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The Role of Team Sports, Coping, and Friendship in Reducing Depressive Symptoms in Youth

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**The Role of Team Sports, Coping, and Friendships in
Reducing Depressive Symptoms in Youth**

A Thesis

Presented in

Partial Fulfillment of the

Requirements for the

Degree of Master of Arts

By

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May 23, 2024

Department of Psychology

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Biography

The author was born in Massachusetts on July 8, 1990. She trained from an early age as a ballet dancer and danced professionally for 11 years in Europe. She received her Bachelor of Arts in psychology and a minor in creative writing from DePaul University in 2022. She is currently pursuing her MA/PhD in Clinical-Child Psychology at DePaul University.

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Abstract

The prevalence of depression in adolescents has increased in the last decade. Minority and low-income youth face additional barriers to accessing mental health services leading to a significant proportion of adolescents going undiagnosed and untreated. Participation in multiple team sports may offer an additive protective effect for youth mental health, yet how and for whom this relation occurs is unclear. The current study aimed to examine how coping strategies and friendships interact with team sports participation to reduce depressive symptoms in youth. Self-report data was collected from 196 urban youth across two time points. Moderated moderation analyses were conducted to assess the interactive effects of friendships and coping strategies on the relation between team sports participation and depressive symptoms. The results showed that at low levels of friendship, those who play multiple sports and endorse high levels of secondary ($b = -2.90, p = .02$) or disengagement coping ($b = -3.00, p = .019$), experience fewer depressive symptoms at Time 2. The findings further showed that at high levels of friendships, those who play multiple team sports and endorse high levels of secondary coping, experience more depressive symptoms at Time 2 ($b = 5.03, p < .001$). The results suggest friendships influence the functionality of coping strategies in reducing depressive symptoms in youth team sports players. The results further suggest that secondary and disengagement coping strategies function similarly in the presence of low levels of friendships to reduce depressive symptoms. The current study may inform future screening for depressive symptoms in young team sports players and support for team sports in urban areas.

Keywords: team sports, depression, coping, friendship, adolescence

Introduction

Over the past decade, depression rates have doubled in adolescents, resulting in significant gender disparities in prevalence rates, as well as racial and socioeconomic disparities in accessing mental health services (Daly, 2022; Lu, 2017; National Institute of Health (NIH), 2022). Despite increasing rates of depression, accessing mental health services has not significantly increased in youth, resulting in an increasing number of adolescents with potentially untreated symptoms (Lu, 2019, NIH, 2022). Moreover, racially minoritized adolescents are significantly less likely than their White counterparts to receive mental health services (Lu, 2019). Given that psychological disorders are the leading cause of disability in adolescents (NIH, 2022), it is important to consider ways to support adolescent mental health in broader non-clinical settings such as through participation in sports. The Health Through Sport model (Eime et al., 2013) provides a theoretical framework for how sports can reduce depressive symptoms through physical, psychological, and social factors. Furthermore, considering positive youth development theory (PYD; Petitpas et al., 2005) participation in multiple sports may have an additive effect in benefiting development. Team sports provide opportunities that enable youth to better cope with stressors (Super et al., 2021), however coping is further influenced by the social context of team sports (Kerdijk et al., 2016). This study aims to further the understanding of how coping strategies and friendships interact to influence the effect of multi-team sports participation on reducing depressive symptoms in a sample of diverse urban youth. By analyzing how coping strategies and friendships interact, we aim to further the understanding of how multi-team sports participation may reduce depressive symptoms to promote accessible ways of supporting youth mental health.

Sports and Depression

The potential for sports to reduce symptoms of depression offers an opportunity to support youth mental health outside a clinical context. However, the literature remains limited to majority White participants and shows variable effect sizes. An umbrella review conducted by Boelens et al. (2022) found a negative relation between sports and depression symptoms. The review found the frequency, duration, and intensity of participation have a small association with better psychological outcomes. However, moderate to high rates of heterogeneity across studies were found with some studies reporting no effect, indicating other factors may influence the relation. Additionally, in a meta-analysis including individual and team sports, Panza et al. (2020) found different effects depending on how sports participation was operationalized. Panza et al. (2020) found the most common operationalization of participation is a dichotomous measure, which showed a small negative correlation with depression. The volume of participation is most often operationalized as the time spent playing a sport, but can also be measured by the number of sports teams (Panza et al. 2020). While the volume of sports participation points to a negative effect on symptoms, there were too few studies included in the meta-analysis to calculate an effect size. Compared to time spent, measuring the number of sports played is more likely to capture the beneficial effects of sports participation as it includes a range of experiences, social relationships, and skills that may benefit development. Measuring the time spent may lead to mixed results as excessive time spent in a single sport can have negative effects. Narrative reviews show specializing in a single sport at an early age is linked to social isolation, poor sleep, and increased rates of anxiety, stress, burnout, and injury (Brenner et al., 2019; Jayanthi et al., 2019). Notably, only two U.S. studies in the Panza et al. (2020) meta-analysis analyzed the number of team sports played; both studies were cross-sectional and only included female participants (Dishman et al., 2006; Duncan et al., 2015). The other non-U.S.-

based studies included in the meta-analysis found an inverse relationship between the number of team sports played and depressive symptoms in both cross-sectional and longitudinal designs in Australian and Canadian youth, such that the more team sports participants played, the fewer depressive symptoms they endorsed (Brunet et al., 2013; Kremer et al., 2014). Panza et al. (2020) further found stronger effect sizes in studies that included older adolescents and majority male participants. Additionally, there was significant heterogeneity in effect sizes across studies. The varying effect sizes in these reviews reflect the operationalization of participation and individual factors that may enhance the sports-symptom relation. The current study aims to address these gaps in the literature by assessing the number of team sports played on depressive symptoms in a sample of diverse American youth.

Cross-sectional studies show an inverse relationship between team sports participation and depression, but there are some gaps in the literature including varying effect sizes, a lack of research on the effect of playing multiple team sports, and whether this relation is present in diverse American youth. A study of Canadian youth found youth who played team sports had lower depressive symptoms compared to those who played individual sports or participated in unorganized physical activity (Doré et al., 2016). However, when controlling for moderate to vigorous physical activity, team sports players showed improved mental health including levels of happiness, social connection, autonomy, and interest in life, but did not show reduced depressive symptoms (Dore et al., 2016). In a sample of Irish youth, team sports were associated with lower rates of depression in boys and girls, with those who played more team sports endorsing fewer symptoms compared to those who played a single sport (Murphy et al., 2020). Similarly, in a sample of Australian youth, Kremer et al. (2014) found that increased participation in team sports, measured by the number of teams, was associated with lower

depressive symptoms. Studies of majority White American youth further found time spent playing sports is associated with lower levels of depressive symptoms (Sanders et al., 2000). In a nationally representative sample of American adolescents, the frequency of sports participation in the past week was associated with a 25% decrease in depression (Babiss & Gangwisch, 2009). The two U.S.-based studies included in the Panza et al. (2020) meta-analysis (Dishman et al., 2006; Duncan et al., 2015), which cross-sectionally analyzed the number of team sports played, found that sports participation was associated with fewer depressive symptoms. Dishman et al. (2006) found that self-concept and self-esteem mediated the relation between sports participation and depressive symptoms in adolescent girls. This study however did not assess whether the effect varied by the number of sports played (Dishman et al., 2006). Duncan et al. (2015) found that increased sports participation was associated with reduced depressive symptoms. However, this effect was observed only among White and Latina girls, not Black girls (Duncan et al. 2015). Notably, this study employed a latent variable approach, incorporating the number of team sports played with both adolescent and parental reports of participation frequency. Previous cross-sectional research is promising, yet is limited by design, providing only a partial understanding of the impact of team sports on depressive symptoms.

Longitudinal evidence is needed to determine the unique role team sports participation plays in reducing symptoms. Longitudinal designs provide the opportunity to identify the role of team sports independently from confounding variables that may impact symptoms. However, current gaps in the literature include mixed findings in longitudinal studies and different effects based on participant demographics. Measured longitudinally from fifth to seventh grade, participation in organized and team sports alongside other non-sport activities promoted positive youth development and was associated with lower depressive symptoms in youth (Zarrett et al.,

2009). In a sample of Canadian youth, Brunet et al. (2013) found the number of team sports played prospectively predicted lower rates of depression in young adulthood, but this effect was not present when age, sex, and parental education were controlled for. In White adolescents, team sports negatively prospectively predicted depression, but when controlling for other protective factors, the effect was only significant for girls (Gore et al., 2001). Agans & Geldhof (2012) also found girls benefited more in positive youth development and had a later effect on reduced depression symptoms compared to boys. In a majority Black sample, Fredricks and Eccles (2008) found the sports-depression effect was present only in youth from higher SES, possibly reflecting opportunities for more participation. Racial differences have also been found, with an effect of team sports on depression present for White and Latina girls but not for Black girls (Duncan et al., 2015). Higher rates of symptoms based on demographic differences may explain the presence of an effect. For example, girls experience higher rates of symptoms (Daly, 2022; Lu, 2019), and rely more on close peer connections (Buhrmester & Furman, 1987), thus the social nature of sports may be particularly beneficial for girls' mental health, leading to more of an effect compared to boys. White and Latina adolescent girls may also be more motivated to participate in sports for social connections compared to Black girls (Grieser et al., 2006). Potential demographic differences in the team sports-depression relation highlight the importance of including a diverse sample to further understand how sports impact minority youth.

Team Sports Participation and Depression

The social context of team sports is theorized to provide greater benefits to youth compared to individual sports. In a systematic review and meta-analysis, Zuckerman et al. (2021) found youth who participated in team sports had lower rates of depression compared to those

who played individual sports and those who did not participate in any sports. In a systematic review, Eime et al. (2013) found team sports participation was associated with fewer depressive symptoms, while individual sports participation was not. The authors concluded the social context of team sports promotes positive social development through experiences such as teamwork and cooperation, while individual sports prioritize physical achievements. A positive team sports environment fosters social support and belonging for young athletes, which is associated with fewer depressive symptoms (Boone & Leadbeater, 2006). Furthermore, in contrast to individual sports where the performance pressure lies solely on the individual athlete, team sports offer a buffer through communal coping, as responsibility and experiences of wins and losses are shared among teammates (Leprince et al., 2019). This literature emphasizes the unique social context of team sports, highlighting the important role that the social experiences of team sports play in reducing depressive symptoms.

Youth are more likely to participate in team sports compared to individual sports, yet participation rates vary by income and race (Aspen Institute, 2022). The most popular team sports include basketball, baseball, soccer, and tackle football (Aspen Institute, 2022). The COVID-19 pandemic caused a substantial decline in adolescent (aged 13-17) team sports participation, which has since returned to pre-pandemic levels; however, income disparities in participation persist and have been increasing since 2019, with adolescents from socially vulnerable neighborhoods being less likely to participate in sports (Aspen Institute, 2022; Center for Disease Control and Prevention (CDC), 2023). School sports offer the best opportunity for sports participation, but schools in urban and low-SES communities have less funding for sports and often have fees that make participation inaccessible (Sabo, 2009; Zarrett et al., 2020). Moreover, recent interest in early sport specialization and “pay to play sports” has led to a

decrease in participation rates and resources from school and community programs, further widening the disparities in participation (Aspen Institute, 2022; Zarrett et al., 2020).

Furthermore, White adolescents are significantly more likely to participate in sports than minoritized youth, who face additional barriers such as safety risks and prohibitive expenses (CDC, 2023; Zarrett et al., 2020). Urban girls of color from low SES in particular are the least likely population to participate in any sport and are the most likely to drop out of sports (Sabo, 2009; Zarrett et al., 2020). This has been referred to as a “triple jeopardy” of limited access to sports participation based on race, gender, and class that contributes to a lower likelihood of participation and a narrower window of opportunity to participate in sports (Mann & Hacker, 2022).

Gender Differences

Despite the barriers girls face in sports participation, some research has found girls benefit more from team sports compared to boys. Girls report better quality friendships in sports compared to boys (Bedard et al., 2020; Ullrich-French & Smith, 2009). Evidence may also support a stronger longitudinal effect of playing sports on reducing depression in girls (Agans & Geldhof, 2012). Studies with European samples further found girls may benefit more from team sports compared to boys (Baldursdottir et al., 2017; McMahon et al., 2017). Girls’ participation in organized and team sports is associated with lower levels of depression compared to boys (Baldursdottir et al., 2017). Similarly, across ten European countries, girls showed more of an effect of reduced depressive symptoms with playing team sports compared to boys (McMahon et al., 2017). Research in American youth has found team sports negatively prospectively predicted depression, but when controlling for other protective factors, the effect was only significant for girls (Gore et al., 2001). However, boys may have more access to the psychological benefits of

sports as they are encouraged to prioritize sports more than girls (LaVigne et al., 2016). Research indicating the added benefit of sports participation for girls highlights the importance of further understanding the impact sports participation may have on youth, and if the effect is present in mix-gender samples.

Benefits of Playing Multiple Team Sports

Playing multiple team sports could provide an additive effect in reducing psychological symptoms in youth. A core principle of PYD posits that involvement across multiple contexts amplifies the positive effects on development, known as a "pile-up" effect (Benson et al., 2006). It is important for youth to face challenges in various environments and cultivate supportive relationships with peers and nonparental figures across these settings, as this has an accumulative impact on their overall development (Benson et al., 2006). Participating in more than one sport can provide a variety of experiences that contribute to positive development (Agans & Geldhof, 2012). Playing multiple team sports presents a unique opportunity for positive development as players experience a sense of mastery in overcoming challenges while connecting with various teammates and coaches. Playing multiple sports also enhances health benefits by offering diverse opportunities to develop skills applicable to other life domains (Zarrett et al., 2018). A cross-sectional study with Irish youth found differences in depression in boys and girls who played multiple sports compared to those who played a single sport, with adolescents playing three or more sports exhibiting the lowest levels of depression (Murphy et al., 2020). The authors concluded the effect is likely a result of the sense of belonging and social connection fostered in team sports. Eime et al. (2013) did not include any studies that analyzed the number of team sports played on depressive symptoms in their review. The authors however found that the number of team sports played is more important than the level of competition on levels of

competence and self-esteem (Eime et al., 2013). These findings highlight the benefits of recreational multisport participation. Despite the potential benefits, few adolescents participate in multiple sports across a year. The average number of sports played by adolescents is down from 2019, in part due to reduced resources for school and community sports programs, and a desire to excel in a single sport (Aspen Institute, 2022). More research is needed to understand how playing multiple sports may reduce depressive symptoms in diverse American youth, which could influence the support for community and school programs to offer a wide range of sports.

Coping

Coping and Depression

Coping strategies are a mechanism that may explain the impact of team sports participation on reducing depressive symptoms in youth. Voluntary coping is categorized into engagement and disengagement strategies, defined by approach or avoidant reactions to a stressor (Compas et al., 2001). Engagement coping includes primary coping, which focuses on problem-solving, and secondary coping, which involves emotion-focused strategies such as cognitive restructuring or seeking social support (Connor-Smith et al., 2000). Conversely, disengagement coping involves avoidant responses to a stressor, such as withdrawal or denial (Connor-Smith et al., 2000). Psychological outcomes also depend on the type of coping strategy that is commonly used. Meta-analyses and reviews consistently show an inverse correlation between engagement coping and psychological symptoms, and a positive correlation between disengagement coping and symptoms. A comprehensive review found engagement coping was negatively associated with depression, while disengagement coping was positively associated with psychological symptoms (Compas et al., 2001). A meta-analysis found disengagement coping had a medium to large effect size with depression, while engagement coping was

negatively associated with depression (Aldao et al., 2010). Compas et al. (2017) similarly found medium to large effect sizes of disengagement coping on depressive symptoms, while primary and secondary engagement coping had small to medium negative effect sizes on depressive symptoms. These findings emphasize the role of primary and secondary coping strategies in mitigating depressive symptoms.

Notably, the literature on coping and depression remains limited to majority White samples. Urban minority youth, who often experience higher levels of social and environmental stressors, may not benefit from engagement coping to the same extent as their White counterparts. Disengagement coping can be effective when facing uncontrollable stressors (Compas et al., 2001). For example, in Black youth, disengagement coping has been shown to be adaptive in the face of environmental stress, resulting in fewer externalizing symptoms for boys (Grant et al., 2000). However, the benefits of disengagement coping for urban youth vary by factors including adult support and levels of community violence (Cory et al., 2020; Reife et al., 2020). Research has found that for urban youth, aspects of engagement coping including self-expression and actively seeking help protect against psychological symptoms, yet for youth without adult support, disengagement or avoidance coping strategies are associated with lower levels of internalizing symptoms (Reife et al., 2020). Elevated stressors may impede youth's ability to cope, in addition to the efficacy of their coping strategies (Grant et al. 2000). However, disengagement coping is not always beneficial in the face of elevated stressors. For example, the benefits of disengagement coping are not present for Black youth who experience high levels of violence (Cory et al., 2020). Moreover, engagement coping may benefit the subjective well-being of urban youth, even in the face of high environmental stressors (Coyle & Vera, 2013). Coyle et al. (2013) found engagement coping paired with uncontrollable stressors may benefit

youth well-being by providing a sense of agency. This research suggests the efficacy of a coping strategy may further rely on other factors that shape an individual's perception of their agency over a stressor.

Coping and Sports

The salutogenic model provides a framework for understanding how sports participation can improve coping skills through opportunities that foster transferable skills, enabling youth to respond to stressors adaptively. Applying the salutogenic model to sports in a theoretical analysis, Super et al. (2021) concluded those with a stronger sense of the world as predictable, manageable, and meaningful will be better able to respond to stressors appropriately and in a healthy way. Qualitative data further supports the impact sports may have on coping skills. Thematic analysis revealed youth sports coaches believed that creating moments of success and understanding helps socially vulnerable youth cope with challenges in other life domains (Super et al., 2016). Elite youth athletes were also found to have better self-regulatory skills including better planning, reflection, and self-efficacy compared to youth who did not participate in sports (Jonker et al., 2011). The authors concluded the effect was a result of specific experiences in sport including working with coaches, setting goals, and dealing with wins and losses (Jonker et al., 2011).

Most of what is known about the relationship between coping and psychological symptoms comes from elite athletes. However, there is a need to examine this relationship in recreational youth athletes to determine if recreational team sports are a viable means to improve coping and reduce depressive symptoms in a population that is at increased risk of psychological symptoms. Research has shown that elite athletes most commonly use primary and secondary engagement coping strategies and have lower levels of stress compared to athletes who use

disengagement strategies (McLean, 2020). In a sample of Mexican University students, Fernández-Barradas et al. (2024) found that student athletes were more likely to use engagement coping compared to non-athletes. Research in European adults has also shown that lower levels of sports participation are associated with disengagement coping and higher levels of depression (Wijndaele et al., 2007). These findings suggest elements of sports including competition and goal setting may contribute to primary and secondary coping strategies. Furthermore, Cumming et al. (2012) found female youth athletes who use primary engagement coping strategies outside of the context of sport have better mental health outcomes compared to those who use disengagement strategies. These findings support the use of engagement coping strategies in team sports players to benefit mental health both in and outside the sports context, yet further research is needed in samples of recreational youth sports players to better understand the relation in this at-risk population.

Friendships

Friendships and Depression

Peer connections are strongly related to adolescents' psychological well-being, fostering positive psychological states and mitigating risk factors associated with depression. As youth's social worlds expand from caregivers to peers, peer connections become more strongly related to depressive symptoms in adolescence compared to parent attachments (Rubin et al., 2006). Peer relationships that do not meet youth's needs can negatively impact mental health and development (Rose-Krasnor, 1997). Being accepted by peers is associated with lower anxiety and depression, while being rejected by peers is positively associated with social anxiety and depression (Epkins & Heckler, 2011). Dysfunction in peer relationships also becomes more salient to youth mental health through adolescence, and friend support can protect against social

victimization (Prinstein et al., 2001). Social support from peers further bolsters mental well-being and positive states that reduce the risk of depression (Rueger et al., 2016). Furthermore, peer acceptance negatively prospectively predicts depressive symptoms, especially for girls (Epkins & Heckler, 2011) Considering the strong impact peer relationships have on psychological symptoms, it is important to consider the role of friendships in the team sports-depression relation.

Friendship and Sports

Team sports offer valuable psychosocial benefits, fostering friendships and social acceptance, which may contribute to reducing psychological symptoms. The Health Through Sport model (Eime et al., 2013) provides a framework for how team sports support psychological and social outcomes. In their review, Eime et al. (2013) found team sports participation is associated with lower levels of internalizing symptoms and higher levels of social acceptance. Eime et al. (2013) concluded the social impact of team sports explains the benefits on mental health, an effect that is not seen in individual sports. Longitudinal psychosocial benefits of team sports include lower social anxiety, improved social self-concept, lower rates of social isolation, and better social skills as reported by parents (Eime et al., 2013; Findlay & Coplan, 2008). Across childhood and late adolescence, those who play organized sports report stronger social connections compared to those who do not play sports (Zarrett et al., 2020). Playing multiple sports is further associated with significantly more social support and less loneliness compared to youth who do not play any sports, with youth engaged in basketball, baseball, or softball, and soccer exhibiting higher levels of peer support compared to other sports (Zarrett et al., 2020). In a longitudinal analysis of diverse American youth, the social benefit of sports, defined by having prosocial peers, was only present for low SES youth (Fredricks & Eccles, 2008). The authors

concluded the impact of sports on prosocial peer relationships was particularly important for low SES youth who may experience increased risks and stressors. The social context of team sports offers psychosocial benefits, fostering friendships which play a role in reducing the risk for depression, and may be particularly beneficial for low SES youth.

Friendships and Coping

The impact of team sports participation on reducing depressive symptoms may be better understood by analyzing the interactive effect of friendships on coping strategies. According to the Lazarus & Folkman (1984) model of coping, an individual's appraisal of a stressor determines the coping strategy used. However, this appraisal can be influenced by social interactions. Research suggests that the social context of team sports can affect how players perceive stressors and choose coping strategies (Tamminen & Gaudreau, 2014) Tamminen & Gaudreau (2014) highlight the intrapersonal process of coping in sports teams, emphasizing how teammates' actions influence the appraisal of stressors and the coping strategies of other players. Kerdijk et al. (2016) furthermore provide a model illustrating how the social context of sport including teammates and coaches' coping styles influence players' appraisal of a stressor as challenging or threatening thereby impacting the chosen coping strategy. In a sample of young adult athletes, Kerdijk et al. (2016) found when teammates influence an individual's appraisal of a stressor, the player was more likely to view the stressor as a challenge and use primary or secondary engagement coping strategies. The authors further found when teammates did not influence appraisal, players were more likely to perceive the stressor as a threat and use avoidant coping. These studies suggest the social influence of team sports may allow youth to feel more agency in the face of stressors, enabling them to use more primary and secondary coping strategies, which are associated with lower depressive symptoms (Compas et al., 2001). This

research however is limited to stressors in the sports context, and less is known about how coping with broader social stressors is impacted by friendships for young team sports players. Investigating this relation will enhance our understanding of how team sports participation in youth may mitigate depressive symptoms.

Purpose of Study

The goal of the current study is to examine the roles of coping and friendships on the longitudinal relation of team sports participation and depression symptoms in a sample of racially diverse urban youth. The current study asks if coping strategies and friendships independently moderate the relation between the number of team sports played and depressive symptoms in adolescents. The current study further asks if there is an interactive effect between team sports participation, coping, and friendships on depressive symptoms. The following research questions will be examined in this study:

Research Questions

1. Does Time 1 team sports participation predict fewer depressive symptoms at Time 2? It is expected that youth who play more team sports at Time 1 will have fewer depressive symptoms at Time 2.
2. Does Time 1 team sports participation predict coping strategies? It is expected that youth who play more team sports will use more primary and secondary coping strategies.
3. Does Time 1 team sports participation predict friendships? It is expected that youth who play more team sports will have more friendships and higher social competency.
4. Does coping moderate the team sports-depression relation? It is expected that coping will moderate the team sports-depression relation such that those who play more team sports at Time 1 who use more primary or secondary coping strategies will have fewer

depressive symptoms at Time 2, but those who use more disengagement coping strategies will have more depressive symptoms at Time 2.

5. Does friendship moderate team sports-depression relation? It is expected that friendships will moderate the team sports-depression relation such that those who play more team sports at Time 1 and who have higher friendship scores will have fewer depressive symptoms at Time 2.
6. Does the moderating effect of coping (primary, secondary, and disengagement) on the team sport-depression relation further depend on friendships? It is expected that friendship and coping will interact to moderate the team sports-depression relation such that those who play more team sports who use more primary or secondary coping strategies and have higher friendship scores will experience fewer depressive symptoms at Time 2. It is expected that those who play more team sports who use more disengagement coping strategies and have lower friendship scores will experience more depressive symptoms at Time 2.

Method

Participants

The current study included self-report survey data from 339 adolescents (50% female) aged 10 to 18 at the initial time of data collection ($M = 14.53$, $SD = 2.23$). Participants were from diverse racial and ethnic backgrounds (White: 28%, Hispanic: 27%, Black: 25%, Biracial 12%, Asian: 8%).

Procedure

As part of a larger study measuring stress and learning outcomes, 379 students ages 11-18 were recruited from three urban Chicago schools. The present study included data from 196

youth. Youth and their parents were given information regarding the study and parental consent was obtained for adolescents' participation. Youth then provided assent to participate in the study, and all participants were compensated with \$50 for their participation. Survey data was collected at two time points, six months apart. Measures of coping, friendship, and sports participation were measured at the first time point, and depressive symptoms were measured at both time points. The study was in accordance with the DePaul University's Institutional Review Board and surveys were completed in participants' classrooms.

Measures

Demographics

Participants self-reported racial and ethnic status. Racial identity was categorized with the item *"I consider my racial group to be (pick all that are true) Black, Asian, American Indian/Native Alaskan, Native Hawaiian or Other Pacific Islander, White or Caucasian, Bi-Racial or Multi-Racial (parents from more than one group), and Other (please write in)."* Participants reported their ethnicity with the item *"I consider my ethnic group to be: Hispanic or Latino or not Hispanic or Latino."* Participants' family SES was identified with the question, *"Is your family poor, working class, middle class, or rich?"* with values ranging from poor (1) to rich (4). Participants further self-reported their age and gender.

Sports Participation

Participants' sports participation was assessed at both time points using three items from the Youth Self-Report survey (YSR; Achenbach & Rescorla, 2001). Participants were asked three times to list a sport they played. The number of sports participants engaged in was coded on a scale from 0-3 sports. Organized team sports were identified according to the criteria of more than one athlete participating at the time of competition as defined by Agans and Geldorf

(2012). For example, running was coded as an individual sport (“1”) and basketball was coded as a team sport (“2”). Total sports participation scores for team and individual sports were formed by summing the corresponding number of sports reported.

Depressive Symptoms

Depressive symptoms were measured at both time points with the 27-item Children’s Depression Index (Kovacs, 1978). The CDI was normed on adolescents aged 7 to 17 and is the most used screener for depressive symptoms in adolescent populations (Kovacs, 1978). The index captures various symptoms of depression including feelings of worthlessness, sadness, anhedonia, suicidal ideation, sleep, and eating disturbances across contexts. Participants were asked about their experience of depressive symptoms within the past two weeks, and responses were scored on a 3-point scale (0= no symptom to 2 = definite symptom). Using the second timepoint, internal consistency was measured using Cronbach’s alpha; internal consistency in the present sample was .64.

Coping

Engagement and disengagement coping were measured with the Response to Stress Questionnaire (RSQ; Connor-Smith et al., 2000) at the first time point. The RSQ is a widely used measure that was validated in a population of low-income youth experiencing social stress (Connor-Smith et al., 2000). Previous research shows acceptable to good levels of internal consistency for primary ($\alpha = .82$) and secondary ($\alpha = .80$) engagement coping and disengagement coping ($\alpha = .73$) (Connor-Smith et al., 2000). Participants were asked how they dealt with problems in a social context in the past six months on a 4-point scale (0 = none, 1 = A little, 2 = Some, 3=A lot). The RSQ measures primary and secondary engagement, and disengagement coping strategies. The primary engagement subscale includes 9 items, the secondary engagement

subscale includes 9 items, and the disengagement subscale includes 12 items. Scores for each subscale were created by summing the corresponding items.

Friendships

Friendships were measured at Time 1 with three items on the Youth Self Report (Achenbach & Rescorla, 2001) assessing the number of friendships and youth's social competency. The items include "About how many close friends do you have?" "How much time do you spend with friends" and "Compared to others your age, how well do you get along with other kids?". Responses were standardized to a 3-point scale and summed to create a composite measure of friendships with a higher value corresponding to a better subjective rating of friendship quantity and compatibility. Internal consistency was measured using Cronbach's alpha; internal consistency in the present sample was .43.

Results

Preliminary Analyses

Attrition analyses revealed that of the initial 371 participants who provided depression scores, at Time 1, 196 participants participated at Time 2. An independent samples t-test examining participant differences across attrition rates showed no significant difference between participants who dropped out and those who completed both time points on Time 1 study variables. Participant demographics are shown in Table 1.

Pearson correlations were conducted to examine the relationships between team sports participation, friendship scores, coping strategies, and depressive symptoms (see Table 2). The number of team sports played was negatively correlated with Time 1 depressive symptoms ($r(233) = -.17, p = .009$) such that the more team sports a participant played, the lower their depressive symptoms were. There was a positive correlation between team sports and friendship

scores ($r(227) = .17, p = .011$), indicating participants who played more team sports had higher friendship scores. There was a positive correlation between primary ($r(307) = .19, p = .001$) and secondary ($r(305) = .13, p = .03$) coping and friendship scores, indicating those who endorsed the use of more primary and secondary engagement coping strategies reported higher friendship scores. Disengagement coping was positively correlated with Time 1 depression ($r(340) = .35, p < .001$), indicating those who endorsed more disengagement coping strategies reported higher levels of depressive symptoms at Time 1.

One-way ANOVAs were conducted to examine demographic differences across study variables (Tables 2 and 3). A one-way ANOVA revealed that there was a statistically significant difference in team sports participation between boys and girls, with girls playing fewer team sports than boys $F(1,2) = 8.98, p < .01$. Girls also reported more Time 1 depressive symptoms $F(1,367) = 15.56, p < .001$. Gender differences were also found in coping strategies, with girls reporting more primary $F(1,335) = 10.26, p < .01$, and disengagement $F(1,340) = 5.89, p = .02$ coping than boys.

A one-way ANOVA also revealed racial differences in Time 1 depressive symptoms. Tukey's HSD test for multiple comparisons found that Time 1 depressive symptoms were significantly higher in White participants compared to Black participants ($p < .001, 95\% \text{ C.I.} = [-2.79, -.73]$). Significant differences also emerged between Black and Biracial participants with Biracial participants endorsing higher Time 1 depressive symptoms ($p < .001, 95\% \text{ C.I.} = [-2.85, -.26]$) than Black participants. Tukey's HSD test for multiple comparisons further found racial differences in friendship scores between Black and Asian participants ($p = .03, 95\% \text{ C.I.} = [-1.56, -.04]$), with Asian participants reporting higher scores than Black participants (see Tables 3-4).

Main Effects of Team Sports Participation

Multiple linear regressions were conducted to analyze the main effects of team sports participation on depressive symptoms, coping strategies, and friendship scores. Gender and Time 1 symptoms were included as control variables. Five separate regressions were conducted.

The overall model for the main effect of team sports participation on Time 2 depressive symptoms was statistically significant $F(3, 111) = 15.546, p < .001; R^2 = .296$, however, team sports participation was not a significant predictor of Time 2 depressive symptoms.

The overall model for team sports participation on primary coping was statistically significant $F(2, 223) = 5.24, p = .006; R^2 = .21$, however, team sports participation was not a significant predictor of primary coping. The overall models of team sports participation on secondary and disengagement coping were not statistically significant.

The overall model for the main effect of team sports participation on friendship scores was statistically significant $F(2, 223) = 4.07, p = .018; R^2 = .19$. Team sports participation significantly predicted friendship scores when controlling for gender ($\beta = .22, p = .025$), indicating participants who played more team sports reported having more friends, spent more time with them, and felt they got along better with friends compared to their peers.

Moderating Role of Coping and Friendship

To test the hypotheses that the team sports participation-depression relation was independently moderated by coping strategies and friendship scores, moderation analyses were conducted using PROCESS model 1. Gender and Time 1 symptoms were included as control variables. Each predictor was tested in a separate model. The overall model testing primary control coping as a moderator of the team sports-depression relation was significant $F(5, 103) = 8.99, p < .01; R^2 = .30$. The interaction between team sports participation and primary coping

did not significantly predict Time 2 depressive symptoms. The overall model testing secondary control coping as a moderator was significant, $F = (5, 103) = 9.43, p < .01; R^2 = .31$. The interaction between team sports participation and secondary coping did not significantly predict Time 2 depressive symptoms. The overall model testing disengagement coping as a moderator was significant, $F = (5, 106) = 9.48, p < .01; R^2 = .31$. The interaction between team sports participation and disengagement coping did not significantly predict Time 2 depressive symptoms. The overall model testing friendship on the team sports participation-symptom relation was significant $F = (5, 106) = 9.78, p < .001; R^2 = .32$. The interaction between team sports participation and friendship did not significantly predict Time 2 depressive symptoms.

Interactive Effects of Coping and Friendship

To test the hypotheses that the impact of playing multiple team sports on youth's depressive symptoms was bolstered by friendship and varied by coping strategies, three independent moderated moderation analyses were conducted using PROCESS Model 3. Gender and Time 1 symptoms were included as control variables (see Figures 1-3).

The overall model for team sports participation, primary coping, and friendship on Time 2 depression was statistically significant $F(9,100) = 6.39, p < .001; R^2 = .60$. The interaction effect of primary coping and friendship scores on the team sports participation-depression relation was not significant.

The overall model for team sports participation, secondary coping, and friendship on Time 2 depression was statistically significant, $F(9,97) = 7.52, p < .001; R^2 = .41$. There was a significant conditional three-way interaction effect between team sports participation, secondary coping, and friendship scores ($b = 2.01, SE = .56, p < .001; 95\% \text{ C.I.: } [.90-3.11]$). Simple slopes indicate at high levels of team sports participation, those with high levels of secondary coping

and high friendship scores have higher levels of depression at Time 2, ($b = 5.03$, $SE = 1.35$, $p < .001$; 95% C.I.: [2.35-7.71]). Simple slopes indicate that those who play more team sports and endorse high levels of friendship and medium levels of secondary coping experience higher levels of depression ($b = 2.08$, $SE = .88$, $p = .02$; 95% C.I.: [.33-3.84]). However, the pattern reverses at low levels of friendship, such that those who play more team sports, and endorse high levels of secondary coping experience lower levels of depression ($b = -2.90$, $SE = 1.25$, $p = .02$; 95% C.I.: [-5.39 -.41]) (figure 2).

The overall model for disengagement coping and friendship was statistically significant $F(9,100) = 6.39$, $p < .001$; $R^2 = .60$. There was a significant three-way interaction between team sports participation, disengagement coping and friendship scores ($b = 1.32$, $SE = .61$, $p = .03$; 95% C.I.: [.11-2.53]). To further interpret this interaction, simple slopes were computed, indicating that at low levels of friendship, those who play more team sports and endorse high levels of disengagement coping, experience fewer depressive symptoms at Time 2 ($b = -3.00$, $SE = 1.26$, $p = .019$; 95% C.I.: [-5.50- -.51]).

Discussion

The current study assessed the interactive effect of team sports participation, coping strategies, and friendships on depressive symptoms in a sample of urban youth. Three key findings emerged. Firstly, for those who played multiple team sports, high levels of secondary coping and low levels of friendships led to lower levels of depressive symptoms at Time 2. This pattern reversed at high levels of friendship, such that those who played multiple team sports and endorsed high levels of secondary coping had higher levels of depressive symptoms at Time 2. Secondly, for those who played multiple team sports, high levels of disengagement coping, and low levels of friendship led to fewer depressive symptoms at Time 2. There was no significant

interaction between team sports participation, primary coping, and levels of friendships on depressive symptoms. In addition, youth who played more team sports reported more social competency, had more friends, and spent more time with friends. Cross sectional analyses showed that youth who played more team sports endorsed fewer depressive symptoms, but sports participation did not longitudinally predict depression or coping. In summary, the present study revealed that for youth who play more team sports, secondary and disengagement coping strategies had a similar effect when interacting with low levels of friendships to prospectively mitigate depressive symptoms.

The salutogenic model provides a framework for understanding how sports participation can foster coping skills, enabling youth to adaptively respond to stressors (Super et al., 2021). Incorporating the tenets of PYD, the salutogenic model highlights the mechanisms of how sports benefit youth development (Super et al., 2021). Experiences in sports including teammate and coach support, structured environments, and goal setting provide a sense of meaning and predictability that prepare youth to use adaptive coping strategies when facing stressors (Super et al., 2021). Recognizing that youth development is a dynamic process that involves the interaction of internal resources with external stressors across different domains, the impact of sports participation on development is best understood by analyzing the ability to handle stressors across different contexts (Super et al., 2021). However, the existing literature predominately examines coping in the sports context and elite athlete populations, with a lack of quantitative longitudinal research investigating how team sports influence youth coping in broader social contexts. While research in college athletes suggests sports participation is associated with primary and secondary coping strategies (Fernández-Barradas et al., 2024; Nicholls et al., 2007),

the present study adds to the literature by analyzing the impact of team sports participation on youth's coping strategies across life contexts and the impact on psychological outcomes.

Main Effects of Team Sports Participation

Cross-sectional findings showed that team sports participation was associated with lower depressive symptoms and higher friendship scores. Team sports participation was negatively associated with depressive symptoms such that the more team sports participants played, the fewer depressive symptoms they endorsed. These findings support previous cross-sectional research that has found a link between team sports participation and lower levels of depression (Boelens et al., 2022; Panza et al., 2020). The volume of team sports participation is commonly operationalized as the time spent playing sports (Panza et al., 2022). Yet the time spent playing sports may not accurately reflect the benefits of team sports participation, as it does not specify whether that time is spent in more than one sport. More time spent playing a single sport can lead to social isolation, maladaptive coping, injury, and burnout as seen in early sport specialization (Brenner et al., 2019; Jayanthi et al., 2019). Operationalizing participation by the number of team sports played aligns more closely with the principles of PYD and better captures the variety of experiences and social relationships in sports that benefit development (Benson et al., 2006). Participating in multiple team sports presents a unique opportunity for positive development as players overcome challenges while connecting with teammates and coaches across different contexts. Despite the potential benefits of multi-sport participation, only two U.S.-based studies in the Panza et al. (2022) operationalized team sports participation by the number of team sports played. Both studies were cross-sectional analyses of diverse female participants and found that increased sports participation was associated with fewer depressive symptoms (Dishman et al., 2006; Duncan et al., 2015). The present study adds to the literature, highlighting that the number

of team sports played is negatively correlated with depressive symptoms in an urban sample of boys and girls.

As hypothesized, there was a statistically significant effect for team sports participation on friendship scores, with youth playing more team sports endorsing more friendships and more time spent with friends. This finding is consistent with literature that suggests team sports provide opportunities that promote social skills and friendships (Bigdow & Lewko, 2016; Herbison et al., 2017; Poulin & Denault, 2013). Compared to individual sports, team sports involve collaborative experiences that foster cohesion including teamwork and working towards a shared goal. The Health Through Sport model (Eime et al., 2013) emphasizes the context of team sports benefits social and psychological outcomes in youth. Moreover, playing multiple team sports is associated with higher levels of peer support and less loneliness in youth (Zarrett et al., 2020). Further research indicates that sports are particularly beneficial in promoting friendships for youth from low SES (Fredricks & Eccles, 2008). The current findings highlight that urban youth and low SES youth may particularly benefit from team sports participation and the protective effects of friendships fostered through sports.

While the current study builds on the literature showing that team sports are related to positive outcomes, contrary to what was hypothesized, the impact of sports participation on depressive symptoms was not significant in longitudinal analyses that controlled for age and gender. The lack of significant prospective findings in the current study may reflect participant characteristics such as race and gender that indirectly influence the longitudinal impact of team sports participation on symptoms. Research in American youth suggests that girls may experience a greater reduction in depressive symptoms from team sports participation compared to boys (Agans & Geldorf, 2012; Gore et al., 2001). Further studies have found White girls and

Black youth from higher socioeconomic backgrounds may experience greater benefits from team sports in reducing depressive symptoms (Duncan et al., 2015; Fredrick & Eccles, 2008). The current study included a mixed-gender sample of diverse urban youth. The demographics of our sample may include confounding factors that impact the relation on depressive symptoms such as the variations in the quality of sports experiences. Future research should continue to assess the longitudinal role of participating in multiple team sports to better understand the impact on reducing depressive symptoms in diverse youth.

The main effects of team sports participation on primary, secondary, and engagement coping strategies were not statistically significant in the current study's sample of adolescents involved in general recreational sports. These findings are inconsistent with previous literature that supports the role of team sports in preparing youth to better cope with life stressors (Super et al., 2021). In adolescent samples, qualitative research has shown coaches believe community-based team sports promote socially vulnerable youth's ability to cope with stressors (Super et al., 2016), and youth who participate in high school sports through young adulthood report an increased ability to handle stressors (Murray et al., 2021). Additional research in elite athletes and adults has also shown that team sports participation is associated with primary and secondary engagement coping use (Fernandez-Barradas et al. 2024; Nicholls et al., 2016). Cross-sectional research shows Mexican university student athletes display more primary and secondary engagement coping strategies compared to students who engage in regular physical activity (Fernandez-Barradas et al. 2024). Similarly, American college team athletes have been found to use more primary and secondary engagement coping compared to individual sports athletes (Nicholls et al., 2007). The social context of team sports is particularly relevant to coping strategies, as teammates and coaches can shape how young adult athletes appraise stressors,

leading to the use of more primary and secondary engagement coping strategies (Tamminen & Gaudreau, 2014; Kerdijk et al., 2016). However, it is difficult to conclude the impact of team sports on coping in youth as there is a lack of longitudinal research using validated measures in young American team sports players.

Based on PYD theory, the current study analyzed coping strategies in response to broader social stressors. While team sports provide an important social setting for youth (Poulin & Denault, 2013), our study expanded the scope of coping for a more comprehensive understanding of the benefits of youth team sports. The lack of significant findings raises the question of whether the coping skills learned in sports are specific to the sports domain or if they are translatable to other areas of life (Super et al., 2021). The PYD framework highlights the interplay of different contexts in shaping internal resources and the resulting ability to take action to shape their situations across contexts (Benson et al., 2007). This process is best explained by Kendellen and Camiré's (2019) framework for how skills learned in sports are translated to other areas. The authors found young adult athletes used skills learned in sports including emotion regulation and applied them to other contexts, subsequently adapting their behavior based on the outcome (Kendellen & Camiré, 2019). Super et al. (2020) emphasize that while skills learned in sports may be generalizable, the applicability to other contexts should be explicitly taught in sports. Qualitative research has further shown former college athletes attribute their ability to cope with stressors and setbacks to experiences from sports (Strowd et al., 2022). The former student-athletes in this sample underscored the transferability of coping skills acquired through sports that enabled them to excel in medical school (Strowd et al., 2022). Qualitative reports rely on subjective accounts of coping ability, and it is unclear to what extent participants use specific strategies. Further research using validated measures of coping is needed to better understand

how the skills learned in team sports translate to youth's abilities to manage stressors in broader social contexts. Such research could increase support for team sports participation among youth facing heightened stressors.

Joint Effects of Team Sports, Coping, and Friendship

To better understand the interactive effects of team sports participation, coping strategies, and friendships on youth depressive symptoms, this study used moderated moderation analyses to examine the three-way interactive effects. Contrary to what was hypothesized, the current study found secondary and disengagement coping had the same effect when interacting with team sports and friendship in predicting depressive symptoms at Time 2. Specifically, secondary coping interacted with friendship such that for youth who played more team sports, high levels of secondary coping and low levels of friendship led to fewer depressive symptoms at Time 2. This pattern reversed at high levels of friendship, such that youth who played more team sports and endorsed high levels of secondary coping had more depressive symptoms at Time 2. The pattern similarly emerged for disengagement coping. Participants who played more team sports and endorsed high levels of disengagement coping but low levels of friendship experienced fewer depressive symptoms at Time 2. There was not a significant interactive effect at high levels of friendship. The current findings provide insight into the adaptive nature of secondary and disengagement coping strategies for urban youth who play team sports.

The current findings diverge from past research, which consistently shows distinct impacts of engagement and disengagement coping on depressive symptoms (Aldao et al., 2010; B. E. Compas et al., 2017) suggesting other factors impact the efficacy of coping strategies. In our study, secondary and disengagement coping were positively correlated, suggesting that youth used multiple coping strategies rather than relying on one. The current findings may point to

youths' adaptability rather than the inherent benefits of one strategy versus another (Aldridge & Roesch, 2008) found that flexibility in minority adolescents' coping strategies is more predictive of mental health compared to the use of individual coping strategies. Team sports may also provide youth with a range of experiences that enhance youths' ability to adapt to different stressors. In a sample of Turkish youth, Aslan (2018) found youth who play team sports exhibited more cognitive flexibility, highlighting their increased ability to adapt to changes in the environment compared to individual sports players. Further research may examine coping flexibility and aspects of team sports that promote flexible coping in youth.

Another notable finding was the interaction of low levels of friendship with secondary and disengagement coping to predict fewer depressive symptoms at Time 2. Time spent with friends not only protects against depression but protects against future rejection sensitivity (Masten et al., 2012). Adolescents with higher depressive symptoms report fewer friends (Ueno, 2005) and peer acceptance prospectively protects against depression symptoms, especially for girls (Epkins & Heckler, 2011). However, the current results suggest that among youth with high levels of friendships, relying on secondary coping strategies may inadvertently strain relationships, leading to higher levels of symptoms. Heightened interpersonal stress in friendships is a known predictor of depression in youth and young adults (Hammen, 2015; Sheets & Craighead, 2014; Slavich et al., 2020). Using latent profile analysis, Herres (2015) found that adolescents with coping profiles that did not commonly use social support as a means of coping had fewer depressive symptoms compared to other profiles of coping including using approach coping strategies. Given these findings, the factor of low friendship in combination with the youth's flexibility in coping strategies may underly the common effect of secondary and

disengagement coping on reducing depressive symptoms for youth who play multiple team sports.

These findings are particularly counterintuitive given the well-established protective role of friendships in the context of depressive symptoms. Friendships play a key role in adolescent development and are linked to a lower risk of depression (Epkins & Heckler, 2011; Rueger et al., 2016). Meta-analyses show the number of friends and friendship quality prospectively predict fewer depressive symptoms (Schwartz-Mette et al., 2020). Moreover, the quantity, quality, and stability of friendships enhance the advantages of friendships on development (Benson et al., 2006). Friendships have also been shown to be protective in the face of environmental and urban stressors. Research in Black youth has found secure friendships predict lower levels of depression in adulthood (Cook et al., 2016), while urban youth exposed to violence experience decreased depressive symptoms in adulthood with secure friendships (Heinze et al., 2018). Friendships benefit youth mental health and development, offering resilience against social adversities and urban stressors.

However, high levels of friendships may offer more opportunities for social stress or risk taking. Friendships can paradoxically increase psychological symptoms for women when the friendships demand more social support than they can provide (Kawachi & Berkman, 2001). While women tend to offer more social support to friends compared to men, exceeding their capacity to do so can lead to social stress within these relationships (Kawachi & Berkman, 2001). Similarly, in youth, the influence of friends may be positive or negative. Some research has shown that friendships in team sports are associated with higher levels of problematic behavior including aggressive behavior (Poulin & Denault, 2013). Large social networks may also be related to depressive symptoms in boys and girls. Falci & McNeely (2009) found that

large social networks were associated with more depressive symptoms in youth. The authors further found symptoms varied by level of group cohesion such that girls with large unconnected social networks experienced higher levels of depressive symptoms whereas boys with large, connected networks experienced the highest depressive symptoms. Our measure was not comprehensive and may not have captured underlying factors within friendship quality that may influence participant coping resources and depressive symptoms. Future research may utilize a more comprehensive measure of friendship to evaluate the type and quality of friendships.

Moderating Effects of Coping and Friendship

The current study then used three separate moderated analyses to assess the effects of coping strategies and friendships on the team sports to depressive symptoms relationship with no significant two-way interaction effects present. The protective effects of friendships and coping strategies in youth were not found in the current study, perhaps because stressors and perceived level of control were not included. Previous research has shown that excessive levels of stress can deplete individual protective resources, limiting the impact of coping and social support (Cory et al., 2020; Grant et al., 2000). High levels of uncontrollable stress, such as exposure to community violence, can diminish the protective effects of peer support and coping on internalizing and externalizing symptoms (Grant et al., 2000). Research using cluster analyses further shows that excessive stress can overwhelm protective resources in Black youth (Tandon et al., 2013) Tandon et al. (2013) found that Black urban youth with high levels of engagement coping, and peer support experienced higher depressive symptoms compared to other clusters when paired with high levels of stress (Tandon et al., 2013). Additionally, the efficacy of specific coping strategies can vary by gender and type of stress. Grant et al. (2000) found that avoidant coping was protective against externalizing symptoms in boys but exacerbated the association

between daily stressors and anxiety and depressive symptoms in girls. However, some evidence supports the use of engagement coping regardless of stress levels. Coyle et al. (2013) found engagement coping may benefit the subjective well-being of urban youth, as it gives youth hope and perceptions of agency in the face of uncontrollable social and environmental stressors. In summary, future research should consider demographic and social differences with the interactive role of stress that may determine the adaptability of engagement and disengagement coping strategies.

Strengths and Limitations, and Future Directions

To our knowledge, this is the first study to examine the longitudinal impact and interactive effect of team sports participation, coping, and friendships on depressive symptoms in urban youth. The current study found that for youth who play multiple team sports, secondary and disengagement coping interacted with low levels of friendships leading to fewer depressive symptoms at Time 2. Contrary to previous literature that cites engagement coping as a protective factor and disengagement coping as a risk factor for depression, the current findings suggest for youth who play multiple team sports, secondary and disengagement coping function similarly when coupled with low levels of friendships to protect against depressive symptoms. Our findings provide new insights into the unique roles of secondary and disengagement coping strategies for youth who play multiple team sports.

Additional strengths of our study include the ethnically diverse sample of urban youth. Urban minorities, girls, and youth from low-SES families are the least likely to participate in sports (Sabo, 2009; Zarrett et al., 2020). Additionally, Black, and Hispanic youth are experiencing a decline in participation rates since 2019 (Aspen Institute, 2023). The disparity in participation for girls and low-income youth has been improving, however, youth, in general, are

playing less team sports since 2019 (Aspen, 2023). From 2019-2022, consistent team sport participation in youth aged 13-17 years old has decreased by 6%, meaning youth are playing sports less frequently (Aspen, 2023). Moreover, depressive symptoms may be underdiagnosed in racially minoritized youth as they experience more barriers to accessing psychological services (Lu, 2019). Most of the research on the sports-depression relation includes majority White samples; however, research in minoritized youth shows differing effects based on racial and SES demographics (Eccles 2008; Duncan et al., 2015). Including racially diverse and representative samples enhances our understanding of how and for whom sports may reduce depressive symptoms.

The current study furthermore used a longitudinal design and a specific operationalization of team sports participation to better understand the long-term impact of participating in multiple team sports. The effect on depression varies by how sports participation is operationalized, and few U.S.-based studies measure the volume of team sports participation (Panza et al., 2020). Measuring participation by the number of team sports played captures multiple components of participation that are theorized to benefit youth based on PYD theory. This includes experiences across multiple contexts, multiple relationships with adults and peers, in addition to the physiological component of physical activity that benefit youth development. Additionally, the literature on the longitudinal impact of team sports on internalizing symptoms is limited and presents mixed findings that vary depending on participant demographics, highlighting underlying mechanisms of the sports-depression relation (Agans & Geldhof, 2012; Duncan et al., 2015; Fredricks & Eccles, 2008). This study provides new insights into the impact of playing multiple team sports participation on depressive symptoms in urban youth.

The present study however included some limitations. Firstly, this study was unable to test coping and friendships as mediators of the team sports-depression relation. The indirect effects of coping and friendships may better explain the impact team sports participation has on reducing depressive symptoms. The current study included only two timepoints, whereas three time points are ideal in mediation models with three variables (Cole & Maxwell, 2003). Given the theoretical frameworks of PYD, the Health Through Sport model, and the salutogenic model, which emphasize the transferable skills acquired through sports, analyzing coping and friendships as underlying mechanisms may provide a more in-depth understanding of the impact of team sports participation on reducing depressive symptoms. Despite this, research has largely focused on self-esteem and body dissatisfaction as mediators of the sports-depression relation (Babiss & Gangwisch, 2009; Bang et al., 2020; Dishman et al., 2006; Gomez et al., 2014). Future research should examine coping strategies and friendships of mediators of the team sports-depression relation to better understand how the skills fostered in sports benefit psychological health in youth. Additionally, our measure of friendship was not comprehensive and lacked good internal reliability. Future research may use a validated measure of friendship that further includes aspects of friendship quality. Moreover, other factors could influence coping that were not including in the present study including stress levels or perceived control which may influence youth's coping capabilities and efficacy (Cory et al., 2020; Grant et al., 2000; Tandon et al., 2013). Finally, the current study looked at three broad coping categories, but examining more specific strategies may yield different results. For example, Waugh et al. (2020) found positive distraction is a type of disengagement coping that is related to fewer depressive symptoms. Future research should include the interactive effect of stress levels and more specific coping strategies to better understand the impact of team sports on youth depressive symptoms.

Conclusion

Youth are experiencing persistently high rates of depressive symptoms with disparities in rates and mental health access for girls and racially minoritized youth (Daly, 2022; Lu, 2019; National Institute of Health, 2022). Participation in team sports can protect against depressive symptoms, and playing multiple team sports may offer additional benefits. However, little research exists on how protective factors including coping strategies and friendships interact to impact depressive symptoms among youth team sports players. The present study found participation in multiple team sports was associated with fewer depressive symptoms and higher levels of friendship for youth. Additionally, our findings suggest a novel perspective to the literature by highlighting a common effect of secondary and disengagement coping. The present results further suggest that friendships can impact the efficacy of coping strategies to influence depressive symptoms for youth involved in multiple team sports. The current study provides new insight into how youth team sports players' coping strategies and friendships differentially impact their depressive symptoms, informing future screening for youth depression and support for young athletes.

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Appendix A: List of Tables

Table 1. *Participant Demographics*

(*N* = 371)

	<i>M (SD)</i>
Age	14.0 (1.92)
	<i>N (%)</i>
Sex	
Female	198 (47.8)
Male	173 (41.8)
Race	
White	136 (32.9)
Black	129 (31.2)
Bi-racial/multi-racial	61 (14.7)
Asian	40 (9.7)
Native American	4 (1.0)
Native Hawaiian/ Pacific Islander	2 (0.5)

Table 2. *Correlations Among Study Variables and Covariates*

	1	2	3	4	5	6	7	8
1 Gender	—							
2 Friendship	-.01	—						
3 Depression T1	.20**	-.11	—					
4 Depression T2	.14	-.09	.52**	—				
5 Primary	.17**	.19**	.01	-.01	—			
6 Secondary	.09	.13*	.03	-.07	.65**	—		
7 Disengagement	.13*	-.01	.35**	.15	.37**	.57**	—	
8 Team Sports	-.19**	.17*	-.17**	-.06	.07	-.01	.01	—

*p<.05; **p<.01

Primary = primary engagement coping, Secondary = secondary engagement coping, Disengagement = disengagement coping,
 Team Sports = total team sports played

Table 3. Means, Standard Deviations and One-Way Analyses of Variance: Gender

Measure	Male		Female		Total		F	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Primary	2.07	0.65	2.31	0.71	2.20	0.69	10.26 ^{a**}	0.030
Secondary	2.25	0.70	2.37	0.69	2.31	0.70	2.60 ^b	0.008
Disengagement	1.96	0.70	2.15	0.68	2.06	0.70	5.89 ^{c*}	0.017
Friendship	7.15	1.48	7.13	1.36	7.14	1.41	0.02 ^d	0.000
Depression T1	16.24	2.72	17.45	3.11	16.89	3.00	15.56 ^e	0.041
Depression T2	4.56	4.62	6.16	6.34	5.49	5.72	3.48 ^f	0.019
Total Team Sports	1.59	0.97	1.22	0.89	1.39	0.94	8.98 ^{g**}	0.037

a= 1,335 df; b= 1,331 df; c= 1,340 df; d= 1,317 df; e = 1,176 df; g = 1,232 df

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4. Means, Standard Deviations and One-Way Analyses of Variance: Race

Measure	Black		Asian		Native American		NHOPI		White		Multi racial		Total		F	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Primary	2.15	0.75	2.40	0.72	1.81	0.88	2.44	0.00	2.15	0.65	2.29	0.63	2.20	0.69	.18	.001
Secondary	2.19	0.73	2.43	0.59	2.67	0.57	2.42	0.47	2.32	0.72	2.43	0.64	2.31	0.70	3.34	.010
Disengagement	2.00	0.68	2.15	0.77	2.08	0.45	2.56	0.00	2.08	0.73	2.08	0.65	2.06	0.70	2.58	.007
Friendship	6.97	1.59	7.77	1.11	6.92	1.57	7.17	1.18	7.20	1.30	6.89	1.39	7.14	1.41	0.51	.002
Depression T1	15.88	2.36	16.67	2.46	16.50	1.73	18.50	3.54	17.64	3.16	17.44	3.61	16.88	3.00	1.60	.004
Depression T2	5.09	5.47	4.26	4.14	5.00	6.24	5.19	.	5.64	4.59	7.60	9.43	5.47	5.71	.06	.000
Total Team Sports	1.54	0.87	1.14	0.88	0.75	0.50	2.50	0.71	1.32	1.00	1.46	0.99	1.38	0.95	2.89	.012

a = 1,336 df; b = 1, 332 df; c = 1,341 df; d = 1,318 df; e = 1,368 df; f = 1,177 df; g = 1,233 df

* $p < .05$; ** $p < .01$; *** $p < .001$

Appendix B: List of Figures

Figure 1. *Primary Coping, Friendship, and Team Sports Participation on Time 2 Depressive Symptoms*

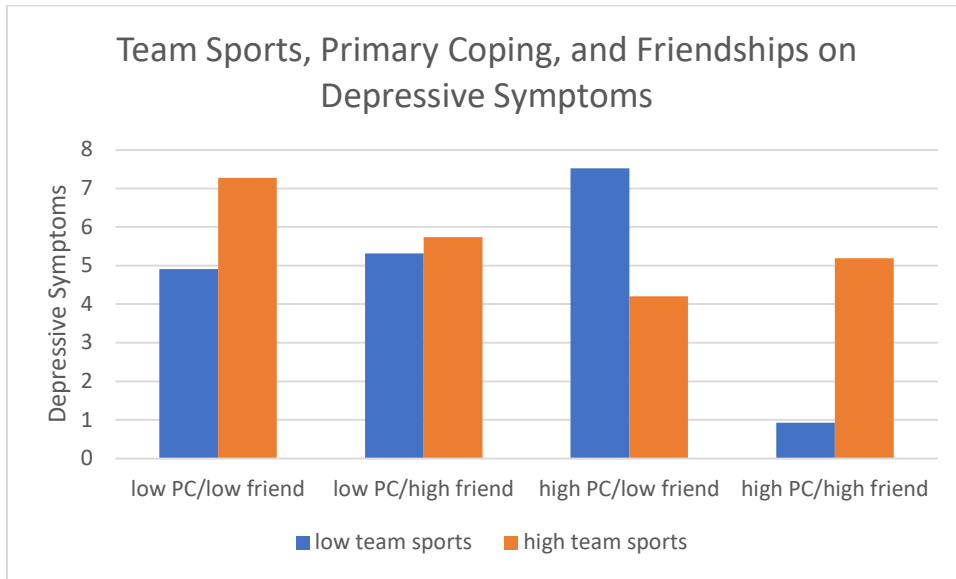


Figure 2. *Secondary Coping, Friendship, and Team Sports Participation on Time 2 Depressive Symptoms*

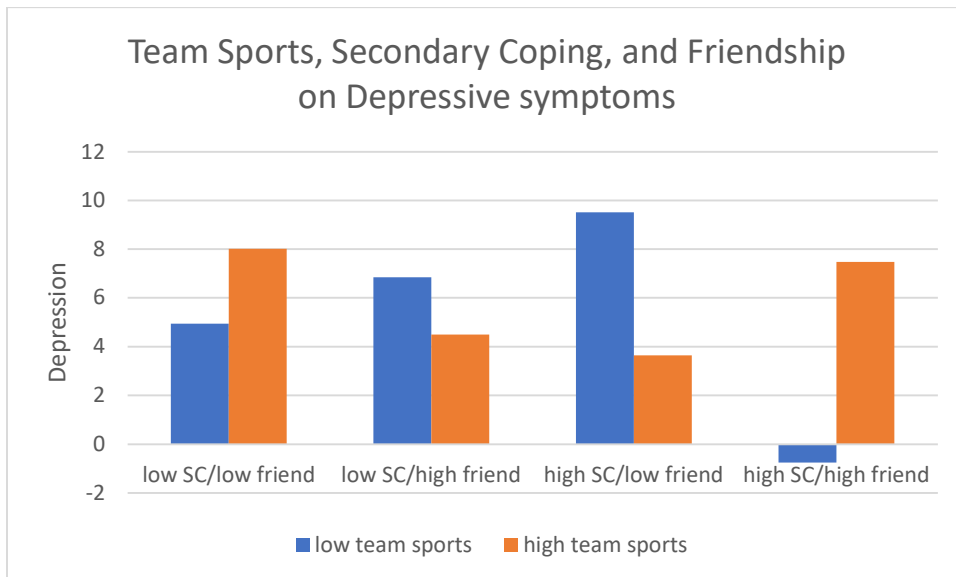


Figure 3. *Disengagement Coping, Friendship, and Team Sports Participation on Time 2 Depressive Symptoms*

