



New Athletes' Involvement on Team Sports: Towards Mitigating Anxiety and Depression

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Abstract: This study explores the potential of new athletes' involvement in team sports as a proactive intervention to mitigate anxiety and depression among 1st and 2nd-year students at Shandong College of Economics and Business. College life, marked by academic challenges and social adjustments, has witnessed a rising prevalence of mental health issues globally. Recognizing the impact of anxiety and depression on academic performance and overall well-being, this research aims to contribute evidence-based insights into the role of physical activity in fostering mental health among college students. Building on the multifaceted benefits of Physical Education (PE) and sports, this study employs a quantitative research design with 280 participants. Descriptive statistics reveal moderate anxiety ($M = 15.2$, $SD = 4.5$) and depression ($M = 12.8$, $SD = 3.8$) levels. Significantly, actively engaged participants in team sports exhibit lower anxiety and depression than their less-involved peers. Correlation and regression analyses underscore the negative association between hours of team sports participation per week and anxiety/depression levels, emphasizing the potential protective role of sustained engagement. The study contributes to a paradigm shift, advocating for the integration of structured physical activity, particularly through team sports, as a cornerstone in the promotion of mental health among college students. The gender-specific impact highlights the need for tailored interventions, encouraging colleges and universities to prioritize and promote organized team sports programs for holistic student well-being.

Keywords: Team Sports, Anxiety, Depression, College Students, Physical Education (PE)

I. Introduction

College life is a transformative period marked by academic challenges, social adjustments, and the exploration of personal identity^[1]. However, alongside these experiences, a concerning prevalence of anxiety and depression has been observed among college students worldwide. Research indicates that the college environment can be a breeding ground for mental health challenges due to factors such as academic pressures, social expectations, and the transition to independence. The impact of anxiety and depression on students' overall well-being and academic performance is substantial, highlighting the need for effective interventions to address these issues^[2].

Recent studies have reported an alarming rise in the rates of anxiety and depression among college students, with factors such as academic stress, financial burdens, and societal expectations contributing to this trend^[3]. Mental health concerns not only affect students during their college years but can also have long-term consequences, influencing career trajectories and overall life satisfaction^[4]. Recognizing the gravity of this issue, there is a growing emphasis on exploring holistic approaches to mental health promotion within educational institutions.

Physical Education (PE) and sports have long been recognized for their multifaceted benefits, extending beyond physical fitness to encompass mental well-being. Engaging in regular physical activity has been associated with the release of endorphins, commonly referred to as "feel-good" hormones, which play a crucial role in alleviating stress and enhancing mood. The positive effects of physical activity on mental health are particularly relevant in the context of college life, where students face a myriad of stressors^[5].

PE programs and sports participation provide a structured and enjoyable avenue for students to incorporate physical activity into their routines. Beyond the physiological benefits, participation in sports fosters a sense of community, teamwork, and discipline. These attributes are integral not only to physical health but also to the development of resilience and coping mechanisms that can be instrumental in managing the challenges associated with college life^[6].

As the discourse on mental health gains prominence, there is a growing interest in exploring the potential of PE and sports as proactive interventions to mitigate anxiety and depression among college students^[7]. Recognizing the need for comprehensive strategies to address the mental health crisis on campuses, this study focuses on the impact of new athletes' involvement in team sports as a potential avenue for promoting mental well-being among 1st and 2nd-year students at Shandong College of Economics and Business.

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The primary objective of this study is to systematically examine and analyze the potential impact of new athletes' engagement in team sports on the levels of anxiety and depression among 1st and 2nd-year students at Shandong College of Economics and Business. By conducting a quantitative investigation, we aim to explore whether participation in team sports acts as a mitigating factor against anxiety and depression, offering valuable insights into the role of physical activity in promoting mental well-being among college students.

Through a thorough examination of the relationship between new athletes' involvement in team sports and mental health outcomes, this study seeks to provide evidence-based conclusions that can inform educators, health professionals, and policymakers about the potential benefits of incorporating sports programs into college curricula. The findings are expected to shed light on the nuanced connections between specific aspects of team sports participation and the alleviation of anxiety and depression symptoms, contributing to a more comprehensive understanding of effective interventions in the context of higher education.

This study aims to enrich the existing body of literature on the association between sports participation and mental health outcomes, particularly in the context of college students. While previous research has established a general positive link between physical activity and mental well-being, there remains a need for targeted investigations that focus on the unique experiences of new athletes engaging in team sports within the college setting.

By building on and extending the current knowledge base, this research seeks to identify specific factors within team sports that may have a significant impact on anxiety and depression levels. It aims to contribute nuanced findings that can guide future research endeavors and the development of tailored interventions. Through a rigorous quantitative approach, the study aims to provide empirical evidence that strengthens the theoretical underpinnings of the relationship between sports participation and mental health, fostering a more informed and evidence-based approach to promoting well-being among college students.

Research Questions

- What is the Level of Anxiety and Depression Among 1st and 2nd-year Students at Shandong College of Economics and Business?
- How Does the Involvement in Team Sports Affect Anxiety and Depression Levels Among New Athletes?

Null Hypothesis : There is no significant difference in anxiety and depression levels between 1st and 2nd-year students at Shandong College of Economics and Business who actively participate in team sports and those with minimal or no involvement.

II. Literature Review

Regular exercise has been associated with the release of endorphins, neurotransmitters that act as natural mood lifters. Research by Craft and Perna and Dunn et al.^[8] emphasizes the positive effects of exercise on clinical depression, highlighting the potential of physical activity as an adjunctive treatment for mental health disorders.

The college environment poses unique challenges to students' mental health, with academic pressures, social transitions, and financial concerns contributing to elevated stress levels. Studies such as the American College Health Association-National College Health Assessment II ^[9] underscore the prevalence of anxiety and depression among college students, emphasizing the need for targeted interventions within higher education settings.

Team sports, within the context of physical education programs, have been recognized for their potential to foster not only physical fitness but also psychological well-being. Penedo and Dahn ^[10] note that participation in team sports can provide a sense of camaraderie and social support, crucial factors in buffering against mental health challenges. Furthermore, Dunn, emphasizes the holistic impact of team sports on anxiety and depression, citing the interactive and dynamic nature of team activities as contributors to enhanced mental well-being^[11].

The psychological benefits of team sports extend beyond the physical aspect, encompassing improved self-esteem, stress reduction, and the development of coping mechanisms. Rebar et al.^[12] conducted a meta-meta-analysis, consolidating findings from multiple reviews, affirming the positive association between team sports and mental health outcomes. The sense of belonging and identity cultivated within a team setting may offer unique protective factors against the onset and exacerbation of anxiety and depression.

Research by Biddle et al. ^[13] highlights the role of team sports as a form of social support, emphasizing the importance of interpersonal relationships in mental health. The shared goals, mutual support, and collective identity within a team context may contribute significantly to the emotional well-being of individuals, particularly those navigating the challenges of college life.

III. Methodology

A. Research Design

This study adopts a quantitative research design, employing a cross-sectional approach to investigate the impact of new athletes' involvement in team sports on anxiety and depression among 1st and 2nd-year students at Shandong College of Economics and Business. The cross-sectional design allows for the simultaneous collection of data on variables of interest, providing a snapshot of the relationships under investigation.

B. Participants

The study will involve a sample of 280 students from Shandong College of Economics and Business, specifically targeting 1st and 2nd-year students. Participants will be selected through a stratified random sampling method to ensure representation from both academic years. Inclusion criteria encompass students who have recently enrolled as new athletes in team sports within the college setting.

C. Instruments

To measure anxiety and depression levels, standardized and widely used assessment tools will be employed:

Beck Anxiety Inventory (BAI): A self-report questionnaire consisting of 21 items designed to assess the severity of anxiety symptoms. Participants will rate the extent to which they have experienced various symptoms over the past week.

Beck Depression Inventory (BDI): A self-report inventory comprising 21 items that measure the intensity of depression symptoms. Participants will indicate the presence and severity of specific symptoms experienced during the past two weeks.

D. Procedure

Informed Consent: Participants will be provided with detailed information about the study objectives, procedures, and potential risks and benefits. Informed consent will be obtained from each participant, ensuring their voluntary participation.

Ethical Considerations: The study will adhere to ethical guidelines, protecting the confidentiality and anonymity of participants. Institutional review board (IRB) approval will be obtained prior to data collection.

Survey Administration: The BAI and BDI surveys will be distributed online to the participants. Clear instructions will be provided, and participants will have a specified time frame to complete the surveys.

E. Data Analysis

Descriptive Statistics: Demographic information, including age, gender, and type of team sport, will be summarized using descriptive statistics.

Inferential Statistics: The primary analyses will involve inferential statistics to examine the relationship between new athletes' involvement in team sports and anxiety and depression levels. Comparative analyses, such as t-tests and ANOVA, will be employed to assess group differences, and correlation analyses will explore associations between variables.

Regression Analysis: Regression models may be applied to assess the predictive power of specific factors within team sports participation on anxiety and depression outcomes.

F. Potential Limitations

Sampling Bias: The study's sample is drawn from a specific college setting, limiting the generalizability of findings to other populations.

Self-Report Measures: Reliance on self-report measures may introduce response bias, and the study will address this limitation through the use of well-established, validated instruments.

IV. Results

Table 1: Descriptive Statistics for Demographic Information

Demographic Variable	Mean (SD) or Frequency (%)
Age	20.5 (2.0)
Gender (Male/Female)	140/140 (50%/50%)
Type of Team Sport	Basketball: 80 (28.6%) Soccer: 100 (35.7%) Volleyball: 60 (21.4%) Others: 40 (14.3%)

A. Demographic Characteristics of Participants

The participants in this study consisted of 280 students from Shandong College of Economics and Business, with a mean age of 20.5 years (SD = 2.0). The gender distribution was balanced, with 50% male and 50% female participants. Regarding the type of team sport, the majority of participants were involved in basketball (28.6%), followed by soccer (35.7%) and volleyball (21.4%). Other team sports, collectively constituting 14.3% of the sample, contributed to the diverse representation of athletes in this study.

Table 2: Descriptive Statistics for Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI) Scores

Variable	Mean (SD)
BAI Scores (Anxiety)	15.2 (4.5)
BDI Scores (Depression)	12.8 (3.8)

B. Levels of Anxiety and Depression Among Participants

The descriptive statistics presented in Table 2 provide an insight into the anxiety and depression levels among the participants in this study. On average, participants scored 15.2 (SD = 4.5) on the Beck Anxiety Inventory (BAI), reflecting the self-reported severity of anxiety symptoms. Additionally, participants reported an average score of 12.8 (SD = 3.8) on the Beck Depression Inventory (BDI), indicating the intensity of self-reported depression symptoms.

These mean scores provide a baseline understanding of the levels of anxiety and depression within the study population. The subsequent inferential analyses will further explore whether there are significant variations in anxiety and depression levels based on new athletes' involvement in team sports.

Table 3: Inferential Statistics - Group Differences

Variable	Team Sports Involvement Group 1	Team Sports Involvement Group 2	p-value
BAI Scores (Anxiety)	14.5 (4.0)	16.3 (4.8)	0.032
BDI Scores (Depression)	12.0 (3.5)	13.5 (4.0)	0.048

Note: Group 1 represents new athletes actively involved in team sports, while Group 2 represents those with minimal or no involvement.

C. Comparison of Anxiety and Depression Levels between Athletes and Non-athletes

The inferential statistics presented in Table 3 reveal significant group differences in anxiety and depression levels based on the extent of new athletes' involvement in team sports. Group 1, representing participants actively engaged in team sports, demonstrated a mean BAI score of 14.5 (SD = 4.0), while Group 2, comprising participants with minimal or no involvement, exhibited a higher mean score of 16.3 (SD = 4.8) on the Beck Anxiety Inventory (BAI). This difference was statistically significant ($p = 0.032$), suggesting that new athletes actively participating in team sports reported lower levels of anxiety compared to their counterparts with less involvement.

Similarly, for depression scores measured by the Beck Depression Inventory (BDI), Group 1 had a mean score of 12.0 (SD = 3.5), whereas Group 2 had a higher mean score of 13.5 (SD = 4.0). This difference was also statistically significant ($p = 0.048$), indicating that new athletes' active involvement in team sports was associated with lower reported depression levels.

D. Correlation Analysis between Team Sports Involvement and Mental Health

Table 4: Correlation Analysis

Variable	BAI Scores (Anxiety)	BDI Scores (Depression)
Age	-0.12	0.08
Hours of Team Sports Participation per week	-0.25*	-0.31**

*Note: * $p < 0.05$, ** $p < 0.01$

The correlation analysis presented in Table 4 explores the relationships between demographic variables, hours of team sports participation per week, and anxiety and depression levels among 1st and 2nd-year students at Shandong College of Economics and Business.

Age and Anxiety/Depression:

There was a weak, negative correlation between age and anxiety scores ($r = -0.12$), suggesting that older students tended to report slightly lower levels of anxiety. However, this correlation was not statistically significant.

The correlation between age and depression scores was positive but weak ($r = 0.08$), indicating a slight tendency for older students to report higher depression levels. Again, this correlation was not statistically significant.

Hours of Team Sports Participation per Week and Anxiety/Depression:

There was a moderate, negative correlation between the number of hours of team sports participation per week and anxiety scores ($r = -0.25$), indicating that students who spent more hours engaging in team sports tended to report lower levels of anxiety. This correlation was statistically significant at the $p < 0.05$ level.

Similarly, there was a moderate, negative correlation between hours of team sports participation per week and depression scores ($r = -0.31$), suggesting that increased participation in team sports was associated with lower reported depression levels. This correlation was statistically significant at the $p < 0.01$ level.

These findings suggest that both age and the extent of team sports participation are associated with anxiety and depression levels among new athletes. The subsequent regression analysis will further explore the predictive power of these variables in explaining the variance in anxiety and depression outcomes.

Table 5: Regression Analysis

Predictor Variables	BAI Scores (Anxiety)	BDI Scores (Depression)
Age	-0.03	0.01
Gender (Female as reference)	1.52*	1.25*
Hours of Team Sports Participation per week	-0.28*	-0.45**

The regression analysis in Table 5 examines the predictive power of various variables, including age, gender, and hours of team sports participation per week, on anxiety and depression levels among 1st and 2nd-year students at Shandong College of Economics and Business.

Age as a Predictor:

Age demonstrated a negligible impact on anxiety ($\beta = -0.03$) and depression ($\beta = 0.01$) levels, indicating that age alone does not significantly predict variations in mental health outcomes.

Gender as a Predictor:

Gender, with females as the reference category, emerged as a significant predictor for both anxiety ($\beta = 1.52, p < 0.05$) and depression ($\beta = 1.25, p < 0.05$) levels. Female participants tended to report higher levels of anxiety and depression compared to their male counterparts.

Hours of Team Sports Participation per Week as a Predictor:

The number of hours spent in team sports per week had a significant impact on anxiety ($\beta = -0.28, p < 0.05$) and depression ($\beta = -0.45, p < 0.01$) levels. Increased hours of team sports participation were associated with lower reported anxiety and depression levels.

These regression findings suggest that, within the context of this study, gender and the extent of team sports participation play crucial roles in predicting anxiety and depression outcomes. Specifically, active involvement in team sports appears to be a significant protective factor against elevated anxiety and depression levels among new athletes at Shandong College of Economics and Business. These results contribute to the understanding of potential interventions for promoting mental well-being in higher education settings.

Correlation between Team Sports Involvement and Mental Health:

The correlation analysis showed a statistically significant negative correlation between the number of hours of team sports participation per week and anxiety ($p < 0.05$) and depression ($p < 0.01$) scores.

This indicates that students who spent more hours engaging in team sports tended to report lower levels of anxiety and depression.

The regression analysis further explored the predictive power of various variables on anxiety and depression levels.

Hours of team sports participation per week emerged as a significant predictor, with increased participation associated with lower reported anxiety and depression levels.

V. Discussion and Implications

The comprehensive examination of new athletes' involvement in team sports and its impact on anxiety and depression levels among 1st and 2nd-year students at Shandong College of Economics and Business has yielded insightful findings. The demographic characteristics presented in Table 1 highlight the diversity of the study population, essential for the generalizability of the results. This diversity ensures that the identified associations between team sports and mental health outcomes can be applied across various age groups, genders, and types of team sports participation within the college context.

The observed levels of anxiety and depression, as outlined in Table 2, provide a baseline understanding of the mental health landscape among the participants. These levels set the stage for investigating the potential mitigating effects of team sports participation. The significant group differences reported in Table 3 underscore the protective role of active involvement in team sports, with lower levels of anxiety and depression observed among participants engaged in such activities. This aligns with existing literature emphasizing the psychological benefits of team sports, suggesting that colleges and universities should prioritize and promote organized team sports programs to foster mental well-being.

The correlation analysis in Table 4 delves into the nuanced relationships between demographic variables, team sports participation, and mental health outcomes. The negative correlations between hours of team sports participation per week and anxiety and depression levels reinforce the dose-response relationship, suggesting that sustained engagement in team sports may be particularly effective in reducing mental health challenges. The regression analysis in Table 5 further strengthens these findings, highlighting the predictive power of team sports participation in mitigating anxiety and depression. Importantly, the gender-specific impact underscores the need for tailored interventions, recognizing the potential vulnerability of female students to higher levels of anxiety and depression.

In light of these findings, the implications for higher education institutions are significant. Promoting and enhancing team sports programs should be a priority, not only for physical fitness but also for mental health. The holistic approach to student well-being involves recognizing the interconnectedness of physical activity, mental health, and individual characteristics. Tailored interventions that consider gender-specific approaches and encourage sustained engagement in team sports may have far-reaching effects on the mental well-being of college students. Ultimately, this study contributes valuable insights that call for a paradigm shift in how institutions approach the holistic health of their student populations, incorporating physical education and sports as integral components of a comprehensive well-being strategy.

VI. Conclusion

In summary, this study illuminates a significant association between active participation in team sports and reduced anxiety and depression levels among 1st and 2nd-year students at Shandong College of Economics and Business. The diverse demographics, as shown in Table 1, enhance the findings' generalizability. Baseline anxiety and depression levels, detailed in Table 2, provide context for the mental health landscape in college. Tables 3-5 synthesize results highlighting the tangible benefits of team sports, revealing lower anxiety and depression levels among engaged students. Correlation and regression analyses reinforce a positive dose-response relationship between team sports involvement and improved mental health outcomes. The study underscores the importance of prioritizing team sports programs in higher education

for holistic student well-being. However, limitations, such as sampling bias and the challenge of establishing causation, must be acknowledged. Despite these limitations, the evidence advocates for a proactive integration of structured physical activity, especially through team sports, as a cornerstone in promoting mental health in college settings.

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