

The difference between level of sport on the symptoms of a mental health disorder within an
Irish context

Laoise Neuman Jones

20400776

Supervisor: Dr. Amanda Kracen

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Abstract

Aims: This study analysed the association between the levels of playing sports and mental well-being through measuring the variables of stress, depression, anxiety and quality of life. The study is based on the hypotheses that depression, anxiety and stress increases as the level of sport increases. The final hypothesis is that the quality of life decreases as the level of sport increases.

Method: An online questionnaire was administered to participants ($n=121$) through social media and circulation through sports teams to which the author had access. The questionnaire consisted of questions regarding scores of depression, anxiety and stress which were from the Depression, Anxiety and Stress Scale (DASS) and also included questions regarding quality of life which came from the World Health Organisation Quality of Life Instrument (WHOQOL). The four hypotheses were investigated through an ANOVA analysis.

Results: there were 119 viable respondents and these represented a broad range of athletes. None of the hypotheses were supported by the results of the ANOVA analyses. However, small insignificant deviations were found between level of sport.

Conclusion: Overall, the results of the current study, while not significant demonstrate the importance for mental well-being for engaging in sport.

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Literature review

Research has shown that not engaging in any form of physical exercise can have long-term negative consequences for both physical and mental health (Haskell et al., 2009). Mental disorders such as depression and anxiety may even be more likely to develop in individuals who do not partake in enough physical exercise (Strohle, 2009). Symptoms can be better managed through physical exercise in individuals suffering from these disorders. This is seen through a meta-analysis which examined the available literature and overall found a significant medium association between lower symptoms of depression and physical exercise. Along with this, findings show a significant small association between lower symptoms of anxiety and physical exercise (Rebar et al., 2015). On the other hand, more recent research shows that the level at which an individual is taking part in physical exercise can have an impact on their mental well-being. It has been reported that there are higher levels of untreated mental health disorders in athletes when compared to non-athletes (Walton et al., 2019). In the world of sport and athleticism, standards for athletes are constantly being raised, criticism is very common and there is an unbelievably high amount of pressure for success put on them (O'Brien & Kilrea, 2021). Stressors which athletes are faced with include: sport-related stress, burn-out, injuries, and long periods away from home at a time for travel (Sebbens et al., 2016). Female athletes are more likely to suffer from mental health disorders than their male counterparts and at the same time, retired athletes are more likely again to suffer from mental health disorders than current athletes (Woods et al., 2022). The current study will aim to assess the relationship between playing sport at various levels and mental well-being.

The positives of playing sport

In terms of depression and anxiety, the use of physical exercise is encouraged to reduce symptoms as a form of self-management (Siefken et al., 2019). Exercising for ten

weeks or more to a degree of strenuous physical activity for a duration of half an hour over a course of four times a week has been shown to be effective for the management of depression and anxiety symptoms (Pelletier et al., 2017). Self-management techniques for depression and anxiety disorders have been a more popular form of treatment than traditional medicines and therapy and have been used as a dual form of treatment, along with therapy (Lewis et al., 2012; Houle et al., 2019). While there are benefits to playing sport as a self-management technique, literature has shown that those who partake in regular exercise did not show consistent results and in some cases could not be accounted for (Siefken et al., 2019; Pelletier et al., 2017; Lewis et al., 2012). Research still needs to account for the extent to which the level of sport has a negative impact on the symptoms of depression and anxiety rather than a positive one.

Those in team sports have a lower chance of reporting symptoms of declining mental health (Pluhar et al., 2019). When athletes undergo high levels of a unitive experience, the symptoms of impaired mental health are lower in athletes within a team environment (O'Brien & Kilrea, 2021). When looking at team sports, evidence suggests that those in a team environment rely on each other in high stress situations (Evans et al., 2012). This alleviates the onus of responsibility on individual team members which is important for good mental health in a sporting context. Adolescents and children who participate in a team sport score lower on scales measuring emotional problems, social problems, behavioural problems, and negative self-talk when compared to non-sport playing peers. The opposite is found when comparing individual sport players and non-sport players (Hoffmann et al., 2022).

Participation in team sport has been linked to mental health benefits including scoring lower on depressive symptoms (Eime et al., 2013; Guddal et al., 2018). This could be attributed to the feeling of fitting in with likeminded peers. Team sport has also been associated with social acceptance, body satisfaction, reduced feelings of hopelessness, lower social isolation,

and reduced thoughts of self-harm and suicide (Eime et al., 2013; Sabiston et al., 2016; Nixdorf et al., 2016; Pluhar et al., 2019). Many studies do not look at adulthood when examining team sport and mental health, and instead focus on childhood and adolescence. One study identifies participation in team sport can have a protective effect in preventing symptoms of depression in adulthood (Sabiston et al., 2016). Future research could delve deeper into the positives of being part of a team sporting environment within an adult context.

The negatives of playing sport

Female athletes are at a higher risk for suffering from symptoms of depression and anxiety (Wolanin et al., 2016). This is seen through documentation that professional female footballers report symptoms of a possible mental health disorder, when compared to professional male footballers during their careers (Woods, et al., 2022; Prinz et al., 2016). However research also suggests that male athletes suffer the same amount as females in terms of mental health difficulties (Junge & Feddermann-Demont, 2016). In general, findings support the idea that females are more susceptible to developing a mental health disorder. However, the type of sport is also linked to the development of a disorder in men. For both genders, generalised anxiety disorder is common (Schaal et al., 2011). In the general population, mental health disorders are typically brought on by an individuals' predisposition to a mental disorder. This is the case for both genders, the type of disorder however, is generally different for both genders (Hicks et al., 2007). This research shows elevated symptoms in athletes when compared to research on the general population, sparking the idea for the current study. A study focusing on Tunisian athletes showed different coping mechanisms between adolescent and adult athletes in high stress situations. In terms of adolescents the females used disengagement techniques and the males used distraction techniques. The adult females used distraction techniques and the adult males used task-based techniques (Hajji et al., 2020). While evidence exists surrounding the differences in mental

health for both female and male athletes, not many studies have examined mental health and sport in the context of athletes. This could be due to limitations of study designs as many studies focus on one gender and do not get high response rates.

Going against the previous thoughts, that athletes are protected against mental health challenges, athletes have been found to be more susceptible to specific mental health challenges. These include eating disorders, exercise addiction or dependence, Chronic Traumatic Encephalopathy (CTE), and mood disorders (Bar & Markser, 2013). Findings show that female athletes between the ages of fifteen and eighteen are at the most risk for developing an eating disorder (Currie & Morse, 2005). Along with this, the strongest predictors for an eating disorder are sport participation and social pressure (Walter et al., 2022). This could be due to the perception that maintaining a certain weight is the key to success in their sport performance and achievement. Exercise addiction has been specifically linked to endurance sports. Those who score highly in the exercise addiction inventory also show risks of developing an eating disorder. This is especially present in those who participate in endurance sports due to the focus on decreasing and maintaining body weight (Zeulner et al., 2016). Eating disorders and exercise addiction typically come together due to the excessive need for sufferers to lose weight and decrease their calorie intake which leads to over exercising and this can in turn become an exercise dependence issue. Even though Chronic Traumatic Encephalopathy (CTE) cannot be officially found and diagnosed until after death through an autopsy, some symptoms in living sport players have been identified. The symptoms include apathy and impairments in attention, memory and executive functioning, mood and behavioural changes and can lead to dementia (Eme et al., 2013). While sport may be a form of coping and alleviating symptoms of a mood disorder, the constant demands and competition associated with sports can have a negative impact on symptoms of a mood disorder (MacIntyre et al., 2017).

The difference between level of sport and mental well-being

There is little research which examines the difference between level of sport and the variables this study is interested in investigating. When investigating anxiety and level of sport, it is more likely that top level athletes will experience anxiety in relation to their physique than those who take part in lower levels of sport (Mulazimoglu-Balli et al., 2010). This could be due to the specifically high standards athletes are held to in regard to their bodily appearance and how that can affect success. In lower levels of sport the pressure of how individuals look is not under as much scrutiny by others. High levels of stress can occur for those in sports when there is a gap between demands and the perceived ability to cope with the demands (Santomier, 1983). This stress may be higher with the elevated pressure to perform and cope with the constant new demands of top level athletes. According to Fernandez and colleagues (2020) it may be the type of sport, rather than the level of sport that influences anxiety scores. Over a range of combat sports, some show competitors experience higher anxiety scores when compared to their lower level counterparts. Whereas other combat sports show the opposite (Fernandez et al., 2020). In terms of quality of life, evidence suggests those who participate in sport or physical exercise have a higher quality of life than those who do not, which is true no matter the level (Omorou et al., 2013). Following injury such as an ACL reconstruction, the return to sport at the same level or sport at a higher level, has been linked to an increase in an individuals quality of life. However, if reinjury occurs and another surgical reconstruction is required, scores of quality of life decrease (Filbay et al., 2017). This displays the positive power of sport following a serious injury. The level of sport in this case is not the most important factor, but the ability to return to sport is.

The current study

Previous research has focused on the positives of sport for the symptoms of mental health disorders, the benefits of team sport when compared to individual sport, gender

differences in top level athletes in symptoms of mental health disorders and the most common mental health disorders associated with top level athletes. There is little research which examines the difference in level of sport and the symptoms of mental health disorders. The research that does examine the difference between level of sport and symptoms of mental health disorders focuses on one symptom and in some cases focuses on one sport in particular and are not specific to the Irish context. The evidence does suggest that some symptoms such as stress and anxiety are more common than the likes of depression and quality of life. The research shows that levels of quality of life while playing sport is high and while not playing sport is low no matter the level and that the levels of stress, and anxiety are also high which could lower scores of quality of life. Despite the recent popularity and interest in the topic of level of sport and symptoms of a mental health disorder, little research examines more than one symptom such as depression, anxiety, stress and quality of life within an Irish context. Research has not yet examined the difference in level of sport on the scores of depression, anxiety, stress, and quality of life over a variety of sports within an Irish context.

Therefore, the aim of this current study is to provide a better understanding of the impact that level of sport has on the symptoms of mental health disorders. As previous research has shown that pressure to perform, fear of injury and stressor levels (Sebbens et al, 2016) are higher at the level of sport increase, the expectation is that levels of stress, depression and anxiety will also increase, whereas the quality of life will decrease. The first aim of this study is to examine the difference between level of sport on scores of depression. The second aim is to examine the difference between level of sport on scores of anxiety. The third aim is to examine the difference between level of sport on scores of stress. Finally, the fourth aim of this study is to examine the difference between level of sport on the scores of quality of life. these four aims produce the following research questions and consequent hypotheses:

Research question 1: Is there a difference on scores of depression between the levels of sport people participate in? Hypothesis for research question 1: There is a difference on scores of depression between the levels of sport people participate in. Essentially, the higher the level of sport, the higher the scores on the measure of depression.

Research question 2: Is there a difference on scores of anxiety between the levels of sport people participate in? Hypothesis for research question 2: There is a difference on scores of anxiety between the levels of sport people participate in. Essentially, the higher the level of sport, the higher the scores on the measure of anxiety.

Research question 3: Is there a difference on scores of stress between the levels of sport people participate in? Hypothesis for research question 3: There is a difference on scores of stress between the levels of sport people participate in. Essentially, the higher the level of sport, the higher the scores on the measure of stress.

Research question 4: Is there a difference on scores of quality of life between the levels of sport people participate in? Hypothesis for research question 4: There is a difference on scores of quality of life between the levels of sport people participate in. Essentially, the higher the level of sport, the lower the scores on the measure of quality of life.

Methods

Participants

The research sample for the current study consisted of 121 participants. Two participants had to be excluded from the study due to unfinished submissions of the questionnaires, for both participants only 50% of the questionnaire was completed. All participants were athletes and partake in sports throughout Ireland. An anonymous questionnaire was sent to athletes, clubs and sports teams for circulation. All clubs and team captains were asked for permission before circulation. It was also distributed via social media. Recruitment consisted of social media, e-mail requests to competitive teams around the country and group chats. Due to this, the sample for the current study had at least some degree of knowledge regarding sports and this could provide a more valid overview of the research questions through their responses. Participants were required to be 18 years old or older to participate in this study, this is in line with ethical considerations. Along with this, participants had to currently be playing or have previously played any level of sport within the last 10 years, currently living in Ireland and be able to recall sporting experience of up to 10 years ago. Informed consent was also a requirement from all participants prior to commencing the questionnaire. At the beginning of the questionnaire, demographic information was collected from participants which included gender identity, age, current sport playing status and the level at which they play/played sports. This demographic information was collected to gather a balanced range of participants. the balance would be achieved if over 40% of any gender identity participates, if the average age is over 30 and if more than 30% of individual or team sport is represented.

Measures

The current study examined whether there are differences between level of sport on scores of depression, stress, anxiety, and quality of life.

Depression, anxiety and stress

The Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995) was used to assess the levels of depression, stress and anxiety of the participants. Some of the questions from the scale were as follows “I had a feeling of shakiness”, “I felt I had lost interest in just about everything” and “I felt that I was using a lot of nervous energy”. The Depression Anxiety Stress Scale is a four-point Likert scale with forty-two items, where participants answered with the option that best applied to them over the last week which ranged from 1 “Did not apply to me at all” to 4 “Applied to me very much”. This scale was used as a continuous measure where higher scores on the items indicated higher levels of stress, depression and anxiety. This measure has been shown to have good reliability with a Cronbach alpha of 0.89 for the entire scale. The Cronbach alpha for the individual factors within the scale also showed reliability and validity with depression (0.90), anxiety (0.92) and stress (0.92) (Akin & Cetin, 2007). When used in various samples, clinical and non-clinical, Cronbach’s alpha ranges from 0.83 to 0.91 (Bilgel & Bayram, 2011).

Quality of life

The World Health Organization’s Quality of Life scale (WHOQOL, 1993) was used to assess the levels of quality of life of the participants. some of the questions on the scale were as follows, “How satisfied are you with the conditions of your living space” and “How satisfied are you with your ability to perform your daily living activities”. The quality of life scale is a five-point scale with twenty-six items, where participants answered with the option that best applied to them over the last two weeks which ranged from 1 “Not at all” to 5 “Completely”. This scale was used as a continuous measure where lower scores on the items indicated lower levels of quality of life. This measure has been shown to have good reliability with a Cronbach’s alpha of 0.76, 0.75, 0.77, and 0.69 for all of the domains within the scale respectively, which illustrates a good level of internal consistency between items on the scale

(Obad et al., 2021). When used in various samples, Cronbach's alpha ranges from 0.69 to 0.81 (Berlim et al., 2005).

Design and Analyses

The research design for the current study is cross-sectional in nature as all data collected was done so at the same point in time. This study is a quantitative type of research, which used an online survey to collect the data. The four research questions of this study are; 1) Is there a difference between level of sport on scores of depression; 2) Is there a difference in level of sport on scores of anxiety; 3) Is there a difference between level of sport on scores of stress; 4) Is there a difference between level of sport on scores of quality of life. Four separate-between-groups ANOVA analyses were conducted to assess hypothesis one, two, three, and four. This analysed the difference between level of sport on the scores on the four variables in the current study. The ANOVA contained one independent variable (IV), level of sport which had six groups within it. Along with this the ANOVA contained one dependent variable (DV) which for this study included depression, anxiety, stress, and quality of life.

As questions were not made compulsory for ethical reasons, some were not answered. This left missing data in the dataset. To account for this, the value of -99 was inserted so that the appropriate analyses could be run using the SPSS system.

Procedure

Data was obtained by using an online survey which was an anonymous, self-report style questionnaire. This was shared on social media platforms, into group chats of sports teams and circulated through emails asking for permission for dissemination at sports clubs; the questionnaire was shared as a link. Upon deciding to participate and following the link to the study, participants were brought directly to an information sheet which showed all the information regarding the study and outlined everything involved with participation, all the risks and benefits identified (see Appendix 1). In order to be able to proceed to the study

participants had to give their informed consent before being able to continue on to the study (see Appendix 3). Participants used their own time to complete the questionnaire which had an estimated time of 10 minutes to complete.

There were three parts involved in the questionnaire. The first part asked the demographic questions which gave an overview of participants through questions regarding the ages of participants, gender identity of participants, level of sport being played by participants, whether participants are part of team or individual sports, and what sports are being played by participants (see Appendix 2C). These demographic questions were similar in previous research (O'Brien & Kilrea, 2020). The second part was where the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) was implemented which investigated the levels of depression, stress and anxiety experienced by the participants (see Appendix 2A). In this study, it was asked that participants answer how they felt when participating at their highest sporting level. The third and final part included the Quality of Life scale (WHOQOL, 1993) which investigated the quality of life experienced by each participant (see Appendix 2B). For this study, it was asked that participants answer how they felt when participating at their highest sporting level. Upon completion of the questionnaire, a debriefing sheet was provided to participants which outlined what the research involved, the confidentiality of the data collected, helplines that participants may find useful had they experienced distress, and expressed gratitude from the researcher for taking the time to complete the questionnaire (see Appendix 4).

Results

The overall results show a balanced representation of gender identity and age ($M=34.91$). As for the individual versus team sport, the balance has not been achieved.

Descriptive statistics

Descriptive statistics for the variables including depression, anxiety, stress and quality of life were performed. There were 119 participants ($n = 119$) in the current sample, with a fairly even split between male and female respondents. 64 participants within the sample were female (54.2%) and the remainder 54 participants were male (45.8%). The overall majority of the sample were current sport players (89.9%) and the other 10.1% of participants have played sports within the last 10 years. Out of the 119 participants, 89.9% ($n = 107$) participate in team sports and the remaining 9.3% ($n = 11$) participate in individual sports. A total of 45.4% of participants play in divisions 1-4 ($n = 54$), other levels of sport included; 10.2% National ($n = 12$), 1.7% Provincial ($n = 2$), 1.7% County ($n = 2$), 13.6% Championship/Cup/League ($n = 16$), and 27.1% Recreational ($n = 32$).

Due to missing data, -99 was substituted for the purpose of the analyses, this has resulted in relatively high range scores. For part of the dataset see Appendix 5.

There are 4 continuous variables: depression, anxiety, stress, and quality of life. Means (M) and standard deviations (SD) for all continuous variables are reported in Table 1.

Table 1

Descriptive statistics for all continuous variables ($n = 119$)

Variable	M [95% CI]	SD	Range
Depression	17.65[13.88, 21.42]	20.78	149
Anxiety	17.82[14.75, 20.88]	16.89	141
Stress	22.30[19.72, 24.88]	14.22	152
Quality of Life	94.07[88.08, 100.06]	33.00	219

Inferential statistics

A one-way-between-groups ANOVA was conducted to determine if there were differences between level of sport on scores of depression. Preliminary analyses were conducted to ensure the assumption of homogeneity of variance was satisfied, this was done through Levene's F test, $F(5,112) = .83, p = .533$. The assumption of normality was violated, however the planned analysis was still used. Participants were divided into 6 groups according to their level of sport; National, Provincial, County, Championship/Cup/League, Division 1-4, and Recreational. There was no significant difference in scores on depression between the 6 groups, $F(5,117) = .63, p = .675$.

A one-way-between-groups ANOVA was conducted to determine if there were differences between level of sport on scores of anxiety. Preliminary analyses were conducted to ensure the assumption of homogeneity of variance was satisfied, this was done through Levene's F test, $(5,112) = .20, p = .960$. The assumption of normality was violated, however the planned analysis was still used. Participants were divided into 6 groups according to their level of sport; National, Provincial, County, Championship/Cup/League, Division 1-4, and Recreational. There was no significant difference in scores on anxiety between the groups, $F(5,117) = 1.16, p = .333$.

A one-way-between-groups ANOVA was conducted to determine if there were differences between level of sport on scores of stress. The assumption of homogeneity of variances was not satisfied, Levene's F test, $(5,112) = 2.32, p = .048$, however since the ANOVA is a robust test the results were still comprehensive. (The assumption of normality was violated, however the planned analysis was still used. Participants were divided into 6 groups according to their level of sport; National, Provincial, County, Championship/Cup/League, Division 1-4, and Recreational. There was no significant difference in scores on stress between the groups, $F(5,117) = 1.20, p = .314$.

A one-way-between-groups ANOVA was conducted to determine if there were differences between level of sport on scores of quality of life. Preliminary analyses were conducted to ensure the assumption of homogeneity of variances was satisfied, this was done through Levene's F test, $F(5,112) = 1.71, p = .138$. The assumption of normality was violated, however the planned analysis was still used. Participants were divided into 6 groups according to their level of sport; National, Provincial, County, Championship/Cup/League, Division 1-4, and Recreational. There was no significant difference in scores between the groups, $F(5,117) = 1.02, p = .411$.

Discussion

In the current study, the difference between level of sport on the symptoms of mental health disorders was examined within an Irish context. This study aimed to provide a better understanding of the impact that level of sport has on the symptoms of mental health disorders through examining the difference between level of sport on the scores of depression, anxiety, stress, and quality of life. Prior research has found positive aspects to do with sports, specifically how sport can have very beneficial effects on symptoms of depression and anxiety (Siefken et al., 2019; Pelletier et al., 2017; Lewis et al., 2012; Houle et al., 2019). Previous research has also found some negative aspects to do with sports, the mental health disorders that are the most common amongst athletes. These include eating disorders, exercise addiction or dependence, CTE, and mood disorders (Bar & Markser, 2013; Walter et al., 2022; Zeulner et al., 2016; Eme et al., 2013; MacIntyre et al., 2017). Through this research, four research questions and hypotheses were formulated to address the aims of this study.

The first hypothesis, that there would be a difference between level of sport on scores of depression, was not supported. This hypothesis was investigated using an ANOVA analysis; from this it was found that there is no significant difference between the six sport levels identified on their scores of depression. The findings show that there is a very small insignificant difference between the levels of sport on their scores of depression. Furthermore, these findings suggest that those who play recreational level sport score very similarly to those who play at national level on a scale measuring depression. This is both consistent and inconsistent with previous literature. The findings are inconsistent with research that has found that sport at a high level or for a specific reason cause a cycle of increased depressive symptoms and poor performance (Newman et al., 2016; Vittengl, 2021; Panza et al., 2020; Lebrun et al., 2018). The findings are consistent with previous literature

that found no difference between level of sport on depression that have found sport participation reduces symptoms of depression (Dahab et al., 2019; Ren et al., 2022; Lewis et al., 2012). These inconsistencies may be due to methodological differences whereby other studies were of a qualitative nature which employed interviews which could have impacted on participants responses, took a diagnosis of a mental health disorder into account which could have explained the presence of symptoms regardless of sport level, included non-sport players in their sample and used a different statistical analysis wherein they analysed different variables.

The second hypothesis, that there would be a difference between level of sport on the scores of anxiety, was not supported. This hypothesis was investigated using an ANOVA analysis; from this it was found that there is no significant difference between the six sport levels identified on their scores of anxiety. The findings show that there is a very small insignificant difference between the levels of sport on their scores of anxiety. Furthermore, these findings suggest that those who play recreational level sport score very similarly to those who play at provincial level on a scale measuring anxiety. Results are both consistent and inconsistent with previous literature. The results of the current study are consistent with previous research that found certain sports and forms of exercise reduces symptoms of anxiety and aids in the management of anxiety disorders (Van Pelletier et al, 2017; Houle et al, 2019; Hales & Travis, 1987). The current results are inconsistent with previous research that found athletes are at a high risk of experiencing symptoms of anxiety through fear of failure in high intensity sporting events and that sport type plays a role (Correia et al, 2017; Schaal et al, 2011; Rice et al, 2019; Stenling et al, 2014). These inconsistencies could be due to methodological differences whereby other studies employed different scales to measure their variables which could show different results depending on the scale, had bigger sample

sizes so got more accurate responses, investigated only team players and did not include individual sport players and compared genders instead of level of sport.

The third hypothesis, that there would be a difference between level of sport on the scores of stress, was not supported. This hypothesis was investigated using an ANOVA analysis; from this it was found that there is no significant difference between the six sport levels identified on their scores of stress. The findings of this study show that there is a small insignificant difference between the levels of sport on their scores of stress. Furthermore, these findings suggest that those who play recreational level sport score very similarly to those who play at a county level on a scale measuring stress. The findings are both consistent and inconsistent with previous literature. The results of this study are consistent with prior research which found no difference between level of specific sports on the stress response following the exercise (Hare et al, 2013; Yuan & Cheng, 2008). The results of this study are inconsistent with prior research that found those who compete at a certain level of sport have a bigger stress response than those who do not compete at that level and that lower level of sport in some cases elicits a bigger stress response at lower level sport (Van Paridon et al, 2017; Hayes et al, 2015; Kivlighan et al, 2005; Jacks et al, 2002). These inconsistencies could be due to methodological differences in other studies whereby meta-analyses are employed which give generalisable results to the population being examined, in some cases the studies only include men in their sample and have used different statistical analyses where one sport only was analysed.

The fourth and final hypothesis, that there would be a difference between level of sport on the scores of quality of life, was not supported. This hypothesis was investigated using an ANOVA analysis; from this it was found that there is no significant difference between the six sport levels identified on their scores of quality of life. The findings of this study show that there is a small insignificant difference between the levels of sport on their

scores of quality of life. Furthermore, these findings suggest that those who play recreational level sport score very similarly to those who play at a cup/championship/league where only top teams get entered on a scale measuring quality of life. The results of this study are inconsistent with previous literature that found a high correlation between quality of life and sport and that those who play high level sport score higher on quality of life scales than those who do not (Moeijes et al, 2019; Snedden et al, 2019; Gill et al, 2013; Sarmiento et al, 2010). These inconsistencies could be due to methodological differences as the other studies looked at children which would give different results than when looking at adults, used different statistical analyses and compared variables rather than assessing differences, had larger sample sizes and conducted their study in one specific town in one country so the results may not be as generalisable.

Implications

Findings from the current study have important clinical and societal implications. This study further demonstrates the positive implications that sport has no matter the level. Since the differences between the levels of sport do not affect the symptoms of a mental health disorder, it is essential that health professionals advise sport participation at any level to those who are struggling with their mental health and should encourage them to do as well as they can within their sport. As well as this, coaches should be aware of the potential mental health disorders that athletes are at a higher risk of developing and should continue to allow for everyone to get to as high a level as possible while implementing a programme to aid the symptoms of mental health disorders and to make access to help easier for the athletes which have been implemented in certain cases (Glazzard & Szreter, 2020; Ho et al, 2017; Bean et al, 2021; Uzzell et al, 2021; Butler-Coyne et al, 2019). Along with this, the findings of the current study demonstrate the need for awareness that it may not always be the level of sport that has an impact on the mental state of sport players and that other factors could have an

impact. Parents should also be aware of the benefits of sport for young people and for themselves to improve mood and quality of life and should encourage those with the ability to compete at as high a level as possible while being aware of the potential risks for a mental health disorder.

Strengths and limitations

Although the sample size in the current study was larger than what was required after the power analysis was conducted, two participants had to be excluded from the study. After finding the power analysis (N=82), 121 participants were recruited overall. However, upon analysing the dataset it was found that two participants had not fully completed the study and due to this they could not be included in the data analyses so their data did not skew the results. The incompleteness of the questionnaire was due to another limitation of the study, the questions in the questionnaire were not made required for participants and due to this participants had the choice of skipping as many questions as they pleased. While this was due to ethical reasons so as to not force participants into answering questions they did not feel comfortable enough to answer, it is recommended by the researcher to only use unrequired questions with a specifically difficult nature in future studies. This being said, the overall response rate for the questionnaire was very high and the study ended up with 112 participants who had answered most questions on the survey.

Even though there was a good representation of gender identity that took part in this study this was not required for the analysis conducted. The statistical analysis was chosen based on the hypotheses which looked at the difference between level of sport on the scores of symptoms of a mental health disorder. In the demographic questions, both age and gender identity was asked of participants, which was done so the results could be generalised to all gender identities and ages. However, only two genders took part in the study meaning the results could only be generalisable to those identifying as either male or female. Future

research in this topic should examine gender differences on the scores of the variables and compare the scores to age and gender identity. This has been analysed previously in research (Snedden et al, 2019; Correia et al, 2017; Schaal et al, 2011). Along with this, future research should attempt to include more gender identities within their study to see if this has an impact on the results. Also the results from the ANOVA analyses were not taken for gender, age group or sport type, as this information was asked for demographic purposes and to ensure a balanced response.

The respondents to the current study are predominantly engaged in team sport, which may have influenced the overall results. While this study was not aimed at team sports in particular it does support previous literature regarding the benefits of team sports (Pluhar et al, 2019; O'Brien & Kilrea, 2021; Evans et al, 2012).

There are a few other limitations that are worth noting from this study. First, the questionnaire was a self-report measure. Due to the questionnaire being a self-report measure of scores it is possible that participants may not have answered as truthfully as required for accurate results. Although the questionnaire was filled out in participants own time and was anonymous it is possible that due to potential embarrassment or their own prejudices regarding the topic of mental health in sport, that participants could be untruthful with their responses. Future research should look into a dual approach in experimental design wherein both qualitative and quantitative designs are used. This could consist of one scale being assessed through an interview in which more personal responses can be obtained and one scale being assessed through a short questionnaire similar to the one in this study. The second limitation worth noting is that due to ethical reasons this study could not take into account the presence of a diagnosis of a mental health disorder of participants. The presence of a mental disorder could have an impact on the results found. Future research should look at differences of scores on the measures between those with a mental health disorder and those without at

different levels of sport. The final limitation worth mentioning is that this study was a cross-sectional design and not longitudinal. Due to the once off participation within the current study a number of factors could have impacted on the responses of participants and some participants may not be at a busy or particularly competitive stage in their respective sporting seasons. Future research should employ a longitudinal design wherein sport players participate at three different times throughout their sporting seasons to see if scores change at different times during the season.

Conclusion

This study expands the current understanding of the difference between level of sport on symptoms of a mental health disorder. In relation to scores on depression, anxiety, stress and quality of life the current findings are both consistent and inconsistent with previous literature in the topic. Inconsistencies are seen with previous literature where significant differences were found between groups on scores of the measures and are consistent with previous literature where benefits of sport on the measures analysed have been found. Overall, the results for the current study, while not significant, demonstrate the importance for engaging in sport. Since there is no difference between the level of sport and symptoms of a mental health disorder, this should be noted and used to encourage young people to engage in a form of physical activity at any level. Findings show evidence, that sport participation at any level is beneficial for the mental health of individuals. The study contributes to previous literature by examining the difference in levels among multiple sports which has not been examined before in available literature. Further research is needed to analyse the difference between level of sport on the measures of depression, anxiety, stress and quality of life through different methodological designs and using similar scales and approaches.

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Appendices

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Appendix 1 – Information Sheet

I am a final year student in the BA in psychology programme at National College of Ireland.

As part of the degree it is required for us to conduct a piece of independent research as our final year project.

For my project I am investigating the relationship between playing sports and measurement of the variables stress, depression, anxiety and quality of life.

You are being invited to take part in a research study. Before making the decision to take part, please take the time to read this document.

You are eligible to take part in this study if you are:

Above the age of 18

Are currently playing or have within the last 10 years played any sport at any level

Are currently residing in Ireland

Have the ability to recall your experience of playing sports of up to 10 years ago

The online questionnaire will include scales asking whether you have experienced the symptoms being analysed and to what degree you feel the symptoms have been bothering you.

Responses to the questionnaire will be completely anonymous and will be kept that way, no information will be traceable to any participant.

Participation in this research is completely voluntary; you do not have to take part and there will be no consequences if you make the decision not to take part in the study.

Once the questionnaire has been submitted, it is no longer possible to withdraw your data from the study however all data given will be completely anonymous

There are no direct benefits to you for taking part in this research. However, the information gathered will contribute to research that helps us to understand the relationship between playing sports and mental well-being.

There is a small risk that some of the questions contained within this questionnaire may cause minor distress to some participants. If you are feeling distress caused by the questions, you are free to stop your participation and to close the questionnaire.

The results obtained from this study will be presented in my final dissertation, which will be submitted to National College of Ireland. The results may also be presented at conferences or submitted to an academic journal for publication if the findings are adding to existing research or filling a gap in the existing research.

For further information please do not hesitate do get in touch with myself or my supervisor.

Laoise Neuman Jones, student at National College of Ireland, LNJ.FYP@gmail.com

Amanda Kracen PhD, lecturer in psychology at National College of Ireland, supervisor,

amanda.kracan@ncirl.ie

Appendix 2A – DASS scale

Lovibond, S. H. & Lovibond, P. F. (1995). Manual for the Depression Anxiety Stress Scales (DASS). Psychology Foundation Monograph. (Available from The Psychology Foundation, Room 1005 Mathews Building, University of New South Wales, NSW 2052, Australia).

Depression, anxiety and stress scale is a Likert style scale that has 4 options that applied over the last week: did not apply to me at all, applied to me to some degree, applied to me to a considerable degree and applied to me very much.

1. I found myself getting upset by quite trivial things
2. I was aware of a dryness of my mouth
3. I couldn't seem to experience any positive feeling at all
4. I experienced breathing difficulty (eg. Excessively rapid breathing/ breathlessness in the absence of physical exercise)
5. I just couldn't seem to get going
6. I tended to overreact to situations
7. I had a feeling of shakiness
8. I found it difficult to relax
9. I found myself in situations that made me so anxious I was most relieved when they ended
10. I felt like I had nothing to look forward to
11. I found myself getting upset rather easily
12. I felt that I was using a lot of nervous energy
13. I felt sad and depressed
14. I found myself getting impatient when I was delayed in any way
15. I had a feeling of faintness

16. I felt that I had lost interest in just about everything
17. I felt I wasn't worth much as a person
18. I felt that I was rather touchy
19. I perspired noticeably in the absence of physical exertion
20. I felt scared without any good reason
21. I felt that life wasn't worth while
22. I found it hard to wind-down
23. I had difficulty swallowing
24. I couldn't seem to get any enjoyment out of the things I did
25. I was aware of the action of my heart in the absence of physical exercise
26. I felt down-hearted and blue
27. I found that I was very irritable
28. I felt I was close to panic
29. I found it hard to calm down after something upset me
30. I feared that I would be "thrown" by some trivial but unfamiliar task
31. I was unable to become enthusiastic about anything
32. I found it difficult to tolerate interruptions to what I was doing
33. I was in a state of nervous tension
34. I felt I was pretty worthless
35. I was intolerant of anything that kept me from getting on with what I was doing
36. I felt terrified
37. I could see nothing in the future to be hopeful about
38. I felt that life was meaningless
39. I found myself getting agitated
40. I was worried about situations in which I might panic and make a fool of myself

41. I experienced trembling

42. I found it difficult to work up the initiative to do things

Appendix 2B – WHOQOL scale

World Health Organization's Quality of Life group: Measuring Quality of Life; 1993.

Development of the World Health Organization Quality of Life Instrument (WHOQOL)

Quality of life scale is a Likert style scale that has 5 options that applied in the last two weeks. Ranging from not at all- completely, very poor-very good, very dissatisfied-very satisfied, not at all-completely and never-always the questions will be asked.

1. Do you get the kind of support from others that you need?
2. How would you rate your quality of life?
3. How satisfied are you with your health?
4. To what extent do you feel that physical pain prevents you from doing what you need to do?
5. how much do you enjoy life?
6. to what extent do you feel your life to be meaningful?
7. how well are you able to concentrate?
8. how safe do you feel in your daily life?
9. how healthy is your physical environment?
10. do you have enough energy for everyday life?
11. are you able to accept your bodily appearance?
12. have you enough money to meet your needs?
13. how available to you is the information that you need in your day-to-day life?
14. to what extent do you have the opportunity for leisure activities?
15. How well are you able to get around?
16. how satisfied are you with your sleep?

17. how satisfied are you with your ability to perform your daily living activities?
18. how satisfied with your capacity for work?
19. how satisfied are you with yourself?
20. how satisfied are you with your personal relationships?
21. how satisfied are you with your sex life?
22. how satisfied are you with the support you get from friends?
23. How satisfied are you with the conditions of your living place?
24. how satisfied are you with your access to health services?
25. how satisfied are you with your transport?
26. how often do you have negative feelings such as blue mood, despair, anxiety, depression?

Appendix 2C – Demographic questions

What do you identify as? Man/woman/transgender/non-binary/prefer to self-identify (please specify)

What age are you? (enter response here) open ended question

Are you currently living in Ireland? Yes/no

Do you currently play sports? Yes/no

If no, have you previously played sports in the last 10 years? Yes/no

At what level do/did you play sports? National/provincial/county/championship, cup or league (where not everyone playing the sport competes)/ divisions 1-4 in club level (1-2 if there are very few divisions in your sport)/recreational

What sport do/did you play? (enter response here) open ended question

Did you/are you currently playing team or individual sports? Team/individual

Appendix 3 – Consent form

The relationship between playing high level sports and mental well-being.

I voluntarily agree to participate in this research study.

I understand that even if I agree now to participate, I can withdraw at any stage in the research process up until the final submission of data and or refuse to answer any questions with no consequences of any kind.

I understand that I will not benefit directly from participating in this research

I understand that in any report on the results of this research my identity will remain anonymous.

I understand that I am free to contact any of the people involved in the research to seek further clarification and information should it be necessary.

I understand that when I click on the proceed to study button, I am giving informed consent and will proceed to the study. (tick box)

I am above the age of 18 (tick box)

I am currently or have previously played sports within the last 10 years (tick box)

I am currently living in Ireland (tick box)

I have the ability to remember playing sports up to 10 years ago, if applicable (tick box)

Laoise Neuman Jones, LNJ.FYP@gmail.com

Amanda Kracen PhD, lecturer in psychology at National College of Ireland,

amanda.kracen@ncirl.ie

“Proceed to study”

Appendix 4 – Debrief sheet

This study is investigating the relationship between playing sports and scoring poorly on the measures of stress, depression, anxiety and quality of life.

This experiment employs a cross-sectional design.

Any participant who has found it difficult to participate in this study for whatever reason may find the below numbers helpful:

Samaritans- 116123

Text support- text50808

Aware- 1800 804 848

Thanks for taking the time to take part in this study.

This data is completely confidential and cannot be traced back to any individual by anyone, even the researcher. This data will be stored in accordance with the APA guidelines and will be destroyed after 5 years.

If you have any questions, please do not hesitate to contact me or my supervisor

Laoise Neuman Jones, student at National College of Ireland, LNJ.FYP@gmail.com

Amanda Kracen PhD, lecturer at National College of Ireland, supervisor,

amanda.kracen@ncirl.ie

Appendix 5 – Dataset

FYP dataset.sav [DataSet1] - IBM SPSS Statistics Data Editor

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	Gender	Numeric	9	0	What do you id...	{1, Female}...	-99	9	Right	Scale	Input
2	Age	Numeric	10	0	What age are y...	None	-99	12	Right	Scale	Input
3	Currentplay...	Numeric	3	0	Do you current...	{1, Yes}...	None	3	Right	Nominal	Input
4	Level	Numeric	40	0	At what level do...	{1, National}...	-99	50	Right	Scale	Input
5	Sport	Numeric	40	0	What sport do/...	{1, multiple}...	None	50	Right	Nominal	Input
6	TeamorIndi...	Numeric	10	0	Did you/are you...	{1, Team}...	-99	10	Right	Scale	Input
7	DASS1	Numeric	2	0	I found myself ...	{1, did not a...	None	12	Right	Nominal	Input
8	DASS2	Numeric	2	0	I was aware of ...	None	None	12	Right	Scale	Input
9	DASS3	Numeric	2	0	I couldn't seem...	None	-99	12	Right	Scale	Input
10	DASS4	Numeric	2	0	I experienced b...	None	None	12	Right	Scale	Input
11	DASS5	Numeric	2	0	I just couldn't s...	None	None	12	Right	Scale	Input
12	DASS6	Numeric	3	0	I tended to over...	None	None	12	Right	Scale	Input
13	DASS7	Numeric	2	0	I had a feeling ...	None	None	12	Right	Scale	Input
14	DASS8	Numeric	2	0	I found difficult t...	None	None	12	Right	Scale	Input
15	DASS9	Numeric	2	0	I found myself i...	None	None	12	Right	Scale	Input
16	DASS10	Numeric	2	0	I felt like I had n...	None	None	12	Right	Scale	Input
17	DASS11	Numeric	2	0	I found myself ...	None	None	12	Right	Nominal	Input
18	DASS12	Numeric	2	0	I felt that I was ...	None	None	12	Right	Nominal	Input
19	DASS13	Numeric	2	0	I felt sad and d...	None	None	12	Right	Nominal	Input
20	DASS14	Numeric	2	0	I found myself ...	None	None	12	Right	Nominal	Input
21	DASS15	Numeric	2	0	I had a feeling ...	None	None	12	Right	Nominal	Input
22	DASS16	Numeric	2	0	I felt that I had l...	None	None	12	Right	Nominal	Input
23	DASS17	Numeric	2	0	I felt I wasn't w...	None	None	12	Right	Nominal	Input
24	DASS18	Numeric	2	0	I felt that I was r...	None	None	12	Right	Nominal	Input
25	DASS19	Numeric	2	0	I perspired noti...	None	-99	12	Right	Scale	Input
26	DASS20	Numeric	2	0	I felt scared wit...	None	None	12	Right	Nominal	Input
27	DASS21	Numeric	2	0	I felt that life wa...	None	None	12	Right	Nominal	Input
28	DASS22	Numeric	2	0	I found it hard t...	None	None	12	Right	Nominal	Input
29	DASS23	Numeric	2	0	I had difficulty s...	None	None	12	Right	Nominal	Input
30	DASS24	Numeric	2	0	I couldn't seem...	None	None	12	Right	Nominal	Input
31	DASS25	Numeric	2	0	I was aware of ...	None	None	12	Right	Nominal	Input

Data View Variable View

IBM SPSS Stat

FYP outputs.spv [Document1] - IBM SPSS Statistics Viewer

File Edit View Data Transform Insert Format Analyze Graphs Utilities Extensions Window Help

Output

- Frequencies
 - Title
 - Notes
 - Statistics
 - Frequency Table
 - Title
 - Do you curr...
 - What do you...
 - Did you/are...
 - At what leve...
- Descriptives
 - Title
 - Notes
 - Descriptive Stati...
- Explore
 - Title
 - Notes
 - Active Dataset
 - Case Processor
 - Descriptives
 - Extreme Values
 - Tests of Normal...
 - TotalDepressio...
 - Histogram
 - TotalDepressio...
 - Normal Q-Q
 - TotalDepressio...
 - Detrended
 - TotalDepressio...
 - Bootstrap
 - TotalDepressio...
 - TotalAnxiety
 - Title
 - Histogram
 - TotalAnxiety
 - Normal Q-Q
 - TotalAnxiety
 - Detrended
 - TotalAnxiety
 - Bootstrap
 - TotalAnxiety

Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
National	12	25.5833	12.18388	3.51718	17.8421	33.3246	14.00	43.00
Provincial	2	20.5000	9.19239	6.50000	-62.0903	103.0903	14.00	27.00
County	2	15.0000	.00000	.00000	15.0000	15.0000	15.00	15.00
Championship/cup/league	16	17.0625	33.30559	8.32640	-.6848	34.8098	-99.00	50.00
Division 1-4	54	18.5926	18.13838	2.46832	13.6418	23.5434	-99.00	48.00
Recreational	32	13.4688	21.04371	3.72004	5.8817	21.0558	-99.00	37.00
Total	118	17.6780	20.86173	1.92048	13.8746	21.4814	-99.00	50.00

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
TotalDepression	Based on Mean	.827	5	112	.533
	Based on Median	.825	5	112	.535
	Based on Median and with adjusted df	.825	5	84.669	.536
	Based on trimmed mean	.955	5	112	.449

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1398.403	5	279.681	.833	.675
Within Groups	49521.360	112	442.155		
Total	50919.763	117			

ANOVA Effect Sizes^{ab}

	Sum of Squares	df	Mean Square	F	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Between Groups	1398.403	5	279.681	.833	.675		
Within Groups	49521.360	112	442.155				
Total	50919.763	117					

IBM SPSS Statistics Processor is ready Unicode ON Classic