The Moderating Role of Justice in the Relationship between Football and Mental Well-Being

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Abstract

The Mental well-being of students is of critical concern in their academic prowess. Consequently, this study explores the relationship between the hours of football students play and their respective mental well-being. In addition to this, a potential moderator, namely the virtue of Justice and its three encompassing strengths fairness, teamwork, and leadership, is established and explored as well. Using a sample of 54 students, this research employs a correlation analysis, a generalized linear model analysis and a bootstrapping analysis to assess these constructs. The findings revealed a weak non-significant correlation between hours of football and mental well-being, and the Generalized Linear Model and Bootstrapping analyses also revealed non-significant interaction effects. These results contradict previous research which has consistently found significant positive relationships between playing football and mental well-being. Several factors may explain this discrepancy, such as the setting in which football is played and the intensity of the competition, which were not controlled for in this study. Limitations, such as the non-normal distribution of data was accounted for by using nonparametric tools to explore the relationships. This study´s findings challenge the current scientific consensus, advocating against the universality of a linear positive impact of increasing physical activity and suggesting a more differentiated view about the relationship in itself. Future research should control for the setting and intensity in which the football is played and accommodate the methodological limitations of this study to obtain a meaningful basis on which to differentiate the relationship.

Preface

For many decades, the relationship between sports participation and its effect on mental well-being has been studied and hypotheses were developed as to why exactly sports help increase mental well-being. In recent years, increasing attention towards this effect has garnered in the field of psychology and sports science in general. The increasing attention seems to be in response to the heightened prevalence of mental health symptoms in western societies (Deng et al., 2022, European Council, 2023). Concurrently, participation in sports and physical activity in general have been on the decline for several years as well (World Health Organization: WHO, 2022b). Throughout this, a growing body of research has already identified a meaningful connection between physical activity and mental well-being (Ho et al., 2015, Sj & Kr, 2006). Given this connection, this thesis aims to quantify the relationship between sports and mental well-being further and examine the possible moderating role of character strengths, namely the virtue of Justice, within this relationship.

Mental well-being

In order to investigate the intricate relationship of sports participation and mental well-being, it is crucial to first understand what mental well-being entails. Mental well-being, defined as "Our internal positive view that we are coping well psychologically with the everyday stresses of life and can work productively and fruitfully" (*Mental Health and Wellbeing Strategy*, 2023), possesses a significant role in increasing the overall psychological state within the population (World Health Organization: WHO, 2022a). A person that feels well mentally is much better equipped to cope with stressors in their life and is more able to withstand various hardships they may face (WHO, 2022a).

This state of mind, however, has been on the decline for years now, as the prevalence of poor mental well-being has increased twofold in the span of only two years in the Dutch

student population (CBS, 2022). Possible reasons for this include the COVID lockdown in 2020 (Thygesen et al., 2021) and increasing social media usage and uncertainty about the future (John Templeton Foundation, 2022). This trend is illustrated by the Dutch student population, while only 10% of the population reported poor levels of mental health back in 2018, this number has risen to 18% in 2021 (CBS, 2022). This increase has propelled the student population to be three times more at-risk for developing at least one mental health issue compared to the average population (Abrams, 2022) (Mental Health America, 2023). The reason as to why they are this much more likely to develop these issues is because students face a multitude of challenges when trying to adjust to the unfamiliar environment of moving away and pursuing a degree. Some of these stressors involve more independence, facing academic challenges, joining new circles of friends, uncertainty about financials and the future in general (Linden & Stuart, 2020). How well a student adapts to these potential stressors not only greatly impacts their mental well-being, but also has an influence on how well they do academically (Linden & Stuart, 2020). Consequently, a downward spiral between worsening grades due to low mental health and worsening mental health due to low grades can develop, further exacerbating the problem (Linden & Stuart, 2020). These are some, but not all, of the challenges students face which diminish their mental health, making them the ideal group to study for this kind of relationship, as the impact on their mental health could potentially be bigger, as they have a poor one to begin with.

Increasing mental well-being through sports participation

The conventional strategy to combat this issue has made use of the disease model, which tried to reach an absence of mental health symptoms. Recently, however, research has emerged suggesting another approach, namely primary prevention, as one possible factor to solve this problem (Jobehdar et al., 2021). With this approach, one would be able to not only

improve the mental well-being of students, but also prevent a diminished state of mental well-being from happening altogether.

One form of primary prevention are sports, which are defined as an activity involving physical exertion and skill, *esp.* (particularly in modern use) one regulated by set rules or customs in which an individual or team competes against another or others (Oxford English Dictionary, 2023). Recent meta-analyses have shown that participating in sports and exerting yourself physically has a positive effect on mental well-being (White et al., 2017), although the type of physical activity or sport seems to have an influence on the strength and direction of this relationship. This stems from the fact the motivation for pursuing a sport differ for each specific type (Jetzke & Mutz, 2019). For instance, going to the gym or cycling are often seen by people as means to improve their physical fitness or health, indicating that these types of activities are not pursued out of enjoyment of them itself. The greatest increase in life satisfaction is seen in sport activities that one can derive enjoyment, relaxation, and sociality out of (Jetzke & Mutz, 2019). The reason why sports could serve well as primary prevention for students is that the levels of physical activity are lower than ever, with 36% of Dutch young adults considered too physically inactive (Hildebrandt et al., 2013). Physical inactivity can lead to ischaemic heart disease, ischaemic stroke, type II diabetes, colon cancer and breast cancer, as well as many adverse mental health outcomes (Bull et al., 2004). Several studies have outlined the bolstering effect of physical activity, especially, on the mental well-being of young adults (Beauchamp et al., 2018) (Galper et al., 2006), suggesting that these two trends might be intertwined in some way.

The biological, psychological, and social perspective on the relationship

At this point in time, no consensus has been reached as to how sports increase the mental well-being of partakers. The three current hypotheses for how participation in sports increases mental well-being revolve around the biological, psychological, and social

perspectives. The biological perspective focuses on the release of neurotransmitters including dopamine as the primary reason for increased well-being. The psychological focuses on an achievement creating increased self-efficacy and self-esteem, which increase well-being as a result. The social perspective sees sports participation as a way to connect to other people, increase social skills and confidence, in turn leading to increased well-being (Fox, 1999, Peluso & Andrade, 2005). The three perspectives evolved through different theoretical frameworks and research of interdisciplinary teams over the years, with each one having its root in other specializations such as biology, sociology, and psychology. So far, only the biological perspective has gotten sufficient attention in research. As previous studies have outlined that the effect size differs for distinct types of sports (White et al., 2017), the effect likely does not stem from physical activity alone.

One way to test the validity of these perspectives and examine the potential bolstering effect of physical activity on well-being is to examine the participation in playing football. The reason why football is a favourable contender for examining the physical activity is because it fits into the criteria of Jetzke & Mutz for increasing well-being. Football can function as a way to derive enjoyment, sociality and competitiveness for participants, suggesting that this type of sport increase well-being through these outlets. Several studies have already outlined the potential effectiveness of participation in a football team for the mental health of patients already exhibiting mental health symptoms (Darongkamas et al., 2011) (McElroy et al., 2008). These studies concluded that playing football can be used as an effective intervention on people who experience severe mental distress or a disorder. In their studies, participating in football significantly decreased the extent to which the participants exhibited a poor mental health. While this setting does not necessarily translate to students, they prove that football works as one way to administer the beneficial effect of physical

activity on mental well-being. This provides a promising outlook for the potential influence of playing football on the mental well-being of students.

These perspectives and the setting give way to theorize in what way this relationship might be influenced by moderators. The only progress made from the psychological and social perspective has been achieved by Özcan (2022) and Ho et al. (2015), who identified three possible moderators for the relationship. Ho et al. (2015) found that resilience significantly mediates the relationship between physical activity and mental health and Özcan (2022) found sportsmanship and integrity as significant moderators. Hence, it is imperative to examine the validity of the social perspective in explaining the relationship between sports and mental well-being and research further possible moderators for this relationship.

Theoretical foundation of the moderator; the virtue of Justice

In order to examine the validity of the social perspective, this thesis introduces the virtue of Justice. Justice entails strengths that help you connect in community or group-based situations according to the Values In Action Theory of Peterson et al. (2004). This theory was developed by Peterson and Seligman to redefine what the "real" psychological disorders are. It is referred to as an alternative to the classical Diagnostic and Statistical Manual for mental disorders by Peterson. The theory proposes that the presence of character strengths entail optimal psychological functioning, and in turn the absence of these constitute pathology. In his view, the focus of psychology must not be laid upon disorders that have a root in biology such as schizophrenia for example, which to him fit more to the disease model of psychiatry, but rather on the "real" disorders such as social estrangement and pessimism. The reason for his view is that to him, schizophrenia is more like an illness and does not represent the average population that may be struggling in other, less severe ways, for example a general feeling of emptiness or not liking their job. By classifying pathology as such, Peterson hopes

to be able to more conclusively help patients struggling with these stressors, as the DSM does not effectively offer treatment for these types of problems.

As such, he established 24 strengths and categorised them into six virtues. These virtues are Wisdom, Courage, Humanity, Temperance, Justice, and Transcendence. Justice incorporates both western notions of equity, "Justice in distribution must be in accordance with some kind of merit" (Aristotle, ca. 350 B.C.E./1925), as well as the eastern understanding of Justice as equality, "from each according to his abilities, to each according to his need" (Marx, 1966). Each of the virtues comprises distinctive character strengths. The ones pertaining to Justice are fairness, leadership, and teamwork. These three strengths are indicative of someone that is capable of connecting in community or group-based situations. Wherein fairness constitutes that person treating all people the same according to notions of fairness and Justice; not letting personal feelings bias decisions about others and giving everyone a fair chance (Peterson et al., 2004). It is a strength that revolves around exceeding personal inclinations one may have towards another and in that, treating everyone the same, be it via equality or equity. Teamwork on the other hand involves a person working well as a member of a group or team; being loyal to the group and doing one's share (Peterson et al., 2004). Lastly, leadership revolves around a person encouraging a group of which one is a member to get things done and at the same maintain time good relations within the group and organizing group activities and seeing that they happen (Peterson et al., 2004). With this theory and the classification as its footing, this study will examine the validity of the social perspective further.

Significance of the virtue of Justice on the relationship

The way this virtue is believed to moderate the relationship is highlighted by the study of Özcan (2022). The study examined the influence of sports character according to the sports character scale (SCS) on the mental well-being of Turkish adolescents. Integrity and

sportsmanship were found to impact well-being significantly and positively. Integrity in this context is defined as the ability to maintain and act on one's morality and convictions (Shields & Bredemeier, 1995) and sportsmanship is defined as one of the character traits involving knowing the rules and standards of behaviour in sport (Shields & Bredemeier, 1995). While not examining Justice per se, a case can be made that these two components are similar, as it is both about fairness and morality. Due to this, Justice is hypothesized to moderate the relationship significantly and positively between sport and mental well-being.

Other than this study, however, the literature on character strengths influencing the relationship is sparse. Even though character strengths have been studied extensively and in a lot of contexts, their role as potential moderators has not been researched to a sufficient degree yet. Through using a more validated and more widely recognised tool such as the VIA survey, the study aims to add to existing literature and provide insight into whether Justice is a virtue that does significantly moderate the relationship.

Research question & Hypotheses

This research aims to answer the question: "*Does playing football influence the mental well-being of students, and to what extent is this relationship moderated by the virtue of Justice?*". This is visually represented in Figure 1.

It is hypothesized that:

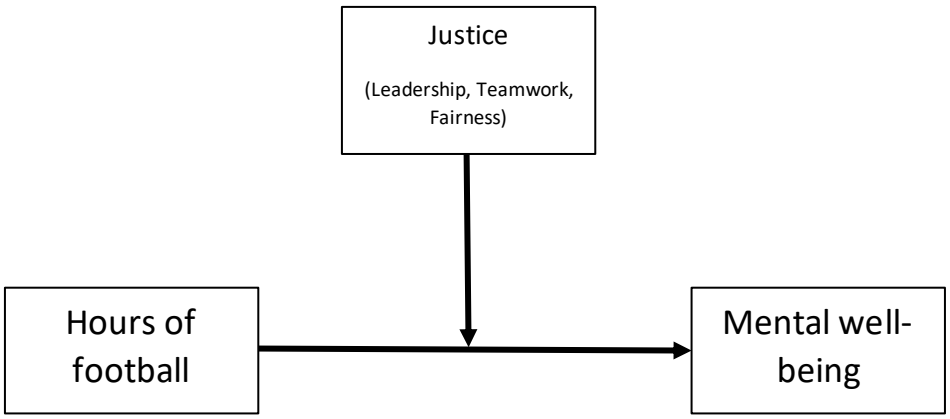
1. There is a significant positive correlation between the hours of playing football and mental well-being

2. The virtue of Justice significantly and positively moderates the relationship between the hours of playing football and mental well-being of students.

3. All three strengths (fairness, teamwork, leadership) significantly and positively moderate the relationship between the hours of playing football and mental well-being.

Figure 1

Visual representation of the hypothesized relationship



Methods

Study Design

This quantitative study aims to explore the moderating role of the character virtue Justice on the relationship between sports participation and mental well-being in students above the age of 18 who engage in the sport football. Three variables will be investigated in this research: hours of participation in football, the virtue Justice, and mental well-being.

Participants

A sample of 50 participants will be recruited to answer the study's questionnaire. Inclusion criteria for this research are a minimum age of 18 years and engagement in the sport football for at least one hour per week.

Materials

At the beginning of the survey, the participants will be presented with several questions to measure their demographics, such as age, gender, and nationality. Following these questions, participants will be presented with a survey that includes several questions regarding their sport participation, the *Global Assessment of Character Strengths* (GACS-24) to measure the virtue Justice, and the *Mental Health Continuum Short Form* (MHC-SF) to measure their mental well-being.

Sports Participation

To evaluate the survey respondents' football participation, they will be asked how many days and how many hours per week the participants practice football. In the case of the number of days, they will be able to choose from zero to seven days, and the scale of the number of hours ranges from one to 40.

Global Assessment of Character Strengths - 24 (GACS-24)

The *Global Assessment of Character Strengths - 24* (GACS-24) will be used to characterise the strengths of the study participants. Only the three items of the GACS-24 that contribute to the virtue Justice were selected from its inventory, namely one question about fairness, teamwork, and leadership, respectively. Teamwork, for instance, was measured with the item, “You are a collaborative and participative member on groups and teams; you are loyal to your group; you feel a strong sense of duty to your group; you always do your share.” The participants were able to provide responses using a seven-point Likert scale ranging from “0 = Very strongly disagree” to “6 = Very strongly agree”. The scales’ internal consistency (α = .75) and test-retest reliability (r =.78) have been shown to be adequate (Shimai & Urata, 2023).

Mental Health Continuum Short Form (MHC-SF)

Fourteen items that measure each aspect of well-being (emotional, social, psychological) make up the MHC-SF. Every item starts with “In the past month, how often did you feel...” and ends, for instance, with “satisfied with life?” or “that you had warm and trusting relationships with others?”. All items will be scored on a standardised six-point Likert scale from “0 = Never” to “5 = Everyday”. The given answers will be summed and divided by the total number of 14 elements to arrive at an overall score which can reach up to six. Higher scores are indicative of better mental health (Lamers et al., 2010). High internal consistency (α = .89) and less fortunate test-retest reliability (r = .68) has been demonstrated by the MHC-SF (Lamers et al., 2010).

Procedure

Prior to the data collection, the project was granted approval by the University of Twente's BMS ethics committee, with the request number 240407. The researchers will use the convenience sampling method to find participants, visiting several football clubs and asking people there to digitally fill out the survey via a QR code that will be provided to them. This approach involves selecting individuals who are readily available and accessible, in this case football players, without using a specific randomisation method. Moreover, a link to the survey will be published on the researchers' Instagram profiles to reach more participants. The survey will be uploaded to the University of Twente's BMS faculty Sona-System test subject pool where students will be able to earn 0.25 Sona credit points for participating in the study. An information letter and consent form will precede the survey's demographic questions. Subsequently, the items from the sports participation, the GACS-24, and the MHC-SF will be presented separately. The survey is supposed to require five to ten minutes to complete, and the respondents will be assured that their answers will be kept confidential.

Data Analysis

The study will conduct several R Studio analyses to examine the moderating role of Justice in the relationship between sports and mental well-being. The packages used for this research will consist of readr, psych, janitor, tidyverse, dplyr, mirt, modelr, broom, and foreign. First, the dataset will be cleaned and outliers due to age or other reasons will be excluded. After that, the assumptions of linearity and normality of the data will be checked. Then, the demographic characteristics of the sample will be summarised using descriptive statistics, which comprise the calculation of medians (M), standard deviations (SD), skew and kurtosis. A Correlation will be computed for the relationship between the number of hours of football per week that participants played and their mental well-being. To assess the main effects, a regression model will be constructed, with mental well-being as the dependent

variable (DV) and hours per week of football as the predictor (IV). The moderation analysis will involve creating an interaction term consisting of 'number of hours' and 'Justice' to examine whether Justice moderates the relationship between sports and mental well-being. Significance testing of moderation effects will be performed to visualize the interaction effects, using a 95% confidence interval, with a 0.05 cutoff for the p-value. After the moderation analysis of the virtue of Justice, the strengths Justice comprises will be checked individually on whether they moderate the relationship by themselves.

Results

Demographics

Five extreme outliers were excluded, and three participants did not fit into the specified age group. After the dataset was cleaned, 54 participants remained. The sample's age ranged from 18 to 30 years. The mean age was 23 years (SD = 5.08). 64.6% of the participants were male (n = 34) and 35.4% female (n = 19). Most of the participants were German (52.1%), followed by Dutch (45.8%) and Ukrainian (2.1%).

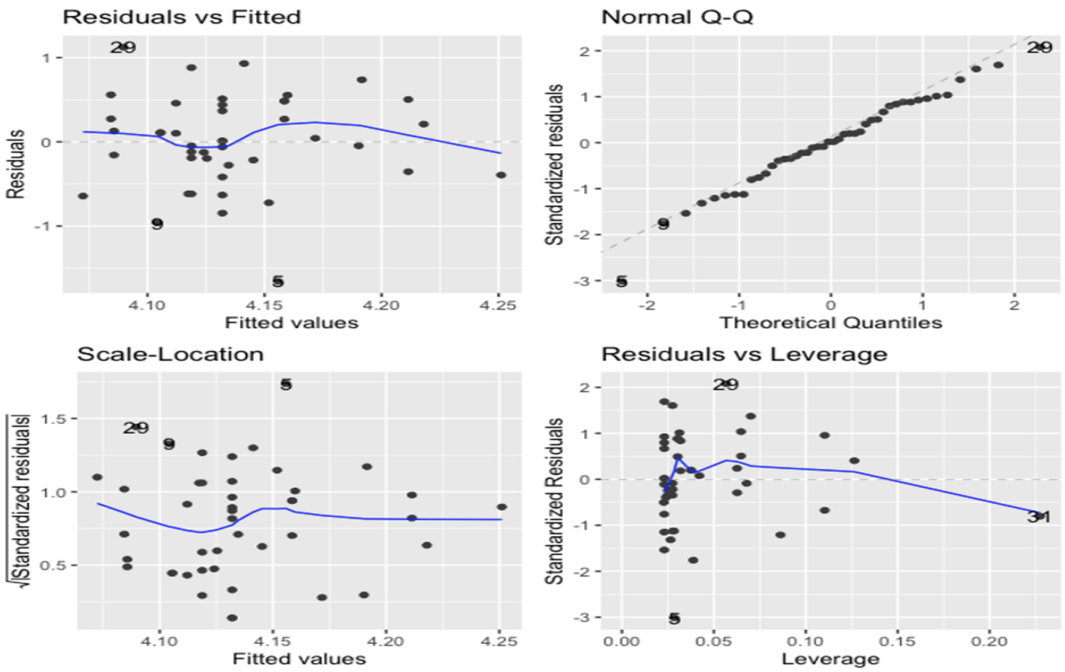
Parametric Assumptions

In order to test the four parametric assumptions, a visual representation of them were computed (Figure 2). Furthermore, follow-up analyses were conducted to test for normality, homoscedasticity, and multicollinearity. Finally, a Box-Cox transformation was applied to attempt to normalize the data distribution.

Figure 2

Visual Representation of the Four

Assumptions



A Shapiro-Wilk test was performed to account for the normality of the data, which returned significant, indicating a non-normally distributed range of data entries. Specifically, the hours of football played per week returned significant ($W = 0.93$, $p = 0.01$). After creating histograms and Q-Q plots, the suspicion of non-normality was confirmed, and a Box-Cox transformation was used to try to achieve normality, after which the Shapiro-Wilk test remained significant however ($W = 0.96$, $p = 0.002$), necessitating the use of non-parametric testing for future analyses. For the analysis of the residuals, plots of residuals versus fitted values were created, which indicated an even spread between the values, suggesting homoscedasticity of the data, and a Breusch-Pagan test was conducted, which confirmed the lack of heteroscedasticity ($BP = 2.99$, $df = 3$, $p = 0.39$). Finally, a Durbin-Watson test was performed to account for the absence of correlation in the residuals ($DW = 2.06$, $p = 0.64$). To account for multicollinearity, a VIF analysis was conducted, which initially returned values well above the threshold, after which the variables were centred. It returned indicating no

multicollinearity (Hours of Football per Week = 1.12, Justice = 1.00, Interaction effect = 1.12).

Descriptive Statistics

The score for mental well-being ranged from 30 to 73 with a relatively high median of 58 (*SD* = 8.77), indicating moderate variability with a negative skew (-0.82) and minimal kurtosis (0.7). Hours of football spanned from 1.50 to 15, with a median of six (*SD* = 2.77), a minimally right-skewed distribution (0.79) and minimal kurtosis (0.68). Justice scores spanned from 4.43 to 6.67 with a median of 5.33 (*SD* = 0.54), with next to no skew (-0.01), and low kurtosis (-0.8). Teamwork scores ranged from 3 to 7, with a high median of 6 (SD = 0.73), indicating low variability with a negative skew (-0.84) and high kurtosis (1.93). Fairness scores ranged from 3 to 7, with a relatively high median of 5 (SD = 1.06), indicating moderate variability with a slight negative skew (-0.19) and low kurtosis (-0.44). Leadership scores ranged from 2 to 7, with a relatively high median of 5 (SD = 1.18), indicating moderate variability with a negative skew (-0.66) and no kurtosis (0).

Testing hypotheses

Using spearman´s Rho, a correlation to check the significance of the correlation between hours of football and mental well-being was computed. There was a non-significant weak positive correlation between hours of football and mental well-being ($\rho = 0.23$, $p = 0.11$) .

To check whether Justice moderates this correlation, a Generalized Linear Model analysis was computed. After the variables were centred to lower the VIF score, it returned no significant moderating effect on the correlation between hours of football and mental well-being ($\beta = -0.01$, $p = 0.68$). The variance explained by the model, indicated by McFadden´s R^2, was quite minimal ($R^2 = 0.011$), suggesting a poor model fit and limited explanatory power.

To check whether any of the three individual strengths Teamwork, Fairness and Leadership moderate the correlation, a Bootstrap analysis was conducted. Bootstrap confidence intervals for moderation effects for fairness (95% *CI* [−8.21, 9.89]), teamwork (95% *CI* [−1.11, 0.98]), and leadership (95% *CI* [−1.46, 2.79]) were non-significant as they include zero, signifying no moderation by these individual strengths.

Discussion

The present study aimed to investigate the relationship between playing football and mental well-being and examined a possible moderation by the virtue of Justice and its three strengths. Contrary to expectations, the hypothesized effect of hours of football on mental well-being could not be validated by this study. The hypothesized positive correlation between playing football and improved mental well-being was found to be weak, and insignificant in this study. In addition to that, both hypotheses of possible moderating effects were rejected as well, neither the virtue of Justice itself, nor the three strengths contained in this virtue moderated the correlation to a satisfactory degree. These results imply that these character strengths do not significantly alter the correlation between football playing hours and mental well-being. This research arrives at the conclusion that the intensity of playing football does not influence students´ mental well-being, and that this correlation is not moderated by the virtue of Justice.

Scientific consensus

Significance of the relationship

The findings of this study are not in line with previous research, which has consistently yielded significant and positive relationships between intensity of physical activity and mental well-being (Fox, 1999). Numerous studies have documented this effect across cultures and across time (White et al., 2017). Additionally, studies examining the effect

of playing football specifically have reached different conclusions than this study (Darongkamas et al., 2011). Playing football, albeit in different settings, has contributed to mental well-being in a significant way in previous studies. In this current study, no significant relationship between the intensity of football and mental well-being could be established. A high variability of results signified that regardless of the intensity of football, the mental well-being of participants did not increase substantially. These contrasting results suggest that the relationship between physical activity and mental well-being may be more complex than previously thought.

One reason this research yielded different results may be that the setting in which the football is played was different. For instance, Darongkamas' study (2011) established teams specifically for individuals struggling with mental health issues, providing a supportive environment that might enhance the benefits of football participation. Previous research into this relatively niche area of physical activity also used a similar setting (McElroy et al., 2008). In contrast, this study did not control for the competitive level or the specific goals of the players, like the study of Darongkamas (2011), which founded a new team with the sole goal of improving mental health, suggesting a less competitive setting and clear goals, which can have an influence on mental well-being (Kuntz, 2023). Competitive athletes, especially in the adolescent or young adult years, disproportionally experience depression or suicidal ideation due to the stress of the competition and uncertainty. This was not controlled for, which could have altered the observed relationship of this study (Kuntz, 2023).

Additionally, previous research has established these football teams and leagues with the goal of improving mental health specifically, meaning that they used football as a way of improving the mental well-being of the players. This is not the case in this study, which focussed on whether the hours of football a person plays a week improves the mental well-being of the population itself, not just people already exhibiting mental health issues, which

may explain the difference in effect. In Darongkamas (2011) study, participants with poor levels of well-being were chosen and targeted specifically to increase their well-being through playing football. This study, however, had participants whose mental well-being was already quite high, to begin with. Lamers et al.´s (2010) study established a benchmark for the mental well-being of young adults using the Mental Health Continuum questionnaire. The mental well-being scores in this study exceeded this benchmark considerably, suggesting that participants may already have been experiencing high well-being levels, making it harder to detect any additional benefits from football participation. This begs the question if the effect of hours of football can even be established, given such a high mental well-being, or if the quantity of the football played does not play as big a role as playing it at all may have. In the second sense, this research with its cross-sectional design is unable to determine whether playing football for a specific amount of time causes a positive effect on mental well-being, it only provides the insight that playing longer does not yield greater increases in mental well-being.

The potential moderator virtue of Justice and strengths

In the case of the moderation hypothesis, the results did not yield significant results as well. Neither Justice as a virtue, nor the three strengths teamwork, leadership and fairness moderated the relationship between sports participation and mental well-being

A few possible reasons can be outlined for this. The study's non-significant findings regarding the moderating role of Justice and its strengths in the relationship between sports participation and mental well-being might be explained by the concepts of overuse and underuse of character strengths. According to Freidlin et al. (2017), both overuse and underuse of character strengths can lead to suboptimal outcomes. As in the case of this study, participants scored relatively high on the strength scales, possibly suggesting that the golden mean of optimal strength usage was exceeded in this sample. Peterson acknowledged that

over or under-usage of the strengths may lead to an inverse relationship with mental well-being (Peterson et al., 2006). According to Freidlin et al. (2017), excessive teamwork can lead to dependence, fairness to detachment, and leadership to despotism. These were found to negatively affect the well-being of participants in the study and thus, the participants in this study may have experienced a similar relationship between the character strengths and their mental well-being (Freidlin et al., 2017).

Another reason for the insignificant results might be that other studies that have found a significant effect of character strengths on the mental well-being of participants in the setting of playing football have actively fostered the development of these character strengths over time and assessed their participants in a pre-post design to see whether any significant differences can be detected. For example, the DÉPORVIDA intervention on Spanish football players found significant changes in well-being after creating an intervention to support the development of character strengths in the span of 8 weeks (Tomé-Lourido et al., 2021). A significant difference in well-being might only take effect when the character strength is actively fostered and present in the participants mind. It might be the case, that only when the player is aware of his strengths, for instance leadership, they are able to attain a sense of accomplishment and feel good about their strengths.

Lastly, there could a difference in conceptualization and operationalization of character strengths across studies. While Özcan and Ho focused on integrity, resilience, and sportsmanship, this study looked at Justice, teamwork, leadership, and fairness. Although these constructs are related, they are not identical, and the specific definitions used can influence the findings. Variations in how these strengths are understood could explain the discrepancies between the studies. Additionally, Özcan used a different measurement method for mental well-being in his study. There, the Warwick-Edinburg Mental Well-Being Scale (WEMWBS) was used to measure mental well-being. Both the WEMWBS and the Mental

Health Continuum measure mental well-being, and possess a moderate to strong correlation between results, still, this might explain the different results (Clarke et al., 2011). The WEMWBS was also adapted to the Turkish language. While the WEMWBS is validated across many cultures and languages, the Turkish translation has not yet been psychometrically assessed, potentially explaining this difference as well. With these considerations in mind, it is crucial to acknowledge that the way character strengths are defined and measured can significantly impact study outcomes.

Limitations

Other reasons why the results contrast concurrent research can be attributed to methodological reasons and the type of design of the study. The methodological shortcoming of this study is that it had to make use of nonparametric analyses because the data was not distributed normally. In the case of this study, the parametric assumptions were violated, and the data was not normally distributed, as indicated by the Shapiro-Wilks test. This occurrence could affect the sensitivity, potentially leading to non-significant findings even when there might be underlying relationships (Siebert & Siebert, 2018). In general, the use of Spearman's rho, a non-parametric measure of rank correlation, is appropriate for non-normal data, but it can sometimes lack the sensitivity to detect subtle relationships in small samples, which may have been the case here (Xu et al., 2013). Finally, Bootstrapping was used to estimate the potential moderating role of fairness, teamwork, and leadership. While it guards against not normally distributed data, bootstrapping falls short of an unrepresentative sample and very skewed data (Tibshirani & Efron, 1993). For these reasons, the power of the statistical analyses is impeded, and the results must be interpreted with caution.

Lastly, another potentially limiting factor could be the study's design. The cross-sectional nature of this research captures the participants' level of activity and mental well-being at one point in time, which is highly influenced by the current state of health or mood

(Kesmodel, 2018). Such biases can introduce measurement errors and reduce the validity of the findings (Rosenman et al., 2011). In the same vein, as there was no established control group of non-football players, no claims can be made regarding the overall mental well-being of football players in comparison to the average population. This study examined whether playing more football led to higher mental well-being but did not compare the observed mental well-being to a control group to establish whether playing football, regardless of intensity, leads to heightened mental well-being, which would provide valuable information as to whether football in itself does increase mental well-being, regardless of intensity or duration. These limitations highlight areas where this study´s validity may be hampered and emphasise caution when interpreting these results.

Strengths

On the other hand, this study also possesses several notable strengths that set it apart from other studies and solidify its main claims. First and foremost, the use of the VIA framework to explore potential moderators and their constituent strengths has not been done before and proves a unique and innovative approach towards receiving a more differentiated understanding of the relationship between intensity of physical activity and mental well-being. By utilizing the VIA framework, this study not only broadens the scope of character strengths research but also provides a nuanced understanding of the interplay between specific virtues and mental health. By examining the virtue of Justice, the groundwork has been laid for other studies to explore specific moderators in this relationship and gain more insight into what exactly causes this relationship to increase or decrease.

Another prominent strength of this research is that it focuses on an understudied population, at least in the confines of physical activity and well-being, namely students. This population specifically suffers worse levels of mental well-being than the average population, yet it has not been clearly established which primary prevention methods could influence the

mental well-being of students sufficiently enough to restore their mental well-being levels to a satisfactory level (Abrams, 2022). With the recent paradigm shift from the disease model to primary prevention, this population has not yet received sufficient attention in research to properly support the change in handling poor levels of mental well-being.

Lastly, the suitability of the experimental paradigm is also a strength in this study. The way this study was designed was to address significant research gaps, which offer new insight into unexplored territory. This research contributes to reaching a scientific consensus on which perspective is correct, the biological, psychological or the social perspective, regarding the way through which physical activity increases mental well-being. If this research had found significant results, it could have had a substantial impact on how the poor levels of mental well-being among students are treated and could have potentially led to huge scale interventions to motivate students to participate in sports more.

With this in mind, although the data was not supportive of the hypotheses, this study nonetheless offers a lot of insight into the relationship between the hours of playing football and mental well-being. The nonsignificant results nonetheless challenge the scientific consensus and give way to new explanations which explain what form this relationship may take and what it´s moderators are.

Theoretical Implications

These considerations give way to re-interpret the three perspectives of how the hours of playing football increase mental well-being. From the biological perspective, the weak correlation observed in this study suggests that biological factors alone may not fully explain the relationship between physical activity and mental well-being, as more hours of football do not lead to a continual increase in mental well-being. From a psychological perspective, it indicates that the psychological benefits might not be as impactful in the context of football or

that other psychological factors may counteract these benefits. The social perspective emphasizes that the social benefits of participating in sports might be context-dependent. Factors, such as the type of sport, team dynamics, and individual differences in social connectedness could influence the extent to which social interactions contribute to mental well-being.

The study's findings also have implications for the Values in Action (VIA) framework. The non-significant moderating effects observed in this study suggest that the application of the VIA framework may need to be more context specific. The effectiveness of virtues like Justice in moderating the relationship between physical activity and mental well-being might vary based on individual differences and specific settings. It is not clear from the research done so far between character strengths and sports participation in what way Justice presents itself and which factors foster the development and effect of Justice on mental well-being. A highly competitive setting where every nuance matters to remain on the field could impede the significance of teamwork and fairness for example, as the more competitive a game is, the more incentivised a person is to use all kinds of tricks to get ahead. On the other hand, it is not clear whether individual differences such as age or gender play a role in how Justice is expressed and considered by the people playing. In adolescents or young adults, for example, the concept of fairness might not be as sophisticated as for adults, as moral development according to Kohlberg is often only accomplished by late adulthood if at all (Kohlberg, 1971). These aspects need to be accounted for to truly get an insight into how character strengths influence the relationship between hours of football and mental well-being.

Future Research

To build upon the findings of this study, future research should employ several key aspects to expand on this topic. First, address the methodological limitations of this study,

such as the type of study. Using a different study design such as a longitudinal design would make it possible to make inferences about causality and directionality of the relationship. Longitudinal studies track changes over time, providing insights into how sustained football participation might influence mental well-being. This would make it possible to infer whether playing football poses a significant influence on mental well-being. This could further be inferred through establishing a control group to measure whether there is a significant deviation of the mean mental well-being of the population compared to football players.

In addition to that, future research should also explore other moderators. As the moderator of Justice is insignificant in our case, future studies should investigate what difference in concept causes Justice not to be significant, but integrity and sportsmanship to be significant. This may provide valuable insights into what facet of these concepts influences the relationship. The VIA framework is context specific and therefore research should be done in a more controlled environment to isolate the effect and eliminate confounding factors. In general, other moderators must be sought out to better explain the relationship and establish whether the social and psychological perspectives of sports participation possess any merit. For instance, other studies should seek out moderators that impact social interactions, such as self-esteem or confidence, to examine in what way if at all, the difference in mental well-being can be explained by the social perspective of sports participation. For the psychological domain, research needs to incorporate moderators like self-efficacy in a longitudinal design to explore whether this does increase with more sports participation, and in turn takes an effect on how much the intensity of playing football increases mental well-being. If these considerations are fulfilled in future research, a solid base level of understanding the nature of this relationship could be achieved.

Conclusion

This study aimed to quantify the relationship between the hours of playing football and mental well-being and establish a moderator in this relationship in the form of the virtue of Justice. As the relationship in itself is insignificant, this study warrants further research into how exactly football influences mental well-being. None of the three theories regarding the dynamic of the relationship could be confirmed in this study, calling for replication studies to validate this phenomenon, as well as more nuanced theories explaining this dynamic. Furthermore, methodological constraints limit the power of the concurrent study´s validity, demanding for more extensive research designs and methodologies. Future research should address the limitations identified in this study by employing longitudinal designs, objective measures, and control groups. Additionally, controlling for level and competitiveness of play could improve validity of the results. By addressing these issues, future research can provide a more nuanced understanding of this phenomenon.

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Appendix

Appendix A

AI-statement

During the preparation of this work the author used ChatGPT in order to attain a structured way to propose the arguments and sort the sections logically. Grammarly was used to check for spelling mistakes. After using these tools, the author reviewed and edited the content as needed and takes full responsibility for the content of the work.