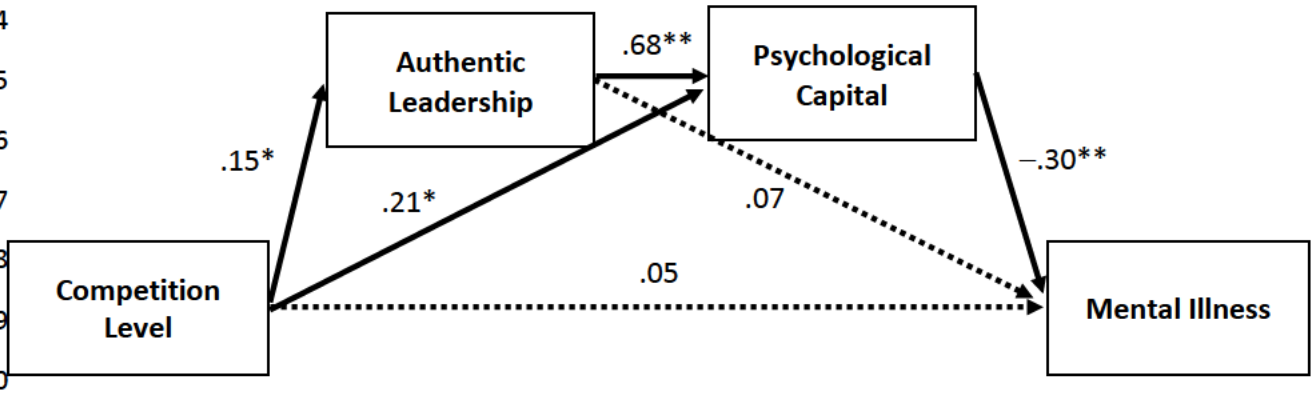
Direct and indirect pathways between Competition level, Authentic Leadership, and Psychological Capital with Mental Illness.

Pathways	Estimate	T	95% CI
Direct effects of Competition level on			
Authentic Leadership	.15*	2.57	.04, .27
Psychological Capital	.21*	2.43	.04, .37
Mental Illness	.05	.68	−.09, .19
Direct effects of Authentic Leadership on			
Psychological Capital	.68**	12.19	.57, .79
Mental Illness	.07	1.27	−.04, .17
Direct effects of Psychological Capital on			
Mental Illness	−.30**	−8.98	−.36, −.23
Indirect effects of Competition level on Mental Illness through			
Authentic Leadership	.01		−.01, .04
Psychological Capital	**−.06**		−.11, −.01
Authentic Leadership -> Psychological Capital	**−.03**		−.06, −.01
Total indirect	**−.08**		−.14, −.03
Total effect of Competition level on Mental Illness	−.03	−.46	−.18, .11

Note. Unstandardized coefficients are shown. CI = confidence interval. *p<.05, **p<.01.

Figure 8.

The relationship between competition level and mental illness, with serial mediation involving authentic leadership and psychological capital.



Note. Solid lines indicate significant pathways. *p<.05, **p<.01.

Table 16 indicates that although there was not a significant effect of competition level on mental illness, this finding can be partly argued to be because of the mediating role of psychological capital. Serial mediation occurred with authentic leadership being positively related to psychological capital which in turn had a significant negative effect on mental illness (b=−.30, p<.01, 95% CI [−.36, −.23]). Therefore, as psychological capital was likely to increase with the athlete being elite, this greater psychological capital resulted in a reduced likelihood of experiencing mental illness. Although elite competition was positively related to authentic leadership, there was no significant finding when examining the effect of authentic leadership on mental illness (b=.07, p=.20, 95% CI [−.04, .17]), as it had to occur through the other mediating variable of psychological capital.

As gender was correlated to both subjective wellbeing (r=−.12) and mental illness (r=.18) where females are demonstrating worse mental health, so we explored whether it moderated our main analysis in authentic leaderships relationship with mental health. Gender did not significantly moderate the relationship between authentic leadership and subjective wellbeing but did significantly moderate the relationship between authentic leadership and mental illness as demonstrated below.

Table 17.

Gender as a moderator for the relationship between sport type and mental illness.

Pathways	Estimate	T	95% CI
Direct effects on Mental Illness			
Authentic Leadership	−.24**	−3.94	−.36, −.12
Gender	−.69	−1.82	−1.42, .05
Interaction	.24*	2.51	.05, .43

Note. Unstandardized coefficients are shown. CI = confidence interval. Coding: Male = 0, Female = 1. *p<.05, **p<.01.

Table 17 demonstrates that authentic leadership had a stronger interaction effect on male mental illness than female mental illness when considering the negative effect of authentic leadership on mental illness. This exploration also identified authentic leadership to have no effect on female athletes' mental illness.

Discussion

Mental health is a hugely important topic for every individual as it contributes to overall health (World Health Organization, 1948). Despite this having been known for a long time, research into mental health has only in the past couple decades started growing. This research consisted of athletes as this is an important population whose mental health can be affected in various ways. Past research has examined and reviewed examples of protective and risk factors for athlete mental health (Küttel & Larsen, 2020) so that athlete mental health can be better understood. One protective factor we focused on in this research is authentic leadership to identify potential relationships it has on various athletes' subjective wellbeing and mental illness.

In this research, we had purposes of investigating authentic leadership in relation to mental health to identify its effectiveness as a leadership style for athletes as previous research (e.g., Kim et al., 2020; Laschinger et al., 2015) has not examined both subjective wellbeing and mental illness in an athlete population. We also examined whether these relationships were the same across athlete groups to identify its generalisability to all athletes or whether it has greater effects on specific groupings. To address these purposes, we examined the relationship authentic leadership has with mental health by examining both subjective wellbeing and mental illness. We then analysed whether these relationships were moderated by competition level or sport type, individual or team. Finally, we investigated the process by which authentic leadership acted on both subjective wellbeing and mental illness by examining three potential mediators in these relationships: these were psychological capital, prosocial teammate behaviour, and antisocial teammate behaviour.

We examined mental health by measuring both an individual's subjective wellbeing and mental illness as these are the two continua to fully understand overall mental health (Keyes, 2002). This has been a weakness of previous research which has either solely examined wellbeing (e.g., Kim et al., 2020) or solely mental illness (e.g., Pluhar et al., 2019). However, we analysed these two continua entirely separately as opposed to combining the two so that an individual can be profiled into a category of mental health. We chose to assess athlete mental health in this way due to expecting low levels of mental illness in our athlete sample so that very few athletes would be in either the "symptomatic but content" or "struggling" profiles where mental illness is high (Keyes, 2002).

Through examining the relationship authentic leadership had with two different mental health measures and seeing how variables may moderate these relationships, we further research in both the field of mental health and authentic leadership, while we propose appropriate recommendations for athletes of different competition levels, sport types, and genders to potentially aid overall athlete mental health.

Athlete mental health

Firstly, as this research was focused on athlete mental health, we interpreted the mean scores for mental health to demonstrate what their subjective wellbeing and mental illness showed. When analysing athletes in our sample's mental health, the mean for wellbeing demonstrated moderate to positive subjective wellbeing. Although this is a decent average, there is evidence for improvement, hence we will suggest interventions to allow for this. When analysing the other aspect of overall mental health, we found our athletes to have a mean score for mental illness that equated to "mild" mental illness on a scale from "normal to extremely severe" (Gomez, 2016). Therefore, we found that mental illness was present in our athlete population due to being greater than "normal", however, it was the least severe scoring of mental illnesses presence. This supported our justification to analyse mental health in subjective wellbeing and mental illness separately as opposed to profiling athletes as the vast majority of athletes would not differ in category based upon mental illness. This separation of subjective wellbeing and mental illness are what Keyes (2002) argued in his model due to each element relating to an individual's overall mental health, but the two are not related to another. Despite this argument, our results found a very strong correlation (r=–.62) between subjective wellbeing and mental illness in our athlete population. Consequently, our results do not fully support the idea that these two continua should be considered distinct and instead we propose that subjective wellbeing and mental illness are related to one another. This finding supports research that links subjective wellbeing and mental illness e.g., Werner (2012) who identify improving subjective wellbeing via hope as an intervention for individuals with severe mental illness.

Authentic leadership and mental health

Our first research purpose was to examine the relationship authentic leadership has with mental health, and we did this through examining subjective wellbeing and mental illness. In our hypothesis 1 we predicted that authentic leadership would be positively

related to subjective wellbeing and negatively related to mental illness. As shown in our results, hypothesis 1 was supported as authentic leadership was positively correlated with subjective wellbeing with a small-to-medium effect size. Through authentic leadership being associated with greater athlete subjective wellbeing, we have supported previous research positively relating authentic leadership and indicators of wellbeing such as that of Laschinger et al. (2015) positively relating authentic leadership to nurses' self-efficacy. We also supported research on athletes such as Malloy et al. (2021a; 2021b) positively relating authentic leadership to athlete enjoyment and positive affect, and Ruan and Liu (2021) positively relating authentic leadership to female athlete psychological wellbeing. When comparing our correlations with previous research examining athlete psychological wellbeing in a mixed sample (Kim et al., 2020) we found a similar strength correlation, although slightly weaker at r=.23 as opposed to r=.32. This demonstrates the finding from Kim et al. (2020) is repeatable in a different athlete sample, albeit with a slightly different measure for wellbeing.

An explanation relating to our findings of authentic leadership and subjective wellbeing could be argued to be a result of the first, and most important, component of authentic leadership which is self-awareness (Hughes, 2005). Self-awareness involves knowing your own strengths and weaknesses but also your emotions (Morin, 2011). Therefore, an authentic leader who displays self-awareness and has their followers mirror this trait will have high levels of emotion regulation which in turn results in greater mental health (Gross & Muñoz, 1995).

Our results also demonstrated authentic leadership to be negatively correlated with mental illness, supporting the other aspect of hypothesis 1. Previous research examining the relationship between authentic leadership and mental illness has produced mixed findings. Laschinger et al. (2015) found authentic leadership to be related to reduced nurse depressive symptoms, whereas Rahimnia and Sharifirad (2015) found no direct effect of authentic leadership on either general or work stress in healthcare professionals. However, Rahimnia and Sharifirad (2015) did find indirect effects for both general and work stress through attachment insecurity, to show authentic leadership does influence stress, even if it's not direct. Our results supported Laschinger et al. (2015) while also strengthening its relevance in sport by demonstrating that these findings can be transferred to a sports

setting. This is due to our measurement of mental illness assessing three variations in the forms of depression, anxiety, and stress.

Our findings relating to authentic leadership and mental illness can again be argued to be as a result of self-awareness within authentic leadership and its subsequent effect on emotion regulation (Gross & Muñoz, 1995; Morin, 2011). As both the leader themselves and their athletes are likely to display higher levels of emotion regulation due to authentic leadership, they have the potential to reduce symptoms associated with mental illness (Hu et al., 2014).

Although there was a significant finding when examining the correlation between authentic leadership and mental illness, the effect size was small due to a weak correlation (r=–.11). Therefore, authentic leadership does not contribute much to preventing mental illness and other factors should be considered.

Authentic leadership and mental health relationship: Moderation by competition and sport type

In our hypothesis 2, there were two components, the first of which related to competition level, and the other was sport type. When examining these, we predicted both competition level and sport type to moderate the relationship between authentic leadership and mental health, both subjective wellbeing and mental illness.

Competition level as a moderator

In our hypothesis 2a we predicted that the strength of the relationship between authentic leadership and mental health would be greater in elite athletes compared to non-elite athletes for both subjective wellbeing and mental illness, which would potentially result in moderation. However, from our analyses we found no significant differences in mental illness between elite and non-elite athletes.

Our exploratory analysis identified that there was a significant indirect effect between competition level and mental illness via psychological capital, demonstrating that psychological capital of elite athletes is negatively related to mental illness. This supports our earlier research demonstrating the importance of authentic leadership and further highlighted the influence of psychological capital when examining athlete mental health which previous research had partially examined (Kim et al., 2020; McDowell et al., 2018). Although psychological capital did significantly negatively relate to elite athletes' risk of

mental illness, our results suggest there must be other factors present aiding this negative association with mental illness that we did not examine.

There were no significant differences in either measure of mental health when contrasting elite versus non-elite athletes which was one aspect of our hypothesis. This topic of research has produced mixed findings previously and this supports those suggesting elite athletes experience similar levels of mental health to the general population (Gouttebarge et al., 2019). Potential explanations for this in our sample could relate to elite athletes not overtraining or being injured which are common reasons for the differences in mental health across competition levels (Purcell et al., 2019).

Another potential explanation we offer for our null finding when examining the differences in mental health between elite and non-elite athletes may relate to the level at which we have classed elite athletes. For the purpose of our research, we classed elite athletes as competing at either national or international level, whereas often in academic research, elite athlete populations are defined as Olympians or World Championship athletes (Swann et al., 2015) who are the most elite and are likely to experience potential stressors to a more extreme level than national level athletes. This is argued to be the case as when researching a group of Canadian Olympians, 41.4% of a sample of 186 athletes from a variety of both individual and team sports met the cut off criteria for having at least one mental health disorder such as depression (Poucher et al., 2021). This research also identified stress and training load to be significant predictors of these disorders which supports that the most elite athletes are likely to experience potential risk factors associated with sports participation (Poucher et al., 2021).

Despite there being no significant differences in mental health between competition levels which we believed to be one reason for moderation to occur, we still examined whether competition level moderated either relationship between authentic leadership and subjective wellbeing or mental illness. We did not find significant moderation of either relationship with mental health outcomes, which did not support our hypothesis or the reasonings we proposed such as impacting on factors that can affect mental health e.g., loneliness which is more frequent in elite athletes (Schrom et al., 2021) and drug use that is more common in elite athletes (Peluso & Andrade, 2005). One potential explanation for these null findings relates to the imbalances in our sample between elite athletes (n=104) and non-elite athletes (n=643) which is an issue described by Shieh (2018) when attempting

to identify a moderating effect. Therefore, this sample imbalance meant that there was not sufficient power within competition levels to have a significant moderating effect.

Another explanation we offer for this is that our results demonstrated that competition level was positively correlated with training with others and therefore the elite athletes we expected may suffer from being isolated or experiencing symptoms of loneliness in fact train with others around them more than non-elite athletes. This finding did not support our hypothesis or past research from interviews with elite golfers highlighting issues such as loneliness, isolation, and a lack of social support (Fry & Bloyce, 2017). Therefore, as elite athletes were not suffering in terms of loneliness and isolation that we expected, an authentic leader could not act on elite athletes any more than non-elite athletes.

Sport type as a moderator

Our hypothesis 2b referred to the potential influence of sport type on the relationship between authentic leadership and mental health. We predicted that the relationship between authentic leadership and mental health would be stronger in individual athletes than in team athletes. Our results showed no significant differences between sport types on subjective wellbeing. We explored this finding as it did not support our hypothesis or previous literature with reasoning that individual sports athletes experience fewer social connections, a reduced group cohesion, and a lesser extent to which their self-efficacy develops because of sport (Sabiston et al., 2016). A potential explanation we have offered for this null finding relates to individual athletes in our sample training more often and as a result more frequently with others than team sport athletes. Therefore, they did not suffer a lack of social nature or connections when participating in their sport.

Our results supported our hypothesis about individual athletes having greater mental illness than team sports athletes as there was a significant difference in mean scores for mental illness when comparing team sport athletes (M=1.94) with individual sports athletes (M=2.13). This supported previous research as a decrease in mental illness following participation in team sport has been demonstrated but not in individual sport (Graupensperger et al., 2021). Although there was a significant finding examining mental illness as the outcome, there was only a very small effect size which demonstrated competition level accounted for just 1% of variation in athlete mental health. As our athlete

population demonstrated individual sports athletes to have greater scores for mental illness through measuring depression, anxiety, and stress, we have supported previous research comparing team and individual sports athletes (Pluhar et al., 2019).

In our research analysing the most popular five sports (athletics, basketball, football, hockey, rugby union) which had 47 athletes or greater, we found athletes who participate in athletics have the greatest score for mental illness and football to have the lowest score. This partially supported research from Wolanin et al. (2016) who demonstrated track and field athletes to have the greatest scores for depression and lacrosse for the lowest scores. Even though the individual sports athletes in our sample trained more often and with others more frequently, this was only related to their subjective wellbeing and not their mental illness as well. An explanation we offer that has previously been suggested before relates to performance failures (Nixdorf et al., 2016). This details that when an athlete who experiences failure in a team sport has reduced feelings of blame as they can share the weight of failure with their teammates who were also involved in the performance, whereas individual sports athletes face the weight of failure by themselves which could potentially lead to developing mental illnesses such as depression.

Following our preliminary analyses examining the relationship between sport type and mental health, we examined whether sport type moderated the relationship between authentic leadership and mental illness. We found no significant moderation for either subjective wellbeing or mental illness. One explanation for not finding moderation when examining subjective wellbeing as the outcome is because we found no differences in subjective wellbeing between team and individual sports athletes irrespective of authentic leadership. This may have been due to the time of the year we administered the questionnaire to athletes as for most individual athletes, who competed in athletics, their competitive season had yet to begin. Therefore, they would not experience negative feelings that we proposed following potential performance failures which are more severe for individual athletes than team sports athletes due to facing failure alone (Nixdorf et al., 2016; Pluhar et al., 2019). As a result of individual sports athletes being less likely to have experienced performance failures, authentic leaders could not reduce negative feelings that would have potentially occurred because of competitions.

Despite there being significant differences between individual and team sports athletes in mental illness, with individual athletes having greater mental illness, we found no

moderation of the relationship between authentic leadership and mental illness by sport type. A potential reason for this null finding relates to our sample. There were over twice as many athletes who participated in team sports (n=453) than individual sports (n=194). Due to these imbalances, it is highly likely that there was insufficient power within sport type for there to be a moderating effect (Shieh, 2018).

Another proposed reason for this null finding is that individual sports athletes trained more hours and more frequently with others than team sports athletes in our sample. This meant they were less likely to be suffering in terms of loneliness or social isolation that an authentic leader could potentially aid more. This argument has been supported when examining long distance runners who either trained individually or in a group (Robinson et al., 2014) as runners who trained with others experienced feelings of belongingness and camaraderie which runners who trained by themselves did not experience. This demonstrated the importance of training with others in individual sports and removes the issue of loneliness or social isolation.

Gender as a moderator

A final potential moderator we examined when considering the relationship between authentic leadership and mental health was gender. Although we did not hypothesise moderation to occur because of gender, we explored its potential due to gender being correlated with both subjective wellbeing and mental illness.

In our preliminary analysis we found females having lower wellbeing and greater mental illness than their male counterparts. Although there were significant findings, the effect sizes gender had on subjective wellbeing and mental illness were also very small, accounting for 1% and 2% of variance in responses respectively. Our findings supported Walton et al. (2021) who found female athletes in Australia to have greater rates of mental illness symptoms while also possessing lower levels of wellbeing than males. Walton et al. (2021) examined only elite athletes, whereas we considered all levels of athletes and have demonstrated the finding is consistent across a whole athlete population regardless of competition level. Explanations for females suffering mental health problems more than males include biological reasons e.g., genetic factors such as pleiotropic effects of genes (Kuehner, 2017), females are also more likely to internalise difficulties more than men who are more likely to externalise and be less vulnerable (Eaton et al., 2012). There are also social and environmental factors that potentially explain the differences in mental health

between genders such as inequality in terms of power, status, and control, as well as females being more likely to experience physical or sexual abuse that leads to mental illness (Kuehner, 2017).

In our exploratory analyses we examined whether gender influenced the relationship between authentic leadership and mental health. We found no significant moderation when examining authentic leaderships relationship with subjective wellbeing but did discover significant moderation when examining authentic leadership and mental illness. In the male population of our sample, there was a negative relationship between authentic leadership and mental illness. However, there was no relationship between authentic leadership and mental illness when examining females. A potential reason for authentic leadership not acting on the relationship females have with mental illness is due to biological and genetic factors that influence female mental illness (Kuehner, 2017) which cannot be altered by a leadership style. Another potential explanation relating to these moderation findings is the slight imbalance between male and female athletes in our sample population at 56% and 43% respectively (Shieh, 2018). This is resulted in our sample consisting of 83 more males than females.

Although we have identified the relationships certain variables have with athlete mental health and have found significant factors such as gender and sport type, their effect sizes were very small which means there are multiple other factors which should be considered when discussing the topic of mental health.

Authentic leadership and mental health: Potential Mediating Variables

When discussing our hypotheses 3a and 3b we proposed three mediating variables in the relationships between authentic leadership and subjective wellbeing and mental illness. These potential mediating variables are psychological capital, prosocial teammate behaviour, and antisocial teammate behaviour.

Psychological capital

Psychological capital was the first of the three mediators we examined in relation to subjective wellbeing and mental illness. As we found authentic leadership to have a significant positive direct effect on psychological capital, we supported arguments from Gardner et al. (2015) stating authentic leaders' model positive psychological states such as efficacy, hope, optimism, and resilience so their followers do the same (Gardner et al. 2015).

The relationship we discovered between authentic leadership and psychological capital had previously been found in sporting populations by McDowell et al. (2018) in a group of basketball players and Kim et al. (2020) in a population of NCAA student athletes. Therefore, there is a lot of evidence aligned with our finding that supports the positive relationship between authentic leadership and psychological capital.

We found psychological capital to have a significant direct effect on subjective wellbeing. This supported previous research examining this relationship (Kim et al., 2020; McDowell et al., 2018). We found that full mediation occurred meaning authentic leadership did not relate to subjective wellbeing other than through psychological capital, which supported past research (Kim et al., 2020) who had demonstrated this indirect relationship. We attribute full mediation due to the components of psychological capital, e.g., hope has been shown to be a strong indicator of positive mental health (Venning et al., 2011), and efficacy has been found to positively relate to wellbeing in a study of golfers (Sorbie et al., 2020). Therefore, psychological capital was a significant mediator in the relationship between authentic leadership and subjective wellbeing which supported our hypothesis.

Although we did not predict psychological capital to mediate the relationship between authentic leadership and mental illness because there was no previous research supporting this, we wanted to examine this to add knowledge to current literature. We found psychological capital to have a significant negative direct effect on mental illness. Psychological capital again fully mediated the relationship between authentic leadership and mental illness, as authentic leadership was found to have no significant direct effect on mental illness when considering psychological capital. As an authentic leader is likely to possess positive psychological states associated with psychological capital, while encouraging their followers to do likewise (Gardner et al., 2015) this provides potential explanations for the relationship with mental illness. One potential explanation relates to the optimism construct within psychological capital. Optimism has been demonstrated to be negatively correlated with depression (Lecomte et al., 2010), which suggests as psychological capital increases so does the individuals optimism which should negatively relate to mental illness. Similarly, hope which is another dimension within psychological capital is also negatively related to mental illness (Venning et al., 2011) which further explains the potential relationship between psychological capital and mental illness.

Psychological capital in athlete's has also been cited to have a positive relationship with athlete performance, an example of this finding is in track and field athletes (Jannah et al., 2018). This athlete population made up a large quantity of participants in this study. As psychological capital has a positive relationship with athlete performances, this is also likely to influence mental health in both wellbeing and mental illness measures (Foskett & Longstaff, 2018). Therefore, we suggest that psychological capital mediates the relationship between authentic leadership and mental health, but this may be mediated further by athlete performances as part of a serial mediation between authentic leadership, psychological capital, athlete performances, and mental health outcomes.

Prosocial teammate behaviour

The next mediating variable we examined was prosocial behaviour in a team or training group. We hypothesised in that prosocial behaviour would mediate the relationship between authentic leadership and subjective wellbeing. We found authentic leadership to have a significant positive direct effect on prosocial teammate behaviours which supported past research relating authentic leadership with prosocial behaviour in a group of army soldiers (Hannah et al., 2011) and more recently in an athlete population (Malloy et al., 2021a).

Our research found a significant positive direct effect between prosocial teammate behaviours and subjective wellbeing. This supported previous research examining indicators of subjective wellbeing as prosocial behaviour has been positively related to enjoyment and effort in an athlete population (Al-Yaaribi et al., 2016). Due to this positive finding between prosocial teammate behaviours and subjective wellbeing, emphasis should be placed in practice to create a positive and protective team climate. This allows for athletes to engage in prosocial behaviours such as congratulating a teammate or encouraging them. Consequently, the athletes that experience this positive team climate are more likely to possess greater subjective wellbeing which has been supported previously by Scott et al. (2021) who also identified a positive relationship between a supportive team climate with happiness, self-kindness and hope which is one component of psychological capital. As a supportive team climate which includes the presence of prosocial behaviours is positively related to other factors such as the components of psychological capital (Scott et al., 2021), which is known to be a protective factor for mental health (Kim et al., 2020; McDowell et al.,

2018). As authentic leadership was still shown to have a significant direct effect on subjective wellbeing, prosocial behaviour only partially mediated the relationship.

In line with our hypothesis, prosocial behaviour had a significant negative direct effect on mental illness which supported previous research negatively relating prosocial teammate behaviours to anger (Al-Yaaribi & Kavussanu, 2018; Al-Yaaribi et al. 2016). When considering prosocial behaviour, authentic leadership had no significant direct effect on mental illness, demonstrating perceived prosocial teammate behaviour fully mediated the relationship and supported our hypothesis. This relationship we found between perceived teammate prosocial behaviour and mental illness supports previous research examining adolescents COVID-19 experiences as experiencing greater amounts of prosocial behaviour was related to a significantly lower score for depressive symptoms (Alvis et al., 2020). However, we found results against this same research as they found a weak positive correlation between experiencing prosocial behaviour with social responsibility and anxiety which is another form of mental illness, and one we examined in this research. One possible explanation for these differences in findings relates to the makeup of their sample as their participants were adolescents and primarily female (78%), who are more likely to experience mental illnesses (Walton et al., 2021). Due to this finding in past research, prosocial behaviour should be monitored so that is not negatively impacting on an individual by putting unwanted pressures on the individual which could lead to anxiety (Alvis et al., 2020).

Antisocial teammate behaviour

The final mediating variable we considered in the relationship between authentic leadership and mental health outcomes was perceived antisocial behaviour in a team or training group. We hypothesised antisocial behaviour would not mediate the relationship between authentic leadership and subjective wellbeing as we expected it to have a weak relationship with subjective wellbeing but a non-significant one. Our results supported this as antisocial behaviour did not have a significant direct effect on subjective wellbeing.

We did however hypothesise that antisocial behaviour would mediate the relationship between authentic leadership and mental illness. We proposed a negative relationship between authentic leadership and antisocial behaviours due to leaders acting in accordance with their morals and standards so their followers should do the same. Our results supported our own proposal by demonstrating a significant negative direct effect

between authentic leadership and antisocial behaviour in a team or training group. We also found antisocial teammate behaviour to have a weak positive correlation with mental illness, but we found no significant direct effect with mental illness and therefore no mediation occurred. This did not support our hypothesis or past research demonstrating the relationship between antisocial behaviour with anger and burnout (Al-Yaaribi & Kavussanu, 2021), especially as burnout is a predictor of depressive symptoms (Laschinger et al. 2015).

A potential explanation relates to the perception of threat that comes from the antisocial teammate behaviour. It has been previously found that swearing, which is a common example item of antisocial teammate behaviour (Kavussanu & Boardley, 2009), is not perceived as threatening or harmful when it comes from someone who is familiar to the individual (Beattie et al., 2022) such as a teammate or training partner. Therefore, if the antisocial behaviours the athlete is experiencing are not being perceived as harmful then they should not be related to mental illness.

Parallel mediation

Following analysing each mediating variable individually, we analysed the three simultaneously to discover their relative importance in mediating the relationship between authentic leadership and subjective wellbeing and mental illness. Psychological capital was demonstrated to be the most important of the mediating variables in both relationships due to significant direct effects on subjective wellbeing and mental illness, even when considering authentic leadership, prosocial behaviour, and antisocial behaviour. Not only was psychological capital the only of the three mediators to significantly mediate authentic leadership's relationship with both outcomes, but it also had the greatest relative relationship as shown by contrasts of indirect effects.

Even though psychological capital held the greatest relative importance out of the three mediating variables we examined, prosocial teammate behaviour still partially mediated the relationship between authentic leadership and subjective wellbeing. Previous research has demonstrated other variables such as team cohesion alongside psychological capital to mediate the relationship between authentic leadership and wellbeing (Ruan & Liu, 2021). Therefore, we have supported previous research demonstrating partial mediation through psychological capital and have shown that multiple variables explain the relationship between authentic leadership and subjective wellbeing. Due to this, leaders should aim to improve their athlete's psychological capital, encourage the frequency of

prosocial behaviours that occur in a team or training group, and create an environment to result in greater levels of cohesiveness in this team or training group.

Through investigating the process in which authentic leadership is related to subjective wellbeing and mental illness, we have increased evidence supporting the importance of psychological capital in the relationship with wellbeing (Kim et al., 2020; McDowell et al., 2018; Ruan & Liu, 2021). We also identified psychological capital to mediate the relationship between authentic leadership and mental illness, which had not previously been examined. Finally, through mediation analysis, we found that prosocial teammate behaviour is another mediator in the relationship between authentic leadership and subjective wellbeing which adds to current literature as the relationship between authentic leadership, prosocial teammate behaviour, and mental health had not been investigated in prior research. Therefore, we further understand factors that relate to an athlete's overall mental health, which results in encouraging coaches to aim at improving an athlete's psychological capital and a team's engagement in prosocial behaviours.

Practical implications and potential interventions

Through our first research purpose of identifying the relationship authentic leadership has with mental health we have shown its effectiveness as a leadership style. Our findings strongly suggest authentic leadership to be a protective factor when considering athlete mental health which is an aspect of health that holds great importance. We have supported previous research relating authentic leadership to wellbeing (Kim et al., 2020), while also adding the relationship of authentic leadership and mental illness in a sample of athletes, allowing for a fuller picture of authentic leaderships influence on overall athlete mental health. As we have contributed further evidence for the relationship between authentic leadership and athlete subjective wellbeing, coaches should aim to possess high levels of authenticity as it has the potential to increase subjective wellbeing and decrease mental illness in their athletes. Based upon this, for coaches to become more authentic, an intervention should focus on increasing the number of authentic behaviours a coach possesses such as that previously performed in research by Malloy and Kavussanu (2021b). Examples of these authentic behaviours include the coach being open with their athletes, having a greater understanding of themselves as they act in accordance with their moral values, and include their athletes to have a voice in decision making. One way to educate coaches on the importance of authentic leadership on athlete outcomes is showing and

explaining results from this study as well as Malloy and Kavussany (2021b) so they are more likely to adopt these behaviours.

In this research we also identified the process in which authentic leadership acts on mental health, highlighting the importance of variables such as psychological capital, and teammate behaviours, in both the form of prosocial and antisocial. Our findings have shown that psychological capital has a strong relationship with both subjective wellbeing and mental illness as shown by correlations and direct effects. Through this research we suggest that authentic leadership has the potential to be an effective intervention for coaches to increase athlete psychological capital which in turn is positively associated with mental health. Another strategy specifically for improving psychological capital in individuals in the Psychological Capital Intervention (PCI) which targets each component which are hope, efficacy, optimism, and resilience through guidelines detailed in Luthans et al. (2010).

Prosocial teammate behaviours are another example of a variable that this research has identified to be important when considering the mental health of both team and individual sports athletes. As prosocial teammate behaviour has been shown to have a significant positive direct effect on subjective wellbeing, a coach and athletes within a team or training group should consider strategies that value and encourage athletes to engage in prosocial behaviours. An example of this would be if the coach started demonstrating prosocial behaviours themselves to their athletes via characteristics of authentic leadership such as being able to recognise and understand their own strengths and weaknesses (Neider & Schriesheim, 2011). They could then praise their athletes for their strengths, while encouraging them to improve upon their weaknesses. Consequently, athletes may learn to copy this authentic behaviour due to observing it as described by social learning theory (Bandura, 1969) and will then further support and encourage their teammates, creating a more positive climate which likely leads to greater athlete mental health.

The second purpose of our research identified at-risk athlete populations for mental health and whether different athlete groups had different responses to authentic leadership when examining mental health. We identified that individual sports athletes are more likely to score greater in mental illness than team sport athletes, therefore making them a priority when intervening to improve athlete mental health. We found there to be no differences in either relationship between authentic leadership on subjective wellbeing or mental illness

due to sport type. Therefore, authentic leadership can be an intervention proposed to potential improve individual sports athletes' susceptibility to mental illness.

We also identified females as another at risk population and showed they respond differently to authentic leadership than males, so interventions should be directed towards them. One potential intervention we suggest is to encourage coaches to act as authentic leaders by providing programs to increase their authentic leadership as this will likely improve female subjective wellbeing. Research in sport has already demonstrated an authentic leadership intervention to result in athletes reporting greater levels of enjoyment and engaging in more prosocial behaviour (Malloy & Kavussanu, 2021b). Although we have demonstrated authentic leadership to positively relate to subjective wellbeing and negatively relate to mental illness, in females there was no relationship between authentic leadership and mental illness. Therefore, to reduce the risk of females suffering from mental illness other potential interventions should be implemented.

Interventions aimed at improving non-elite athlete mental health have been reviewed Sutcliffe et al. (2021) and include the Ahead of the Game (AOTG; Vella et al., 2018) which consists of mental health literacy to parents and coaches, paths to success, and Help Out a Mate delivered to adolescents which has been shown to lead to increased knowledge about mental health, improved provision, and increased wellbeing in a group of male swimmers, football and rugby players (Vella et al., 2021). Through increasing athlete and coach mental health literacy, it decreases athlete stigma while discussing mental health, and increases the coach's willingness to help and listen when regarding issues related to mental health (Bapat et al., 2009; Breslin et al., 2017). Interventions in this review aimed at improving athletes' susceptibility to mental illness included a RISE development program with a holistic approach that was tailored to individual and group rugby player's needs (Dowell et al., 2021) and was found to reduce levels of anxiety post intervention. This is an example of a different intervention that could be used for females to reduce mental illness as we found authentic leadership to not influence this in our research.

Our final research purpose was to identify the process which authentic leadership acts on mental health by examining potential mediators of psychological capital, prosocial teammate behaviour, and antisocial teammate behaviour. As psychological capital mediated both relationships between authentic leadership and subjective wellbeing and mental illness, it is evident that psychological capital is crucial when explaining the relationship

between authentic leadership and mental health. It also possessed the greatest indirect effect on both measures of mental health. Therefore, it is important for a coach to aim at improving an athlete's efficacy, hope, optimism, and resilience which make up psychological capital (Luthans & Youssef, 2004) because it relates to both aspects of athlete mental health.

As prosocial teammate behaviour fully mediated authentic leaderships positive relationship with subjective wellbeing and negative relationship with mental illness coaches should encourage athletes to engage in prosocial behaviours frequently to benefit athlete mental health. This is so long as prosocial teammate behaviour does not apply pressure to the athlete receiving it (Alvis et al., 2021).

On the other hand, antisocial teammate behaviours were shown to have no significant relation to either subjective wellbeing or mental illness and therefore are not overly important when examining athlete mental health. However, there were still positive implications as authentic leadership is negatively related to antisocial teammate behaviours which likely increases group cohesion and decreases susceptibility to burnout (Kavussanu & Al-Yaaribi, 2021).

Limitations and future research

In our research we have identified a few limitations that need to be considered when interpreting our findings. As this research was a cross-sectional study, the relationships between variables such as authentic leadership, competition level, sport type, and mental health cannot be causally established. We do, however, get an understanding of potential ways in which they are connected and other variables that may be involved. Future research should attempt to look at the influence of authentic leadership and mental health outcomes longitudinally, where a coach is taught ways of demonstrating greater levels of authenticity. As a result of getting data at multiple timepoints and attempting to change the level of authentic leadership one could attribute changes in mental health to authentic leadership. Longitudinal and experimental research to date has not examined authentic leadership with mental health measures and would therefore increase knowledge relating to the leadership style.

One might consider that changing the items in a measure such as the removal of an item or the slight change of an item to be made clearer is not ideal practice such as in our measure of psychological capital. However, despite changing or removing few items across

the scales, we still demonstrated high levels of internal consistency across all of our measures, in particular our measure of psychological capital which had a Cronbach's alpha of .91. This suggests that the modified items measured similar constructs to the other items and achieved their desired purpose. On the other hand, we did not use psychometric testing for the adjusted and new items, meaning we cannot be sure of its reflection of construct validity. Therefore, our findings should be interpreted with caution.

Another weakness was that our questionnaire was completed online and without supervision, so there is the possibility of desirable answers where the athlete is answering items how they feel they should rather than honestly. We minimised the chance of this by explaining the confidentiality in responses so that they are not identified and are only used for research purposes. However, there was still the possibility athletes were not honest about their mental health because of the stigma associated with mental health issues e.g., appearing weak, as demonstrated when comparing student-athletes help seeking perceptions with that of the general population (Watson, 2005), especially in an elite population as mental toughness and mental health can be seen as contradictions of one another (Bauman, 2016).

Another limitation relates to most athletes being student athletes. As the majority of athletes were student athletes and the questionnaire was administered over a 5-month period there are other factors outside of sport to be considered such as whether the athlete was currently taking exams or had many deadlines which may have influenced their mental health as mental illnesses relating to stress and anxiety are more likely to be present during these periods (Kurt et al., 2014). This concept has been described when referring to test anxiety which occurs during academic evaluations, and it is found that females experience this more than males (Kurt et al., 2014). However, we did not account for this external factor in our questionnaire or that this could be the potential reason for gender differences in mental health we found. As most of the sample were student athletes, our findings are specific to this athlete population and are not as generalisable to older or younger athletes, or athletes outside of academia.

Another limitation we identified relates to measuring each athlete's perception on their coach's authenticity. As the athlete chooses whether to stay with their coach, it is unlikely that any coach would be rated badly enough on their authentic leadership to be

demonstrating low authenticity. Therefore, we couldn't compare between all groups of authentic leaders as very few leaders were rated lower than 'neutral', and the mean demonstrated 'moderate' levels of authentic leadership.

When comparing our subgroups within competition level and sport type there was not an even distribution of athletes in each subgroup with only 49 athletes in the elite team sport subgroup out of total of 647 athletes, whereas there were 404 non-elite team sport athletes. Therefore, when we made comparisons between these subgroups and found no significant differences in mental health, this could be due to the subgroups with a smaller sample having less reliability and accurate representation of the true value than the other subgroups. The differences in group sizes are due to us not focusing on comparison between subgroups as a primary research purpose. Future research could aim to get more equal sizes of subgroups comparing competition level and sport type simultaneously to further understand the influence this may have on athlete mental health. This research could also use multilevel modelling to identify whether athletes who are in the same teams respond similarly to each other.

Our research primarily focused on authentic leadership which is a protective factor when considering athlete mental health and a limitation is that we did not examine negative coaching behaviours that could be considered risk factors for athlete mental health. Therefore, future research should simultaneously examine positive and negative coaching behaviours in the same athlete population.

Finally, future research could aim to replicate this study or advance upon our findings to experimentally examine the potential relationships that may exist. They could also examine our finding that gender moderates the relationship between authentic leadership and mental illness to identify whether it is repeatable, and if so, then examine potential explanations for these differences. It could also examine other factors potentially related to mental illness, for example performance failures which we have heavily suggested to be related to some of our findings.

References

Afolayan, J., & Adegboyega, J. A. (2012). Knowledge and use of performance enhancing drugs among Nigeria elite athletes. *IOSR J Appl Chem*, *1*(5), 31e8.

Al-Yaaribi, A., & Kavussanu, M. (2017). Teammate prosocial and antisocial behaviors predict task cohesion and burnout: The mediating role of affect. *Journal of sport and exercise psychology*, *39*(3), 199-208.

Al-Yaaribi, A., & Kavussanu, M. (2018). Consequences of prosocial and antisocial behaviors in adolescent male soccer players: The moderating role of motivational climate. *Psychology of Sport and Exercise*, *37*, 91-99.

Al-Yaaribi, A., Kavussanu, M., & Ring, C. (2016). Consequences of prosocial and antisocial behavior for the recipient. *Psychology of Sport and Exercise*, *26*, 102-112.

Avey, J. B., Reichard, R. J., Luthans, F., & Mhatre, K. H. (2011). Meta-analysis of the impact of positive psychological capital on employee attitudes, behaviors, and performance. *Human resource development quarterly*, *22*(2), 127-152.

Avolio, B. J., & Gardner, W. L. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *The leadership quarterly*, *16*(3), 315-338.

Avolio, B. J., Gardner, W. L., Walumbwa, F. O., Luthans, F., & May, D. R. (2004). Unlocking the mask: A look at the process by which authentic leaders impact follower attitudes and behaviors. *The leadership quarterly*, *15*(6), 801-823.

Baker, C. (2020). Mental health statistics for England: prevalence, services and funding.

Baker, J., Côté, J., & Hawes, R. (2000). The relationship between coaching behaviours and sport anxiety in athletes. *Journal of science and medicine in sport, 3*(2), 110-119.

Bandura, A. (1969). Social-learning theory of identificatory processes. *Handbook of socialization theory and research*, *213*, 262.

Bandura, C. T., & Kavussanu, M. (2018). Authentic leadership in sport: Its relationship with athletes' enjoyment and commitment and the mediating role of autonomy and trust. *International Journal of Sports Science & Coaching, 13*(6), 968-977.

Beattie, H., Robertson, O., Horlin, C., Spaeth, E., & Nordmann, E. (2022). Gendered attitudes towards swearing: a trans-inclusive mixed methods study of social identity, swearing norms, and behaviour.

Bueno-Notivol, J., Gracia-García, P., Olaya, B., Lasheras, I., López-Antón, R., & Santabárbara, J. (2021). Prevalence of depression during the COVID-19 outbreak: A meta-analysis of community-based studies. *International journal of clinical and health psychology, 21*(1), 100196.

Cassilo, D. (2022). Media framing and athlete mental health. *Health communication and sport: Connections, applications, and opportunities*, 1-14.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences Lawrence Earlbaum Associates. 20th–.

Coker, A. O., Coker, O. O., & Sanni, D. (2018). Psychometric properties of the 21-item depression anxiety stress scale (DASS-21). *African Research Review, 12*(2), 135-142.

de la Torre, J. A., Vilagut, G., Ronaldson, A., Dregan, A., Ricci-Cabello, I., Hatch, S. L., ... & Alonso, J. (2021). Prevalence and age patterns of depression in the United Kingdom. A population-based study. *Journal of Affective Disorders, 279*, 164-172.

Derr, C. L. (2012). Ethics and leadership. *Journal of Leadership, accountability and ethics*, *9*(6), 66-71.

Dimech, A. S., & Seiler, R. (2011). Extra-curricular sport participation: A potential buffer against social anxiety symptoms in primary school children. *Psychology of Sport and Exercise*, *12*(4), 347-354.

Duffy, M. K., Ganster, D. C., & Pagon, M. (2002). Social undermining in the workplace. *Academy of management Journal*, *45*(2), 331-351.

Eaton, N. R., Keyes, K. M., Krueger, R. F., Balsis, S., Skodol, A. E., Markon, K. E., ... & Hasin, D. S. (2012). An invariant dimensional liability model of gender differences in mental disorder prevalence: evidence from a national sample. *Journal of abnormal psychology, 121*(1), 282.

Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013a). A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport. *International journal of behavioral nutrition and physical activity, 10*(1), 98.

Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013b). A systematic review of the psychological and social benefits of participation in sport for adults: informing development of a conceptual model of health through sport. *International journal of behavioral nutrition and physical activity, 10*(1), 135.

Foskett, R. L., & Longstaff, F. (2018). The mental health of elite athletes in the United Kingdom. *Journal of science and medicine in sport*, *21*(8), 765-770.

Fry, J., & Bloyce, D. (2017). 'Life in the travelling circus': A study of loneliness, work stress, and money issues in touring professional golf. *Sociology of Sport Journal*, *34*(2), 148-159.

Fusco, T., O'Riordan, S., & Palmer, S. (2016). Assessing the efficacy of authentic leadership group-coaching. *International Coaching Psychology Review*, *11*(2), 118-128.

Gardner, W. L., Avolio, B. J., Luthans, F., May, D. R., & Walumbwa, F. (2005). "Can you see the real me?" A self-based model of authentic leader and follower development. *The leadership quarterly*, *16*(3), 343-372.

Gilbert, P., Basran, J., MacArthur, M., & Kirby, J. N. (2019). Differences in the semantics of prosocial words: an exploration of compassion and kindness. *Mindfulness*, *10*(11), 2259-2271.

Goleman, D. (2020). Emotional intelligence. *Bloomsbury Publishing*.

Gomez, F. (2016). A guide to the depression, anxiety and stress scale (DASS 21). *Central and Eastern Sydney primary health networks*.

Gould, D., Collins, K., Lauer, L., & Chung, Y. (2007). Coaching life skills through football: A study of award winning high school coaches. *Journal of applied sport psychology*, *19*(1), 16-37.

Gouttebarge, V., Castaldelli-Maia, J. M., Gorczynski, P., Hainline, B., Hitchcock, M. E., Kerkhoffs, G. M., ... & Reardon, C. L. (2019). Occurrence of mental health symptoms and disorders in current and former elite athletes: a systematic review and meta-analysis. *British journal of sports medicine*, *53*(11), 700-706.

Graupensperger, S., Sutcliffe, J., & Vella, S. A. (2021). Prospective Associations between Sport Participation and Indices of Mental Health across Adolescence. *Journal of Youth and Adolescence*, 1-14.

Gross, J. J., & Muñoz, R. F. (1995). Emotion regulation and mental health. *Clinical psychology: Science and practice*, *2*(2), 151.

Gulliver, A., Griffiths, K. M., & Christensen, H. (2012). Barriers and facilitators to mental health help-seeking for young elite athletes: a qualitative study. *BMC psychiatry*, *12*(1), 1-14.

Gulliver, A., Griffiths, K. M., Mackinnon, A., Batterham, P. J., & Stanimirovic, R. (2015). The mental health of Australian elite athletes. *Journal of science and medicine in sport, 18*(3), 255-261.

Gupta, L., Morgan, K., & Gilchrist, S. (2017). Does elite sport degrade sleep quality? A systematic review. *Sports Medicine*, *47*(7), 1317-1333.

Haghighat, N., & Stull, T. (2022). Overtraining Syndrome. In *Mental Health Care for Elite Athletes* (pp. 171-178). Cham: Springer International Publishing.

Hammond, T., Gialloreto, C., Kubas, H., & Davis IV, H. H. (2013). The prevalence of failure-based depression among elite athletes. *Clinical Journal of Sport Medicine, 23*(4), 273-277.

Hannah, S. T., Avolio, B. J., & Walumbwa, F. O. (2011). Relationships between authentic leadership, moral courage, and ethical and pro-social behaviors. *Business Ethics Quarterly*, *21*(4), 555-578.

Hayes, A. F. (2017). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. *Guilford publications*.

Hoffmann, M. D., Barnes, J. D., Tremblay, M. S., & Guerrero, M. D. (2022). Associations between organized sport participation and mental health difficulties: Data from over 11,000 US children and adolescents. *PLoS one*, *17*(6), e0268583.

Hu, T., Zhang, D., Wang, J., Mistry, R., Ran, G., & Wang, X. (2014). Relation between emotion regulation and mental health: A meta-analysis review. *Psychological reports*, *114*(2), 341-362.

Hughes, L. W. (2005). Transparency, translucence or opacity? An experimental study of the impact of a leader's relational transparency and style of humor delivery on follower creative performance. *The University of Nebraska-Lincoln*.

Iasiello, M., & Van Agteren, J. (2020). Mental health and/or mental illness: A scoping review of the evidence and implications of the dual-continua model of mental health. *Evidence Base: A journal of evidence reviews in key policy areas*, (1), 1-45.

Ilies, R., Morgeson, F. P., & Nahrgang, J. D. (2005). Authentic leadership and eudaemonic well-being: Understanding leader–follower outcomes. *The leadership quarterly*, *16*(3), 373-394.

Ioannidou, F., & Konstantikaki, V. (2008). Empathy and emotional intelligence: What is it really about?. *International Journal of caring sciences*, *1*(3), 118.

Jannah, M., Mintarto, E., Nurhasan, M., & Widohardhono, R. (2018, February). The Influence of Athlete Students' Psychological Capital on Track and Field Performance. In *1st International Conference on Education Innovation (ICEI 2017)* (pp. 219-221). *Atlantis Press*.

Jorm, A. F., Korten, A. E., Jacomb, P. A., Christensen, H., Rodgers, B., & Pollitt, P. (1997). “Mental health literacy”: a survey of the public's ability to recognise mental disorders and their beliefs about the effectiveness of treatment. *Medical journal of Australia*, *166*(4), 182-186.

Jowett, S., & Cockerill, I. M. (2003). Olympic medallists’ perspective of the althlete–coach relationship. *Psychology of sport and exercise*, *4*(4), 313-331.

Kavussanu, M., & Al-Yaaribi, A. (2021). Prosocial and antisocial behaviour in sport. *International Journal of Sport and Exercise Psychology*, *19*(2), 179-202.

Kavussanu, M., & Boardley, I. D. (2009). The prosocial and antisocial behavior in sport scale. *Journal of Sport and Exercise Psychology*, *31*(1), 97-117.

Kavussanu, M., Seal, A. R., & Phillips, D. R. (2006). Observed prosocial and antisocial behaviors in male soccer teams: Age differences across adolescence and the role of motivational variables. *Journal of Applied Sport Psychology*, *18*(4), 326-344.

Kavussanu, M., Stanger, N., & Boardley, I. D. (2013). The Prosocial and Antisocial Behaviour in Sport Scale: Further evidence for construct validity and reliability. *Journal of sports sciences*, *31*(11), 1208-1221.

Kelley, T. M. (2005). Natural resilience and innate mental health.

Kendrick, T., & Pilling, S. (2012). Common mental health disorders—identification and pathways to care: NICE clinical guideline. *British Journal of General Practice, 62*(594), 47-49.

Kernis, M. H. (2003). Toward a conceptualization of optimal self-esteem. *Psychological inquiry*, *14*(1), 1-26.

Keyes, C. L. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of health and social behavior*, 207-222.

Keyes, C. L. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of consulting and clinical psychology, 73*(3), 539.

Keyes, C. L., & Waterman, M. B. (2003). Dimensions of well-being and mental health in adulthood.

Kim, M., Do Kim, Y., & Lee, H. W. (2020). It is time to consider athletes' well-being and performance satisfaction: The roles of authentic leadership and psychological capital. *Sport Management Review*.

Kotnik, B., Tušak, M., Topič, M. D., & Leskošek, B. (2012). Some psychological traits of slovenian olympians (beijing 2008)--a gender comparison. *Kinesiologia Slovenica*, *18*(2).

Kouzes, J. & Posner, B. (1987). The leadership challenge, (1st ed.). *San Francisco: Jossey-Bass.*

Kuehner, C. (2017). Why is depression more common among women than among men?. *The Lancet Psychiatry*, *4*(2), 146-158.

Kurt, A. S., Balci, S., & Kose, D. (2014). Test anxiety levels and related factors: Students preparing for university exams. *J Pak Med Assoc*, *64*(11), 1235-9.

Küttel, A., & Larsen, C. H. (2020). Risk and protective factors for mental health in elite athletes: a scoping review. International Review of Sport and Exercise Psychology, 13(1), 231-265.

Küttel, A., Pedersen, A. K., & Larsen, C. H. (2021). To Flourish or Languish, that is the question: Exploring the mental health profiles of Danish elite athletes. *Psychology of Sport and Exercise, 52*, 101837.

Laschinger, H. K. S., Borgogni, L., Consiglio, C., & Read, E. (2015). The effects of authentic leadership, six areas of worklife, and occupational coping self-efficacy on new graduate nurses' burnout and mental health: A cross-sectional study. *International journal of nursing studies, 52*(6), 1080-1089.

Lecomte, T., Corbière, M., & Théroux, L. (2010). Correlates and predictors of optimism in individuals with early psychosis or severe mental illness. *Psychosis*, *2*(2), 122-133.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour research and therapy, 33*(3), 335-343.

Lundqvist, C., & Sandin, F. (2014). Well-being in elite sport: Dimensions of hedonic and eudaimonic well-being among elite orienteers. *The Sport Psychologist*, *28*(3), 245-254.

Luthans, F., Avey, J. B., Avolio, B. J., & Peterson, S. J. (2010). The development and resulting performance impact of positive psychological capital. *Human resource development quarterly*, *21*(1), 41-67.

Luthans, F., Avey, J. B., & Patera, J. L. (2008). Experimental analysis of a web-based training intervention to develop positive psychological capital. *Academy of Management Learning & Education*, *7*(2), 209-221.

Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel psychology*, *60*(3), 541-572.

Luthans, F., & Youssef, C. M. (2004). Human, social, and now positive psychological capital management: Investing in people for competitive advantage.

Luthans, F., Youssef, C. M., & Avolio, B. J. (2015). *Psychological capital and beyond*. Oxford University Press, USA.

Malloy, E., & Kavussanu, M. (2021a). The Role of Authentic Leadership on Athletes' Achievement and Moral Outcomes over Time.

Malloy, E., & Kavussanu, M. (2021b). The effects of an authentic coaching intervention on athlete outcomes: A pilot randomised controlled trial. *Psychology of Sport and Exercise*, *57*, 101957.

Malloy, E., Kavussanu, M., & Mackman, T. (2021a). The Effects of Authentic Leadership on Athletes' Trust, Achievement, and Moral Variables.

Malloy, E., Kavussanu, M., & Yukhymenko, M. (2021b). The Role of Authentic Leadership on Athlete Outcomes.

McDowell, J., Huang, Y. K., & Caza, A. (2018). Does identity matter? An investigation of the effects of authentic leadership on student-athletes' psychological capital and engagement. *Journal of Sport Management*, *32*(3), 227-242.

McGill, M. E., & Slocum Jr, J. W. (1998). A little leadership, please?. *Organizational Dynamics*, *26*(3), 39-49.

McManus, S., Bebbington, P. E., Jenkins, R., & Brugha, T. (2016). Mental Health and Wellbeing in England: the Adult Psychiatric Morbidity Survey 2014. NHS digital.

McManus, S., Meltzer, H., Brugha, T., Bebbington, P. E., & Jenkins, R. (2009). Adult psychiatric morbidity in England: results of a household survey. Health and Social Care Information Centre.

Mehmood, Q. (2016). Modeling Authentic Leadership and Mastery Goal Orientation with Employee Attitudinal and Behavioral Outcomes, Keeping Employee Work Experience in Focus. *Impact factor journal of organizational and occupational psychology*, *1*.

Morin, A. (2011). Self-awareness part 1: Definition, measures, effects, functions, and antecedents. *Social and personality psychology compass*, *5*(10), 807-823.

Neider, L. L., & Schriesheim, C. A. (2011). The authentic leadership inventory (ALI): Development and empirical tests. *The leadership quarterly*, *22*(6), 1146-1164.

Nixdorf, I., Frank, R., & Beckmann, J. (2016). Comparison of athletes' proneness to depressive symptoms in individual and team sports: Research on psychological mediators in junior elite athletes. *Frontiers in psychology, 7*, 893.

Ogden, D. J., Coates, J. K., Plateau, C. R., & Barker, J. B. (2022). UK professional male cricketers' mental health and support experiences: A qualitative exploration. *Journal of Applied Sport Psychology*, 1-20.

Ons. (2022). Measuring national well-being: domains and measures. *Office for National Statistics. GOV.UK.* [Online] Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/datasets/measuringnationalwellbeingdomainsandmeasures [Accessed: 15 November 2022]

Pankow, K., McHugh, T. L. F., Mosewich, A. D., & Holt, N. L. (2021). Mental health protective factors among flourishing Canadian women university student-athletes. *Psychology of Sport and Exercise, 52*, 101847.

Parto, M. (2011). Problem solving, self-efficacy, and mental health in adolescents: Assessing the mediating role of assertiveness. *Procedia-Social and Behavioral Sciences*, *30*, 644-648.

Peluso, M. A. M., & Andrade, L. H. S. G. D. (2005). Physical activity and mental health: the association between exercise and mood. *Clinics, 60*(1), 61-70.

Petersen, K., & Youssef-Morgan, C. M. (2018). The "left side" of authentic leadership: Contributions of climate and psychological capital. *Leadership & Organization Development Journal*.

Pluhar, E., McCracken, C., Griffith, K. L., Christino, M. A., Sugimoto, D., & Meehan III, W. P. (2019). Team sport athletes may be less likely to suffer anxiety or depression than individual sport athletes. *Journal of sports science & medicine, 18*(3), 490.

Poucher, Z. A., Tamminen, K. A., Sabiston, C. M., Cairney, J., & Kerr, G. (2021). Prevalence of symptoms of common mental disorders among elite Canadian athletes. *Psychology of Sport and Exercise*, *57*, 102018.

Purcell, R., Gwyther, K., & Rice, S. M. (2019). Mental health in elite athletes: increased awareness requires an early intervention framework to respond to athlete needs. *Sports medicine-open*, *5*(1), 1-8.

Rahimnia, F., & Sharifirad, M. S. (2015). Authentic leadership and employee well-being: The mediating role of attachment insecurity. *Journal of Business Ethics*, *132*(2), 363-377.

Reardon, C. L., & Creado, S. (2014). Drug abuse in athletes. *Substance abuse and rehabilitation*, *5*, 95.

Rice, S. M., Purcell, R., De Silva, S., Mawren, D., McGorry, P. D., & Parker, A. G. (2016). The mental health of elite athletes: a narrative systematic review. *Sports medicine, 46*(9), 1333-1353.

Robinson, R., Patterson, I., & Axelsen, M. (2014). The “loneliness of the long-distance runner” no more: Marathons and social worlds. *Journal of Leisure Research*, *46*(4), 375-394.

Roof, R. (2014). Authentic leadership questionnaire (ALQ) psychometrics. Asian Journal of Business Ethics, 3(1), 57-64.

Ruan, Z., & Liu, W. (2021). Coach authentic leadership connected with performance satisfaction and psychological well-being of team: The mediating role of team cohesion and psychological capital. Revista de Psicología del Deporte (Journal of Sport Psychology), 30(1), 189-203.

Ryan, R. M., & Deci, E. L. (2003). On assimilating identities to the self: a self-determination theory perspective on internalization and integrity within cultures.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of personality and social psychology*, *69*(4), 719.

Sabiston, C. M., Jewett, R., Ashdown-Franks, G., Belanger, M., Brunet, J., O'Loughlin, E., & O'Loughlin, J. (2016). Number of years of team and individual sport participation during adolescence and depressive symptoms in early adulthood. Journal of sport and exercise psychology, 38(1), 105-110.

Schriesheim, C. A., & Liu, Y. (2018). Distinguished Scholars Invited Essay: Becoming a Good Sport and a Better Performer: A Social Information Processing View of Authentic Leadership. *Journal of Leadership & Organizational Studies*, *25*(2), 141-152.

Scott, C. E., Fry, M. D., Weingartner, H., & Wineinger, T. O. (2021). Collegiate sport club athletes' psychological well-being and perceptions of their team climate. *Recreational Sports Journal*, *45*(1), 17-26.

Seligman, M. E. (2008). Positive health. *Applied psychology*, *57*, 3-18.

Shevlin, M., McBride, O., Murphy, J., Miller, J. G., Hartman, T. K., Levita, L., ... & Bentall, R. P. (2020). Anxiety, depression, traumatic stress and COVID-19-related anxiety in the UK general population during the COVID-19 pandemic. BJPsych Open, 6(6).

Shibata, M., Burkauskas, J., Dores, A. R., Kobayashi, K., Yoshimura, S., Simonato, P., ... & Corazza, O. (2021). Exploring the relationship between mental well-being, exercise routines, and the intake of image and performance enhancing drugs during the coronavirus disease 2019 pandemic: a comparison across sport disciplines. *Frontiers in psychology*, *12*.

Shieh, G. (2018). Sample size determination for examining interaction effects in factorial designs under variance heterogeneity. *Psychological methods*, *23*(1), 113.

Shillington, K. J., Johnson, A. M., Mantler, T., & Irwin, J. D. (2021). Kindness as an intervention for student social interaction anxiety, affect, and mood: The KISS of kindness study. *International Journal of Applied Positive Psychology*, *6*(1), 23-44.

Shillington, K. J., Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, P., & Irwin, J. D. (2022). A cross-sectional examination of Canadian adults' prosocial behavior during the COVID-19 pandemic. *Journal of Rural Mental Health*.

Shrom, S. J., Cumming, J., & Fenton, S. J. (2022). Lifestyle challenges and mental health of professional tennis players: an exploratory case study. *International Journal of Sport and Exercise Psychology*, 1-21.

Sorbie, Graeme, Ashley Richardson, Jonathan Glenn, Scott Hardie, Sharhidd Taliep, Matthew Wade, Lizzie Broughton, Steven Mann, James Steele, and David Lavallee. (2020). "The association of golf participation with health and wellbeing: A comparative study." *International Journal of Golf Science*.

Sutcliffe, J. T., Graupensperger, S., Schweickle, M. J., Rice, S. M., Swann, C., & Vella, S. A. (2021). Mental health interventions in non-elite sport: a systematic review and meta-analysis. *International Review of Sport and Exercise Psychology*, 1-24.

Swann, C., Moran, A., & Piggott, D. (2015). Defining elite athletes: Issues in the study of expert performance in sport psychology. *Psychology of sport and exercise*, *16*, 3-14.

Swann, C., Telenta, J., Draper, G., Liddle, S., Fogarty, A., Hurley, D., & Vella, S. (2018). Youth sport as a context for supporting mental health: Adolescent male perspectives. *Psychology of sport and exercise*, *35*, 55-64.

Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics* (Vol. 5, pp. 481-498). Boston, MA: pearson.

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., ... & Stewart-Brown, S. (2007). The Warwick-Edinburgh mental well-being scale (WEMWBS): development and UK validation. Health and Quality of life Outcomes, 5(1), 63.

Tepper, B. J. (2000). Consequences of abusive supervision. *Academy of management journal*, *43*(2), 178-190.

Uphill, M., Sly, D., & Swain, J. (2016). From mental health to mental wealth in athletes: Looking back and moving forward. Frontiers in Psychology, 7, 935.

Van der Heijden, B. I., Mulder, R. H., König, C., & Anselmann, V. (2017). Toward a mediation model for nurses' well-being and psychological distress effects of quality of leadership and social support at work. *Medicine*, *96*(15).

Vella, S. A., Swann, C., Batterham, M., Boydell, K. M., Eckermann, S., Ferguson, H., ... & Deane, F. P. (2021). An intervention for mental health literacy and resilience in organized sports. *Medicine and science in sports and exercise*, *53*(1), 139.

Vella, S. A., Swann, C., Batterham, M., Boydell, K. M., Eckermann, S., Fogarty, A., ... & Deane, F. P. (2018). Ahead of the game protocol: a multi-component, community sport-based program targeting prevention, promotion and early intervention for mental health among adolescent males. *BMC public health*, *18*(1), 1-12.

Venning, A., Kettler, L., Zajac, I., Wilson, A., & Eliott, J. (2011). Is hope or mental illness a stronger predictor of mental health?. *International Journal of Mental Health Promotion*, *13*(2), 32-39.

Walumbwa, F. O., Avolio, B. J., Gardner, W. L., Wernsing, T. S., & Peterson, S. J. (2008). Authentic leadership: Development and validation of a theory-based measure. Journal of management, 34(1), 89-126.

Walumbwa, F. O., Wang, P., Wang, H., Schaubroeck, J., & Avolio, B. J. (2010). Retracted: Psychological processes linking authentic leadership to follower behaviors.

Weiner, B. (2010). The development of an attribution-based theory of motivation: A history of ideas. *Educational psychologist*, *45*(1), 28-36.

Weiss, M. R., & Williams, L. (2004). The why of youth sport involvement: A developmental perspective on motivational processes.

Werner, S. (2012). Subjective well-being, hope, and needs of individuals with serious mental illness. *Psychiatry research*, *196*(2-3), 214-219.

Williams, J. M., Kenow, L. J., Jerome, G. J., Rogers, T., Sartain, T. A., & Darland, G. (2003). Factor structure of the coaching behavior questionnaire and its relationship to athlete variables. The Sport Psychologist, 17(1), 16-34.

Wolanin, A., Hong, E., Marks, D., Panchoo, K., & Gross, M. (2016). Prevalence of clinically elevated depressive symptoms in college athletes and differences by gender and sport. British journal of sports medicine, 50(3), 167-171.

Wong, C. A., & Laschinger, H. K. (2013). Authentic leadership, performance, and job satisfaction: the mediating role of empowerment. *Journal of advanced nursing*, *69*(4), 947-959.

World Health Organization. (1948). Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948. http://www.who.int/governance/eb/who_constitution_en.pdf.

World Health Organization. (2001). The World Health Report 2001: Mental health: new understanding, new hope. *World Health Organization*.

World Health Organization. (2005a). Promoting mental health: concepts, emerging evidence, practice: a report of the World Health Organization, Department of Mental Health and Substance Abuse in collaboration with the Victorian Health Promotion Foundation and the University of Melbourne. *World Health Organization*.

World Health Organization. (2005b). Mental health: facing the challenges, building solutions: report from the WHO European Ministerial Conference. *WHO Regional Office Europe.*

Zhang, Y., Guo, Y., Zhang, M., Xu, S., Liu, X., & Newman, A. (2021). Antecedents and outcomes of authentic leadership across culture: A meta-analytic review. *Asia Pacific Journal of Management, 1-37.*

Appendices

Appendix 1 - Contact letter

UNIVERSITY OF BIRMINGHAM

School of Sport, Exercise & Rehabilitation Sciences

Edgbaston, Birmingham

B15 2TT

Dear Sir/Madam:

We are a research team from the School of Sport, Exercise and Rehabilitat University of Birmingham, who are currently conducting a study examining the role of authentic leadership, competition level, and sport type on athlete mental health.

The project is part of MSc by Research of Tom Mackman, supervised by Professor Maria Kavussanu; details of all team members appear at the end of this letter. We are writing to ask whether you would be willing to ask your athletes to take part in our study by completing a questionnaire. The questionnaire will approximately take 10-15 minutes to complete and can be completed before or after a training session, or online at the athlete's own convenience. It will measure athletes' resilience, mental health, and coach authenticity, and example items are provided at the end of this letter. All responses will remain strictly confidential, and nobody will be identified by name at any time. For participation in the study, athletes need to be 16 years of age or older.

All athletes who complete the study will be eligible for an entry into a raffle containing £800 worth of prizes in the form of Amazon gift vouchers, each worth up to £50.

We would be very grateful if you agree to help us conduct this study. This research will allow us to provide recommendations for improving athlete mental health and will help us better understand the role of authentic leadership on athlete mental health. To express our appreciation, if you allow your athletes to participate in this study, we will provide you with a summary report of the 'key' findings, if you indicate an interest in these.

Thank you very much for taking the time to consider this proposition. If you have any questions, please do not hesitate to contact one of our research team.

Yours Sincerely,

Mr Tom Mackman Prof. Maria Kavussanu

07753192768 0121 414-4112

Tpm744@student.bham.ac.uk M.Kavussanu@bham.ac.uk

Example Items

Resilience

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
I feel confident speaking to my coach on behalf of my team or training group	1	2	3	4	5	6	7
I try to achieve my sporting goals with great energy	1	2	3	4	5	6	7
I feel that I can handle many things at the same time in sport	1	2	3	4	5	6	7
I always look on the bright side of things regarding my sport	1	2	3	4	5	6	7

Authentic leadership

My coach...	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Clearly states what they mean	1	2	3	4	5
Shows consistency between their beliefs and actions	1	2	3	4	5
Encourages ideas that challenge their core beliefs	1	2	3	4	5
Describes accurately how others view their abilities	1	2	3	4	5

Mental health

In the past month...	None of the time	A bit of the time	Some of the time	Most of the time	All of the time
I have been optimistic about the future	1	2	3	4	5
I have been feeling useful	1	2	3	4	5
I have been feeling relaxed	1	2	3	4	5
I have been feeling interested in other people	1	2	3	4	5
I have had energy to spare	1	2	3	4	5

Appendix 2 - Study information sheet

Mental health in sport: the influence of authentic leadership, competition level, and sport type

Dear Participant,

Thank you for considering taking part in this study, which has been approved by the University of Birmingham's Ethical Review Board.

What is the study about?

This study will examine athlete mental health. Specifically, we will be examining differences in mental health across athletes from elite to club level competitions, team versus individual sports, and varying degrees of coach authenticity.

Can anyone take part?

Anyone can take part as long you are 16 years of age or above and currently participate in a sport.

What will your participation involve?

If you are willing to participate, you will be asked to complete an online questionnaire that will take approximately 10-15 minutes. This questionnaire will be sent via email containing a direct link. After completion, you will be asked whether you would like to sign up to be informed about the results of the study after its completion.

All your personal data will remain confidential and will be solely used for research purposes. We would be grateful if you were as honest as possible in your responses, as this will affect the quality of our data. In accordance with the Data Protection Act (2018) raw and processed data from this investigation will be kept for a period of ten years following completion of the study. Questionnaires and computer files containing processed data will be kept securely in a locked filing cabinet and will only be accessed by the study investigators. After this time period, all the data collected will be destroyed. Our findings will be used to better understand athlete mental health. You will not be individually identified in any publication.

Do I have to take part?

Your participation in this study is voluntary and you may withdraw at any time until the 30th of April, 2022, without explanation or any negative consequences. If you choose to withdraw from the study, please contact Tom Mackman (contact details provided below) to inform us of your decision. If you choose to withdraw before this time, your data will be

destroyed and not included in the study. A short summary presenting the results and findings will be available upon request at the end of the study.

What are the benefits and risks?

Through participating in this study, if you indicate you wish to do this, you shall be entered into a raffle containing £800 worth of prizes in the form of Amazon gift vouchers, each worth up to £50. By taking part in this study, you will help us to better understand mental health in sport and provide recommendations to enhance athlete mental health. There are very few anticipated risks as a result of participation, however some questions assessing athlete mental health may result in uncomfortable triggers for athletes. To mitigate this, participants can stop completing the questionnaire, and will also be provided with appropriate mental health resources.

Can I change my mind?

If, at any point before or during the study, you wish to withdraw, then you may do so. You do not need to give any reason for this, participation is not compulsory. If you decide to withdraw, the data that we collected from you will be destroyed and will not be used for the study.

Who else is taking part?

We will be recruiting other athletes who, like you, fit the inclusion criteria.

Are there any other constraints?

No.

Do I have to sign anything?

Yes, if you agree to participate, we will ask you to give your consent. This is to show that you have understood what is involved and that you have read the Information Sheet. You can still withdraw after this without having to give us an explanation.

If you want to find out more about this experiment or to participate, feel free to contact us for more details:

Mr Thomas Mackman (TPM744@student.bham.ac.uk) Prof. Maria Kavussanu (m.kavussanu@bham.ac.uk)

Appendix 3 - Information at start of questionnaire and consent

Page 1: Authentic leadership and mental health in sport

Dear athlete,

The following questionnaire is part of a study conducted by the School of Sport, Exercise, & Rehabilitation Sciences, at the University of Birmingham. We are examining how factors such as competition level, sport type, and leadership may impact upon an athlete's resilience and mental health. We would like to ask for your participation in this study, by completing the attached questionnaire, which should take approximately **10-15 minutes** to complete. If you take part in the study, you will be eligible to enter into a raffle, offering **£800** worth of **prizes** in the form of Amazon gift vouchers, each up to **£50**.

For this questionnaire to be useful, we ask for all the questions to be answered with **complete honesty**. All information you provide will be kept **strictly confidential** and will be used only for **research purposes**, and you will not be identified by name at any point. Completed questionnaires will be stored in a locked cabinet, at the university, for the next 10 years, and only members of the research team will have access to the data.

Your participation in this study is entirely **voluntary** and you have the **right to withdraw**, if you wish to do so, until 30th of April 2022. If you wish to withdraw, please contact either Tom Mackman or Professor Maria Kavussanu via email. We are happy to answer any questions you may have. Thank you very much in advance for your participation!

Mr Tom Mackman tpm744@student.bham.ac.uk 07753192768

Professor Maria Kavussanu M.Kavussanu@bham.ac.uk 01214144112

1. Do you consent to being part of this research, acknowledge you have the right to withdraw, and are aware of confidentiality? * *Required*

- (●) Yes

1 Appendix 4 - Demographics

Page 2: Demographics

A. This section is about your demographics, sport, and competition level.

2. Gender * *Required*

Please select no more than 1 answer(s).

- ☐ Male
- ☐ Female
- ☐ Other

3. Age * *Required*

Please enter a whole number (integer).

4. Current education or employment * *Required*

Please don't select more than 2 answer(s) per row.

Please select at least 1 answer(s).

	College student	Undergraduate	Postgraduate	Full-time employment	Part-time employment	Unemployed
Please select all that apply	☐	☐	☐	☐	☐	☐

5. What is the **main** sport you participate in? (You may select more than one if you spend equal amount of time participating in more than one) * *Required*

Please select

6. **Current** competition level * *Required*

Please don't select more than 1 answer(s) per row.

Please select at least 1 answer(s).

	Club/Recreational	County	Regional/BUCS	National	International
What level of competition do you currently compete at?	☐	☐	☐	☐	☐

‹ Previous

Next ›

Appendix 5 - Authentic Leadership Inventory

Likert scale of 1-5 (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree)

My coach…

1. Cleary states what they mean
2. Shows consistency between their beliefs and actions
3. Encourages ideas that challenge their core beliefs
4. Describes accurately how others view their abilities
5. Bases their decisions on their values
6. Carefully listens to alternative perspectives before reaching a conclusion
7. Shows that they understand their strengths and weaknesses
8. Openly shares information with others
9. Resists pressures on them to do things contrary to their beliefs
10. Objectively analyses relevant data before making a decision
11. Is clearly aware of the impact they have on others
12. Expresses their ideas and thoughts clearly to others
13. Is guided in their actions by internal moral standards
14. Encourages others to voice opposing points of view

Appendix 6 - Psychological Capital Questionnaire

Likert scale of 1-7 (strongly disagree, disagree, slightly disagree, neither agree nor disagree, slightly agree, agree, strongly agree)

Currently…

1. I feel confident speaking to my coach on behalf of my team or training group
2. I try to achieve my sporting goals with great energy
3. I feel that I can handle many things at the same time in sport
4. I always look on the bright side of things regarding my sport
5. I feel confident contributing when talking about sporting strategy
6. I see myself as being pretty successful in my sport
7. I can manage sport and its difficulties
8. I'm optimistic about my future in my current sport
9. I feel confident discussing information with teammates or my training group

10. I can think of many ways to reach my current sporting goals
11. I usually deal well with stressful sporting situations
12. I am meeting my sporting goals that I have set for myself
13. I can get through difficult times in my sport because I've experienced difficulty before

Appendix 7 - Prosocial and Antisocial Behaviour in Sport Scale

Likert scale of 1-5 (never, rarely, sometimes, often, very often)

Please think about your experience with your team or training group and indicate how often your teammates or training partners engage in the behaviours listed below towards you this season

1. Gave me positive feedback
2. Argued with me
3. Verbally abused me
4. Encouraged me
5. Criticised me
6. Swore at me
7. Congratulated me for a good play
8. Supported me
9. Showed frustration at me for a poor play
10. Gave me constructive feedback

Appendix 8 - Warwick-Edinburgh Mental Wellbeing Scale

Likert scale of 1-5 (none of the time, a bit of the time, some of the time, most of the time, all of the time)

In the past month…

1. I have been optimistic about the future
2. I have been feeling useful
3. I have been feeling relaxed
4. I have been feeling interested in other people
5. I have had energy to spare
6. I have been dealing with problems well

7. I have been thinking clearly
8. I have been feeling good about myself
9. I have been feeling close to other people
10. I have been feeling confident
11. I have been able to make up my own mind about things
12. I have been feeling loved
13. I have been interested in new things
14. I have been feeling cheerful

Appendix 9 - Depression, Anxiety, Stress Scale

Likert scale of 1-5 (none of the time, a bit of the time, some of the time, most of the time, all of the time)

In the past month…

1. I found it hard to wind down
2. I was aware of dryness of my mouth
3. I struggled to experience any positive feeling at all
4. I experienced breathing difficulty (in the absence of physical exertion)
5. I found it difficult to work up the initiative to do things
6. I tended to over-react to situations
7. I experienced trembling
8. I felt that I was using a lot of nervous energy
9. I was worried about situations in which I might panic and make a fool of myself
10. I felt that I had nothing to look forward to
11. I found myself getting agitated
12. I found it difficult to relax
13. I felt downhearted and blue
14. I was intolerant of anything that kept me from getting on with what I was doing
15. I felt I was close to panic
16. I was unable to become enthusiastic about anything
17. I felt I was not worth much as a person
18. I felt that I was rather touchy
19. I was aware of the action of my heart (in the absence of physical exertion)

20. I felt scared without any good reason
21. I felt that life was meaningless

Appendix 10 - Training background

1. Team name
2. In a typical week, approximately how many hours do you spend training (excluding competition)?
3. In a typical week, how many times do you train with your team or training partners?
4. In a typical week, approximately how many hours do you spend training with your coach being present?
5. How long have you spent training with your current coach?

Appendix 11 - Mental health resources

If any items in this questionnaire have made you feel in need of help please visit https://www.nhs.uk/conditions/stress-anxiety-depression/mental-health-helplines/ so that you can get **appropriate** and **trained help** and **guidance**.