ORIGINAL RESEARCH ARTICLE

Community sport participation and mental wellbeing among women of reproductive age in China: A quantitative study

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Abstract

This study explores the connection between community sport participation and the mental well-being of women of reproductive age in China, utilizing a quantitative research approach. Women in this demographic often face overlapping challenges from work, family, and societal pressures, which heighten their vulnerability to psychological distress. As a result, community-based health strategies are gaining attention as potential preventive measures. Using nationally representative survey data, the study investigates how participation in sports correlates with reduced symptoms of depression and anxiety, as well as increased life satisfaction. The study applies multivariate regression and mediation analyses to evaluate both direct and indirect pathways linking sport participation to mental well-being. The findings support a positive association between community sports engagement and improved mental health, even after accounting for socioeconomic, health, and environmental factors. This relationship is partly explained by benefits such as enhanced social interactions and higher levels of physical activity, emphasizing the combined psychosocial and physical advantages of community sport participation. These results indicate that community sports can serve as a practical and scalable tool for promoting mental well-being. The study contributes valuable gender-focused insights to existing literature and provides actionable recommendations for advancing China's preventive health policies and national fitness programs. *(Afr J Reprod Health 2026; 30 [9s]: 128-139).*

Keywords: Community sport participation, mental wellbeing, women of reproductive age, physical activity, China

Résumé

Cette étude explore le lien entre la participation à des sports communautaires et le bien-être mental des femmes en âge de procréer en Chine, en utilisant une approche de recherche quantitative. Les femmes de cette tranche d'âge sont souvent confrontées à des défis imbriqués provenant du travail, de la famille et des pressions sociétales, ce qui accroît leur vulnérabilité à la détresse psychologique. Par conséquent, les stratégies de santé communautaires attirent de plus en plus l'attention en tant que mesures préventives potentielles. En utilisant des données d'enquête nationales représentatives, la recherche examine comment la participation à des sports est corrélée à une réduction des symptômes de dépression et d'anxiété, ainsi qu'à une augmentation de la satisfaction à l'égard de la vie. L'étude applique des analyses de régression multivariée et de médiation pour évaluer les voies directes et indirectes reliant la participation sportive au bien-être mental. Les résultats confirment une association positive entre l'engagement dans des sports communautaires et une amélioration de la santé mentale, même après prise en compte des facteurs socio-économiques, de santé et environnementaux. Cette relation s'explique en partie par des avantages tels que des interactions sociales renforcées et des niveaux plus élevés d'activité physique, soulignant les avantages combinés psychosociaux et physiques de la participation sportive communautaire. Ces résultats indiquent que les sports communautaires peuvent constituer un outil pratique et évolutif pour promouvoir le bien-être mental. L'étude apporte des informations précieuses centrées sur le genre à la littérature existante et fournit des recommandations exploitables pour faire progresser les politiques de santé préventive et les programmes nationaux de fitness en Chine. *(Afr J Reprod Health 2026; 30 [9s]: 128-139).*

Mots-clés: Participation à des sports communautaires, bien-être mental, femmes en âge de procréer, activité physique, Chine

Introduction

The issue of mental wellbeing has come out as a significant community health issue in China especially in women of reproductive age who start to be affected by the interplay of biological, social, and structural factors. This is a period of life where hormonal shifts, family and caregiving roles, work requirements, and social pressures tend to make the person more susceptible to the effects of stress, anxiety, and depressive symptoms[1-3]. Nationwide surveys like the China Family Panel Studies and China Health and Nutrition Survey datasets have consistently indicated that women reported worse

mental health conditions than men at adulthood and most importantly, women show high disparities in the middle and reproductive years[1,4,5].

Exercise and sports activities are commonly known as useful, non-pharmacological, and inexpensive methods used to enhance mental health. Chinese quantitative evidence has proven that regular physical activity is linked to less depressive symptoms, less anxiety, and greater subjective wellbeing[4,6,7]. On top of the physiological advantage, sport engagement also leads to psychological resilience in terms of stress regulation and better self-rated health[8,9]. Due to this, the promotion of physical activity has become an essential part of the national strategies of the Chinese public health and fitness[10,11].

There are other benefits of community based sport participation other than the individual exercise that encompass the incorporation of the physical activity to the social surroundings. Research that has been conducted in public sports facilities, neighborhood recreational facilities, and community fitness programs in China indicates that community contexts strengthens continuity of participation and increases mental health outcomes via social interaction and life satisfaction channels[12-14]. Nevertheless, there is a disproportionate pattern of community sport, especially in women of reproductive age, who are prone to time limitations, caregiving demands, and gendered expectations that restrict any long-term involvement[15,16]. The latest information on how reproductive healthcare can be improved in rural China indicates that mobile health, telemedicine, and e-health services have increased access to family planning and maternal health services by women of reproductive age, which implies that the need of women to improve their health services can be better tackled through community-based and available interventions in non-clinical environments[17].

Despite the presence of strong support in the literature of the association between physical activity and mental wellbeing, there are a number of gaps. To begin with, women of reproductive age are rarely investigated as an analytical category. Second, most o research pay attention to the general physical activity, not to the community sport participation as a certain behavioural context. Third, minimal literature conceptualizes mental wellbeing as a multidimensional outcome that includes the emotional wellbeing, depression, and life satisfaction. We believe these gaps should be addressed to address the issue from a gender sensitive and specific health promotion perspectives. It is within this context that this paper quantitatively investigates the relationship between community sport participation and mental health among reproductive-aged women in China. We consider that the results will be useful as a source of evidence to inform the design of policy and practice for improving community sports for women's development.

Literature review

Mental wellbeing among women of reproductive age in China

In the Chinese research on public health, the mental wellbeing of women of reproductive age has been a growing concern. Empirical evidence has been consistently showing a higher prevalence of depressive symptom and emotional distress in women than men, and it has been reported that reproductive transitions and cumulative social responsibilities have been major causes of the same[1-3]. Longitudinal studies based on China Family Panel Studies and China Health and Nutrition Survey data also suggest that mental wellbeing of women changes in different life phases, where women are more vulnerable in the phase of pregnancy, perimenopause, and more demanding family caregiving[4,5]. These results highlight the necessity to find the protective behaviors that may be used to promote psychological health in these important life stages.

Physical wellbeing and mental health

There is a solid body of evidence that portrays a strong relationship between mental wellbeing and physical activity in China. Cross sectional and longitudinal researches indicate that increased physical activity is linked to decreased depression and anxiety and increased life satisfaction and subjective wellbeing [1, 6, 7, 18]. There are also indications of a two-way relationship where physical activity portends future enhanced mental health when compared to poor mental health whereas poor mental health decreases future levels of activity [5]. These results confirm the importance of physical activity as a prevention and promotion tool of mental health.

Psychosocial mechanisms and community sport participation

Recent research lays emphasis on the role of community settings in influencing the behavior of physical activity and mental health outcomes. The studies of community sports facilities and neighborhood recreational facilities show that mental wellbeing is positively related to community sport participation by way of augmented social interaction, social capital, and life gratification[12-14]. Sport environments in the community offer the benefits of joint participation, peer-support, and regular interaction, which could increase emotional wellbeing even higher than the impact of personal exercise itself [9,19]. The psychosocial mechanisms are especially applicable to women, who might be able to gain the social support that is entrenched in the community activities.

The barriers to gender, life course, and participation

Regardless of government policy in favor of national fitness, women of child bearing age continue to experience continuous obstacles in sport participation. According to quantitative studies, limited time, the presence of childcare obligations, the necessity to meet commitments at work, and cultural imperatives are found to be the significant barriers between women and physical activity and sport[15,16]. Evidence on pregnant and perimenopausal women also raises the issues of safety, fatigue and social norms decreasing the frequency of participation[11,15]. The barriers indicate that mental health advantages of participating in sport might be distributed unequally and dependent on exposure to supportive community contexts.

Research gaps

Despite the recent literature on a connection between physical activity and mental wellbeing in China, there are still important gaps. Little research pays special attention to women of reproductive age, and community sport attendance tends to be included in overall physical activity indicators[6,10,12]. In addition, mental wellbeing is often operationalized in single indicators as opposed to multidimensional construct. By filling these gaps by engaging in specialized quantitative research, evidence that can be directly applied to gender responsive public health policy as well as community sport interventions can be produced.

Conceptual framework

The conceptual framework is that the community sport participation directly and indirectly influences mental wellbeing among women of reproductive age in China. The rationale behind this relationship is based on empirical evidence that physical activity and sport participation are always linked with better mental health outcomes, such as fewer symptoms of depression and better subjective wellbeing[1,6,8,18].

Sport participation in the community

Community sport participation describes participation in organized or informal physical activities organized in common places within the community e.g. public parks, community fitness programs, or neighborhood sports facilities. The previous studies conducted in China show that community based sport participation is better linked to longer term physical activity and psychological gains compared with solitary exercise due to the fact that it inculcates physical activity in the supportive social settings[12-14]. Lack of structural and social support of individual exercise among women of reproductive age is a common occurrence and community sport is thus especially pertinent in this respect[15,16].

The mediating pathway of social interaction

The initial mediating pathway in the framework is social interaction that is a reflection of mechanisms based on the social capital theory. Involvement in community sports will improve socialization, peer support and belonging. Empirical evidence can demonstrate that the association between mental wellbeing and physical activity in China is mediated by higher social interaction and social capital[9,19]. In case of women of child bearing age, social support which is obtained due to participation in community sports can offset stress that develops as a result of family obligations, pressures at work and reproductive health shifts[3,11]. This is the way in which community sport can lead to mental

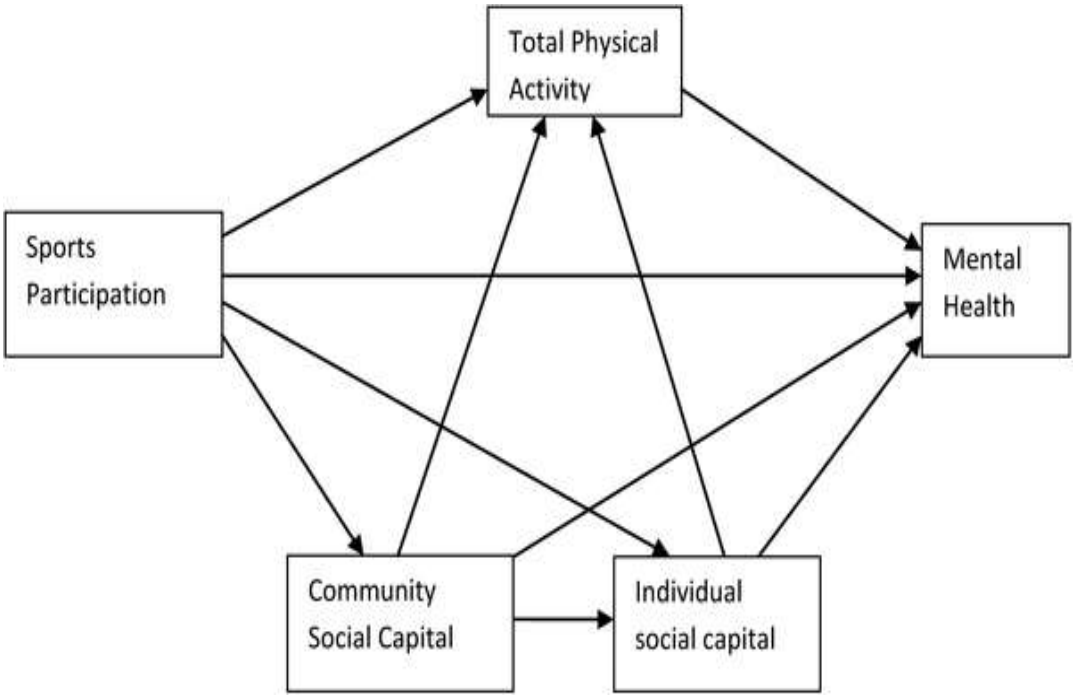

Figure 1: Conceptual framework

wellbeing in addition to the purely physiological effects.

Mediating pathway, physical activity level

Physical activity level represents the second mediated pathway as it signifies the known physiological and psychological processes of connecting physical exercise with mental health. Physical activity at regular intervals better prepares to sleep, decreases the stress hormones, and improves the emotional regulation that results in decreased depression and anxiety risks[4,5,7]. National Chinese datasets conducted quantitative studies have consistently demonstrated that an increase in the levels of physical activity is linked to a better state of mental wellbeing in adulthood[6,18]. The sport involvement in the community enhances the chances of consistent and prolonged physical exercise, thus solidifying this linkage[14, 20].

Mental wellbeing outcomes

The conceptualization of mental wellbeing is based on a multidimensional construct which includes lower levels of depressive and anxiety symptoms, high life satisfaction and improved psychological wellbeing. Past research in China insists on the role of modeling mental wellbeing by applying several indicators instead of particular mental health outcomes[1,8,9]. This methodology not only absorbs the lack of mental distress but also the presence of the positive psychological functioning especially in women of the reproductive age.

Control variables

The framework incorporates the demographic and socioeconomic variables, health variables, and contextual control variables to determine the independent effect of community sport participation. According to previous studies, age, education, income, employment status, marital status, parity, physical health, and urban or rural residence are associated with strongly positive effects on the outcome of physical activity participation and mental wellbeing[1,10,12,16]. The adjustment of these factors makes the causal inference strong in quantitative analysis.

Contribution of theory and empirical data

The framework combines physical activity and mental health theory with social capital and life

course perspectives to explain the process and reasons behind the effect of community sport participation on mental wellbeing among women of reproductive age. It helps to develop current literature by differentiating between community sport participation and general physical activity and by modeling both processes, social and physiological, at the same time. The framework offers a solid foundation of hypothesis testing on regression or structural equation modeling and offers policy implicated implications of gender sensitive community sport and mental health intervention in China.

Hypotheses, and empirical analysis

The theoretical framework of the given research gives the analytical basis of the formulation of hypotheses and structure of the empirical analysis. It states a systematic association where participation in community sport has been found to affect mental wellbeing of women of reproductive age in both direct and indirect ways. Such pathways are indicative of two fundamental processes, namely physiological gains associated with elevated physical activity and psychosocial gains linked to improved social interaction and social support in the community sport context. The hypotheses are based on the framework directly and the empirical models are developed to test the respective conceptual pathways.

The initial analyses are the direct relationship between community sport participation and mental wellbeing. This relationship aligns with the main stream in the conceptual framework of linking participation with outcomes of mental wellbeing. Hypothesis 1 is based on the hypothesis that women doing community sport have more mental wellbeing compared to women who do not do community sport. Multivariate regression models that test mental wellbeing as dependent on community sport participation are used to test this hypothesis and baseline associations are given using descriptive statistics and bivariate correlations.

The second hypothesis is an expansion of the first one, it focuses on the degree of involvement. Hypothesis 2 analyses whether the high community sport attendance is correlated with the low rates of depressive as well as anxiety symptoms. This hypothesis will operationalize the exposure dimension of the framework by differentiating between the different amount of participation. The relationship is empirically tested with the help of regression models involving the participation frequency and the duration of participation as the main explanatory variables, which further enables the determination of the effects of dose response.

Hypothesis three is based on positive aspects of mental wellbeing such as life satisfaction and psychological wellbeing. Hypothesis 3 is associated with the multidimensional conceptualization of mental wellbeing introduced into the framework and is addressed by other dependent variables. These models determine whether community sport participation can also be beneficial not only to lessened psychological distress but also to positive outcomes of wellbeing.

Hypothesis 4 analyses the strength of the direct relationship between community sport participation and mental wellbeing, which considers the confounding factors. As per the framework, the models consist of a comprehensive range of control variables that represent demographic, socioeconomic, health, and contextual variables. The fact that statistically significant associations were still present even after the adjustment is testimony to the fact that the statistically significant relationships are not merely due to some underlying differences in individuals or the environment.

The last hypothesis looks into the mediating mechanisms in the framework. Hypothesis 5 aims at testing the idea, whether the relationship between community sport participation and mental wellbeing is partially mediated by social interaction and perceived social support. This hypothesis is an expression of the psychosocial pathway, which is defined in the conceptual model. The estimation of the indirect effects will be based on mediation analysis or structural equation modeling, which will enable direct comparison of the relative contribution of the social and physical activity pathways.

Methods

The study was a quantitative designed to investigate the connection between community sport participation and mental wellbeing of women of reproductive age in China. Data for this study were obtained from nationally representative survey datasets in China, specifically the China Family Panel Studies (CFPS) and the China Health and Nutrition Survey (CHNS)[12]. These surveys collect comprehensive information on physical activity

behaviour, community participation, mental health outcomes, and individual demographic and socioeconomic characteristics. The study population included women of reproductive age, defined as those aged 15–49 years.

Respondents outside this age range and those with missing data on key variables were excluded to ensure analytical consistency and validity The main independent variable was the sporting participation of women in the community. It was operationalized through self-reported measures of sport or physical activity participation. The measurement of participation included frequency and duration which made it possible to distinguish between non-participation, occasional participation, and regular participation. The dependent variable was mental wellbeing, which was measured as a multidimensional construct. It was quantified through validated indicators of depressive symptoms, anxiety, and subjective wellbeing of life satisfaction. The increase in scores is an indicator of improved mental wellbeing. Higher composite scores indicate better mental wellbeing across multiple dimensions, including lower depressive and anxiety symptoms and higher life satisfaction.

Study instruments and measures

Community sport participation was measured using self-reported survey items capturing participation in organised or informal physical activities conducted within community settings, such as public parks, neighbourhood sports facilities, and community fitness programmes. Respondents reported both the frequency and duration of participation, allowing classification into non-participation, occasional participation, and regular participation. Mental wellbeing was operationalised as a multidimensional construct comprising depressive symptoms, anxiety symptoms, and life satisfaction. These dimensions were measured using validated survey items commonly employed in large-scale Chinese population studies. Responses were recorded on Likert-type scales, and items were standardised and combined to form a composite mental wellbeing score, where higher values indicate better overall mental wellbeing.

Physical activity level was assessed based on self-reported frequency and intensity of physical movement, reflecting the physiological activity pathway linking sport participation to mental health outcomes. Social interaction was measured using survey questions assessing the frequency of social engagement and perceived connectedness with others in the community, capturing the psychosocial mechanism proposed in the conceptual framework**.**

Social interaction was measured using survey questions assessing the frequency of social engagement and perceived connectedness with others in the community, capturing the psychosocial mechanism proposed in the conceptual framework. The use of validated survey instruments and standardised scoring procedures enhances the internal validity of the study. The multidimensional measurement of mental wellbeing allows for a more comprehensive assessment of psychological outcomes beyond single-indicator measures, thereby improving the robustness and replicability of the analysis.

The independent variable, community sport participation, was operationalised using self-reported survey data on engagement in organised or informal sport and physical activities conducted within community settings. Participation was coded as a binary variable, where respondents reporting any community sport participation were assigned a value of 1 and those reporting no participation were assigned a value of 0. In additional analyses, participation intensity was measured using a categorical variable distinguishing between no participation, participation one to two times per week, and participation three or more times per week. This approach allowed examination of both the presence and frequency of community sport engagement.

Mental wellbeing, the primary outcome variable, was measured as a multidimensional composite construct incorporating depressive symptoms, anxiety symptoms, and life satisfaction. Items assessing depressive and anxiety symptoms were reverse-coded where necessary so that higher scores consistently reflected better mental wellbeing. Standardised scores across these dimensions were aggregated to create an overall mental wellbeing index, with higher values indicating improved psychological wellbeing. Physical activity level and social interaction were included as mediating variables, measured through self-reported frequency and intensity of physical movement and frequency of social engagement and perceived connectedness, respectively. Control variables, including age, education, household

income, self-rated physical health, and urban or rural residence, were coded using standard conventions to ensure consistency and comparability across analyses.

Mental wellbeing was operationalised as a multidimensional composite index comprising three domains: depressive symptoms, anxiety symptoms, and life satisfaction. Depressive and anxiety symptoms were measured using validated survey items commonly employed in CFPS and CHNS, with responses recorded on Likert-type scales. Items reflecting depressive and anxiety symptoms were reverse-coded so that higher values consistently indicated better mental health. Life satisfaction was measured using a self-reported satisfaction scale, where higher scores reflected greater subjective wellbeing.

To ensure comparability across dimensions, all items were standardised using z-score transformation. The standardised scores for depressive symptoms, anxiety symptoms, and life satisfaction were then aggregated by computing their arithmetic mean to create an overall mental wellbeing index. Higher composite scores therefore indicate better mental wellbeing, characterised by lower psychological distress and higher life satisfaction. This approach follows established practices in multidimensional mental health measurement in large-scale population studies.

Data analysis

Data analysis was conducted in a sequential and structured manner. First, descriptive statistics were computed to summarise the characteristics of the study sample and the distribution of key variables. Bivariate analyses were then performed to examine preliminary associations between community sport participation and mental wellbeing outcomes. Subsequently, multivariate regression models were estimated to assess the independent association between community sport participation and mental wellbeing while progressively adjusting for demographic, socioeconomic, health, and contextual control variables. This stepwise modelling approach allowed assessment of the robustness of the observed relationships and reduced the influence of potential confounding factors.

To examine the proposed mediating mechanisms, additional models incorporating physical activity level and social interaction were estimated, and mediation analysis was conducted to assess indirect effects. Statistical significance was evaluated using conventional thresholds, and confidence intervals were calculated to assess the precision of estimates. All analyses were conducted using Stata version 17, and robust standard errors were applied to account for potential heteroskedasticity. This analytical strategy ensured clarity, transparency, and reproducibility of the statistical procedures used in the study.

Ethical considerations

This study utilized anonymized, nationally representative secondary survey data, which poses minimal ethical risk to participants. Ethical approval for the use of these data was obtained from the Institutional Review Board of Qufu Normal University (Approval Code: QNU-IRB-2025-027; Date of Approval: 12 Feb 2025). The original surveys from which the data were derived had obtained informed consent from all participants, ensured confidentiality, and complied with national data protection regulations. No personally identifiable information was accessed or used in this analysis. The research adhered to the principles of the Declaration of Helsinki and relevant Chinese ethical guidelines for secondary data analysis in public health research. All data were handled securely, and findings are reported in aggregate form to prevent any potential identification of individuals.

Results

Descriptive statistics and correlations

Table 1 presents the descriptive statistics and bivariate correlations for all key variables included in the analysis. Approximately 46 percent of women of reproductive age reported participating in community sport at least once per week. Mental wellbeing scores varied substantially across the sample, with lower average wellbeing observed among women reporting no community sport participation. Community sport participation was positively correlated with overall mental wellbeing and life satisfaction, and negatively correlated with depressive and anxiety symptoms. Social interaction and physical activity level were also positively associated with mental wellbeing, suggesting potential mediating roles consistent with the conceptual framework. Table 2

Table 2: Descriptive statistics and correlations

Variable	Mean	SD	1	2	3	4	5
1. Mental Wellbeing	3.42	0.71	1				
2. Depressive Symptoms	1.98	0.83	−0.62	1			
3. Community Sport Participation	0.46	0.50	0.29	−0.25	1		
4. Physical Activity Level	3.11	0.94	0.33	−0.28	0.41	1	
5. Social Interaction	3.27	0.88	0.36	−0.31	0.38	0.42	1

Table 3: Multivariate regression results for mental wellbeing (with 95% Confidence Intervals)

Variables	Model 1 Coef. (95% CI)	Model 2 Coef. (95% CI)	Model 3 Coef. (95% CI)
CommunitySport Participation	0.312*** (0.276–0.348)	0.281*** (0.245–0.317)	0.254*** (0.216–0.292)
Age	—	−0.041* (−0.078 to −0.004)	−0.036* (−0.069 to −0.003)
Education	—	0.118** (0.062–0.174)	0.104** (0.048–0.160)
Income	—	0.134*** (0.086–0.182)	0.121*** (0.074–0.168)
Physical Health	—	—	0.189*** (0.142–0.236)
Urban Residence	—	—	0.072* (0.014–0.130)
Observations	3,842	3,842	3,842
R^2	0.09	0.18	0.24

*p<0.05,**p<0.01,***p<0.001
Confidence intervals in parentheses.

Direct effects of community sport participation on mental wellbeing

Table 3 reports multivariate regression results examining the direct relationship between community sport participation and mental wellbeing. Model 1 includes only community sport participation. Model 2 adds demographic and socioeconomic controls, while Model 3 further adjusts for health and contextual variables.

Community sport participation shows a positive and statistically significant association with mental wellbeing across all models. The coefficient remains robust after inclusion of all controls, indicating that women who participate in community sport report higher mental wellbeing compared to non participants. These findings provide strong support for H1 and H4.

Multivariate regression results presented in Table 3 indicate a robust positive association between community sport participation and mental wellbeing across all model specifications. In the fully adjusted model (Model 3), community sport participation is associated with a 0.254-point increase in mental wellbeing scores (95% CI: 0.216–0.292), even after controlling for demographic, socioeconomic, health, and contextual variables. The narrow confidence intervals across models indicate high precision and robustness of the estimated effects.

Participation frequency and psychological distress

To test H2, Table 4 presents the relationship between frequency of community sport participation and depressive and anxiety symptoms. Higher frequency of participation is significantly associated with lower levels of psychological distress. Women engaging in community sport three or more times per week report the lowest levels of depressive symptoms, indicating a dose response relationship.

Table 4 shows the association between participation frequency and psychological distress. The results reveal a dose response relationship, with higher frequency of community sport participation associated with progressively lower levels of depressive symptoms. This pattern mirrors previous quantitative research demonstrating that greater intensity or regularity of physical activity is associated with stronger mental health benefits[6,7,18]. Such findings support Hypothesis 2 and reinforce the importance of sustained engagement in community sport rather than sporadic participation.

Table 4: Participation frequency and depressive symptoms

Participation Frequency	Depression Coefficient
No Participation	Reference
1–2 times per week	−0.184**
≥3 times per week	−0.327***

Table 5: Community sport participation and positive wellbeing

Dependent Variable	Coefficient
Life Satisfaction	0.291***
Psychological Wellbeing	0.268***

Table 6: Mediation effects

Mediator	Indirect Effect	% of Total Effect
Physical Activity Level	0.073**	29%
Social Interaction	0.089**	35%
Direct Effect	0.092***	36%

Table 7: Robustness checks

Model Specification	Participation Coefficient
Alternative Wellbeing Scale	0.241***
Excluding Chronic Illness	0.229***

Community sport participation and positive wellbeing outcomes

Table 5 focuses on positive dimensions of mental wellbeing, specifically life satisfaction and psychological wellbeing. Community sport participation is positively associated with both outcomes after controlling for covariates. These findings support H3 and reinforce the multidimensional conceptualization of mental wellbeing.

Table 5 focuses on positive dimensions of mental wellbeing, including life satisfaction and psychological wellbeing. Community sport participation shows significant positive associations with both outcomes, supporting Hypothesis 3. These results are in line with studies emphasizing that physical activity and sport contribute not only to reduced mental illness but also to enhanced subjective wellbeing and quality of life[8,9,21]. The findings highlight the value of modeling mental wellbeing as a multidimensional construct rather than relying solely on indicators of psychological distress.

Mediation analysis

To examine H5, mediation analysis is conducted to assess whether physical activity level and social interaction mediate the relationship between community sport participation and mental wellbeing. Table 6 reports the indirect effects. Both mediators are statistically significant, with social interaction accounting for a slightly larger proportion of the total effect than physical activity level. However, the direct effect of community sport participation remains significant, indicating partial mediation.

Mediation analysis presented in Table 6 provides evidence for the mechanisms proposed in the conceptual framework. Both physical activity level and social interaction significantly mediate the relationship between community sport participation and mental wellbeing, confirming Hypothesis 5. The relatively stronger mediating role of social interaction is consistent with social capital based explanations advanced in recent Chinese studies, which show that social support, social participation, and community engagement play critical roles in translating physical activity into mental wellbeing gains[9,12,19]. At the same time, the significance of the physical activity pathway aligns with established physiological explanations linking exercise to stress reduction and emotional regulation[4,5,7].

Robustness and sensitivity checks

Table 7 presents robustness checks using alternative specifications of mental wellbeing and excluding respondents with chronic illness. The results remain consistent in direction and significance, strengthening confidence in the findings. robustness checks reported in Table 7 demonstrate that the positive association between community sport participation and mental wellbeing remains stable across alternative model specifications and sample restrictions. This consistency echoes findings from prior studies using different datasets and mental health measures, strengthening confidence in the generalizability of the results[1,14,18].

Discussion

This study provides robust quantitative evidence that community sport participation is positively

associated with the mental wellbeing of women of reproductive age in China. The findings demonstrate that women who engage in community-based sport activities report significantly lower levels of depressive and anxiety symptoms and higher levels of life satisfaction, even after controlling for demographic, socioeconomic, health, and contextual factors. These results are consistent with a growing body of Chinese empirical literature showing that physical activity plays a protective role in mental health by reducing psychological distress and enhancing subjective wellbeing[1,6,7]. However, the present study extends prior research by distinguishing community sport participation from general physical activity, thereby highlighting the added value of socially embedded forms of exercise.

The observed dose–response relationship between participation frequency and psychological distress further reinforces theoretical models linking sustained physical activity to improved mental health outcomes. Previous studies using CFPS and other national datasets have shown that higher intensity or regularity of physical activity is associated with lower risks of depression and anxiety[1,7,18]. The present findings confirm that this pattern holds specifically for women of reproductive age and suggest that consistent engagement in community sport settings yields stronger mental health benefits than sporadic participation. This aligns with physical activity and mental health theories that emphasise the cumulative physiological effects of regular exercise, including improved emotional regulation, reduced stress hormone levels, and better sleep quality[4,5,7].

Beyond reductions in psychological distress, this study also demonstrates a significant positive association between community sport participation and positive dimensions of mental wellbeing, including life satisfaction and psychological wellbeing. This finding supports recent calls in population health research to move beyond deficit-based models of mental health that focus solely on illness and instead adopt multidimensional frameworks incorporating positive functioning and quality of life[8,9]. Prior Chinese studies have similarly reported that physical activity contributes to subjective wellbeing and life satisfaction among adults[9,12], and the present study confirms that these benefits are evident among women during the reproductive life stage, a period often characterised by heightened social and emotional demands.

One of the key contributions of this study lies in its examination of mediating mechanisms. The mediation analysis indicates that both physical activity level and social interaction partially mediate the relationship between community sport participation and mental wellbeing, with social interaction accounting for a slightly larger proportion of the total effect. This finding strongly supports social capital theory, which posits that social networks, trust, and perceived support enhance psychological resilience and wellbeing[9,12,13]. Community sport settings provide structured opportunities for social engagement, peer support, and a sense of belonging, which may be particularly beneficial for women of reproductive age who often experience social isolation due to caregiving responsibilities and work–family pressures[3,11,15].

While prior research has identified social interaction as a mediator between physical activity and mental wellbeing, much of this work has focused on older adults or mixed-gender populations[12-14]. By focusing specifically on women of reproductive age, the present study contributes novel life-course–specific insights, demonstrating that psychosocial mechanisms play a critical role in translating sport participation into mental health benefits during this stage of life. At the same time, the continued significance of the direct effect of community sport participation suggests that both physiological and psychosocial pathways operate simultaneously, reinforcing the conceptual framework underpinning this study.

From a policy perspective, the findings carry important implications for both national and global health agendas. The positive association between community sport participation and mental wellbeing aligns with Sustainable Development Goal 3, which emphasises mental health promotion and preventive health strategies. At the national level, the results provide empirical support for the Healthy China 2030 initiative, which prioritises physical activity, community fitness infrastructure, and mental health across the life course. The evidence suggests that investments in community sport facilities and gender-sensitive participation programmes can yield measurable mental health benefits for women, thereby contributing to broader family wellbeing and social sustainability.

Furthermore, the findings complement emerging policy-oriented research demonstrating that preventive, community-based interventions—such as digital health tools, telemedicine, and non-clinical health promotion strategies—can improve health outcomes when embedded within supportive policy frameworks[22]. Community sport participation represents a low-cost, scalable, and non-pharmacological intervention that can be integrated into existing public health and women's health strategies. Policies that reduce participation barriers, such as childcare support, flexible work arrangements, and safe community facilities, may further enhance the effectiveness and inclusivity of such interventions.

Overall, this study advances the literature by empirically demonstrating that community sport participation enhances the mental wellbeing of women of reproductive age through both physical and social mechanisms. By situating these findings within established theory and contemporary policy frameworks, the study underscores the importance of community sport as a strategic tool for mental health promotion and gender-responsive public health planning in China.

Strengths and limitations

This research has a number of strengths. It targets women with reproductive age, which has been generally ignored in quantitative studies of physical activity and mental health in China. The study elicits the physical and social aspects of participation in sports by identifying the difference between community sports participation and general exercise. The mediation analysis and multidimensional measures of mental wellbeing also increase the analytical depth and theoretical significance of the results. There are a number of restrictions that should be mentioned. The cross sectional design makes it too late to interpret causally and reverse causality can never be discounted. The self reported measures could create a reporting-bias, and other factors that cannot be observed yet could still be influencing the outcomes. Also, the study fails to consider variations in the nature/type or quality of community sport activities. Longitudinal data and objective measure research in the future would resolve these shortcomings.

Conclusion

This research has presented quantitative results that support the fact that community sport participation has positive correlations with mental wellbeing of women of reproductive age in China. The results indicate that women who participate in community sport indicate reduced depressive and anxiety symptoms and increased life satisfaction and psychological wellbeing, even after the adjustment of socioeconomic, health and contextual factors. These findings indicate that community based physical activity is an effective element of mental health of women, at a life phase that has several social and biological requirements.

The mediation analysis also demonstrates that the mental wellbeing benefits of community sport participation mechanism follows both physical and social routes. The associations have been explained by increased levels of physical activity and improvement in social interaction and importance of community sport as a provider of both exercise and social support is dual. This combination of mechanisms makes the community sport participation different as compared to isolated physical activity and highlights its applicability to women who might have time limitations or feel isolated by society.

Policy-wise, the results can be used to justify global and national health policy activities, such as the Sustainable Development Goal 3 and the Healthy China 2030 plan, which favors preventive and community-based mental illness promotion. Increasing the sporting opportunities of gender responsive community programs may thus be a cost effective solution in enhancing mental health and promoting the health of women in China.

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