

Research Article

A study on the factors of barriers to female university students' sports participation from an environmental perspective

Ni Rongjing¹ , Yu Ying^{2*} ^{1,2} Liaoning Normal University School of Physical Education, China

Corresponding author, email: yuying640109@163.com

ABSTRACT

Objective: To understand the barriers to sports participation of Chinese female university students and to increase their motivation to participate in sports. **Methods:** A survey of 1892 female undergraduates aged 18 to 22 who were enrolled in the university was conducted mainly by questionnaire method, and t-test and reliability analysis were conducted using SPSS, and validated factor analysis was conducted using Amos software. **Results:** Venue environment, natural environment and sports atmosphere are common strong perception factors, while interpersonal environment, social sports environment and policy environment are common weak perception factors. All indicators in the dimension of site environment and natural environment are common strong perception factors. The interpersonal environment dimension, in which people around us do not like sports, the sports environment, in which participation in the environment lacks a sense of belonging, and the policy environment, in which there are fewer sports activities for women in the neighborhood and the lack of sports facilities for women in the surrounding sports venues, are all common strong perception factors for both groups of female college students. **Conclusion:** Sports participation of female college students from an environmental perspective is influenced by multiple factors, and a complete support system should be built from various aspects such as family, school, and community.

ARTICLE HISTORY

Received 27 July 2023

Accepted 16 October 2023

KEYWORDS

Environment; female university students; sports participation; barrier factors; exercise habits.

Introduction

The World Health Organization has emphasized through the Global Action Plan on Physical Activity 2018-2030 that individual countries should focus on the physical participation of girls, women, the elderly, and rural and disadvantaged or marginalized populations to increase their opportunities for physical activity. As an important group of people who inherit and promote the spirituality of women's groups, it is especially important to promote this group's overall physical and mental development. However, surveys have shown that the level of physical activity among female college students in China is lower than that of male college students (Ji et al., 2022; Park, 2022; Dong, 2016), and female college students in other countries have also reflected similar problems (Fagaras et al., 2015). Based on this, to solve the problem of the low participation rate of female college students in sports, exploring the influencing factors of female college students' participation in sports is a proper way to promote the motivation of female college students' participation in sports and help them to develop a healthy lifestyle.

A large number of studies have been conducted to show that environmental factors are one of the most important factors influencing sport behavior. The social-ecological theory also endorses the role of environmental factors in influencing people's behavior, arguing that it is not only internal factors that affect individuals but also related to layers of external factors in the survival environment (Han, 2016). Therefore, the study of sports participation also needs to focus on the changes in human behavior in the natural and social environment (Hillsdon et al., 2002). In general, the environment includes social,

natural, family, and work environments, which influence people's thoughts, feelings, and behaviors from different perspectives, domains, and scopes, respectively (Liang, 1994). For example, the physical environment is one factor that directly affects people's willingness to participate in sports, and physical exercise is subject to spatial and temporal environments, whose spatial accessibility is positively proportional to people's enthusiasm to participate in physical exercise (Jiang, 2019). In addition, family environment, school environment, community environment, exercise atmosphere, and peer supervision all impact college students' physical activity behavior (Dong et al., 2022). Therefore, the external environment plays an important role in influencing female college students' sports participation, and exploring the barriers to female college students' sports participation also needs to start from an environmental perspective.

The current studies on the factors of barriers to sports participation are more abundant than those conducted through social-ecological theories, and studies from the environmental perspective alone are relatively scarce. For example, in a study of factors influencing young students' participation in physical activity, it was found that school factors had the greatest influence on young students' participation in physical activity, followed by family factors, community factors, and personal factors (Zhang et al., 2023). Some studies discuss women's sports participation at different ages in terms of four dimensions: personal factors, interpersonal relationships, social environment, and policy factors (Li, 2022). But environmental factors include more than just the physical environment; human factors, policy factors, cultural factors, etc. all form an important part of the environment. Research has shown that interpersonal, policy support and other socialization factors play a key role in promoting girls' participation in sports and physical education (Zhi et al., 2023; Pan, 2019; Abadi, 2020).

Therefore, this study makes up for the previous single perspective of the physical environment and includes the social environment, humanistic environment, and policy environment to study female college students' sports participation from a more complete environmental perspective. Based on the theory of social ecology, it analyzes the obstacles to female college students' sports participation from the perspective of the environment and provides a theoretical reference for improving the enthusiasm for female college students' sports participation.

Method

Research Design

The study was conducted mainly by questionnaire method. A questionnaire survey was conducted among 1,892 female university students aged 18 to 22 years old to find out information about their sports participation. T-test and reliability analysis were conducted by using SPSS, and validity factor analysis and validity test were conducted by using Amos. To have a clearer understanding of the difference between the barriers to sports participation of different female college students, and to provide data support for the proposed solution strategies.

Questionnaire Design and Distribution

The main method used in this study was the questionnaire survey. The Canadian Association for the Advancement of Women in Sport has developed a Social Ecological Model of the Influence of Women's and Girls' Sport Participation. The model includes four main aspects: personal, interpersonal, environmental, and policy. After localization by Prof. Li Min, the barriers included in the model were designed as specific questions and the Barriers to Women's Sports Participation Scale was developed. The scale was subdivided into 14 factors such as personal objective factors, social sports climate, support from the surrounding people, and involvement of the surrounding people (Li et al., 2021). The scale is based on a 5-point Likert scale, with scores from 1 to 5 representing not at all influential, not very influential, average, moderately influential, and very influential. The higher the score, the stronger the

influence of the factor on female students. The higher the score, the stronger the influence of the factor. A question asking whether or not they had physical activity habits was added before the scale to divide the surveyed female university students into those who had exercise habits and those who had no exercise habits. In this study, considering the differences of each region, female university students from seven regions, namely, Central China, North China, East China, South China, Northwest China, Northeast China, and Southwest China, were selected and the questionnaires were distributed by the online platform "Questionnaire Star". 2005 questionnaires were collected, excluding invalid questionnaires, and 1892 questionnaires were valid (94.36%). The total number of questionnaires collected was in 2005, excluding invalid questionnaires, the final number of valid questionnaires was 1892 (94.36%), among which 1260 female university students had the habit of exercising and 632 did not have the habit of exercising. According to the concept of environment, the author filtered out the dimensions involving environmental issues, including interpersonal environment, social sports environment, venue environment, natural environment, sports atmosphere environment, and policy environment for the next step of the analysis.

Test of Confidence Validity

In this study, the validation factor analysis was conducted again with the six latent variables of interpersonal environment, social sports environment, venue environment, natural environment, sports atmosphere environment, and policy environment and a total of 34 observed variables under each dimension, with all factor loadings greater than 0.4. The final validation results showed that RMSEA of 0.053, close to 0.05, which is a good fit. GLI, CFI, and TLI are 0.897, 0.918, and 0.910 respectively, all greater than 0.8 and close to 0.9, which is a good fit; χ^2/df is 6.345, due to the large sample size and the good fit of other values, so at this time the combined other fit indicators are judged to be acceptable (Wu, 2020); after the consistency test, except for the two dimensions of the natural environment and sports atmosphere environment, the number of questions is small, and the consistency is 0.4. After the consistency test, except for the two dimensions of the natural environment and sports environment, which had fewer questions, the consistency was 0.793 and 0.685 respectively, and the alpha coefficients of the other dimensions were greater than 0.8, indicating good reliability. In conclusion, the model is well-adapted and the questionnaire has good structural validity.

Results and Discussion

Result

T-test of Factors that are Barriers to Female University Students' Sports Participation

The mean of each dimension can reflect the overall situation of that dimension, so the overall situation was first observed by calculating the mean of each dimension and subjecting the data of the two groups of female university students to a t-test. As can be seen from Table 1, female students with exercise habits and those without exercise habits had different levels of perceptions of environmental barriers, and there were significant differences between the two groups in the three dimensions of interpersonal environment, social and sporting environment, and venue environment ($p < 0.05$). Female university students with exercise habits had stronger perceptions of the interpersonal environment, social sports environment, venue environment, and policy environment than female university students without exercise habits due to their relatively rich experience in sports participation. Although the two groups of female university students showed significant differences in specific values, it was not difficult to identify common issues. The three factors that female university students in both groups perceived more strongly were the natural environment, the venue environment, and the sports environment, which also reflects the obvious problems in the construction of the sports environment in China.

Table 1. Comparison of barriers to sports participation among female college students with or without exercise habits

| Barrier factors | Exercise habit group | No exercise habit group | t | P |
|-------------------------------------|----------------------|-------------------------|--------|-------|
| | M±SD | | | |
| Interpersonal environment | 2.724±0.818 | 2.644±0.715 | 2.190 | 0.029 |
| The social and sporting environment | 2.562±0.869 | 2.473±0.769 | 2.277 | 0.023 |
| Site environment | 3.663±0.809 | 3.492±0.860 | 4.241 | 0.000 |
| Natural environment | 3.993±0.800 | 4.057±0.801 | -1.630 | 0.103 |
| Sporting ambiance | 3.105±0.924 | 3.115±0.913 | -0.222 | 0.824 |
| Policy environment | 2.971±0.893 | 2.947±0.857 | 0.566 | 0.571 |

Descriptive Analysis of Barriers to Female Students' Sports Participation

To further understand the factors influencing female university students' sports participation, the question items under each dimension were subjected to descriptive statistics, the results of which are shown in Table 2. It was found that two groups of female students felt stronger influencing factors at the same time under all dimensions except under the social sports environment dimension. Among them, the Venue Environment and Natural Environment dimensions are consistent with the above-mentioned study, with each question item under the dimension strongly influencing female university students, once again verifying the importance of Venue Environment and Natural Environment on female university students' sports participation. Among the dimensions other than site environment and natural environment, the strong perceived problems of female university students with exercise habits include the interpersonal environment dimension of no one around them being physically active (3.106±1.131), the sporting environment dimension of lack of belonging in the environment of participation (3.245±1.065), and the policy environment dimension of having fewer sporting activities specifically for women in their neighborhood (3.133±1.093), no available or affordable services to participate in sports (3.037±1.128), lack of sports facilities for women around their place of residence (3.037±1.104), and not knowing where to propose or complain about sports services (3.027±1.109), the strong perceived problems of female university students without exercise habits included the interpersonal environment dimension (3.443±1.027) and family members' lack of interest in sport (3.090±1.093), lack of belonging in the environment of participation (3.248±1.023), fewer sports activities for women in their neighborhood (3.131±1.061) and lack of sports facilities around their place of residence (3.090±1.093). The lack of sports facilities for women (3.033±1.093).

Table 2. Analysis of factors that impede female university students' sports participation in the group with/without exercise habits

| Barrier factors | Title item | Exercise habit group | No exercise habit group |
|---------------------------|--|----------------------|-------------------------|
| | | M±SD | |
| Interpersonal environment | Q1 Disharmony with those around you | 2.463±1.129 | 2.158±0.987 |
| | Q2 What do people around you say about female participation in sport | 2.545±1.136 | 2.347±1.011 |
| | Q3 No one around you likes to exercise | 3.106±1.131 | 3.443±1.027 |
| | Q4 Family members are not interested in sports | 2.817±1.145 | 3.090±1.093 |

| Barrier factors | Title item | Exercise habit group | No exercise habit group |
|-----------------------------------|--|----------------------|-------------------------|
| | | M±SD | |
| | Q5 People around you do not support your participation in sports | 2.507±1.192 | 2.158±1.055 |
| | Q6 Reluctance to create competition with friends in sports | 2.701±1.112 | 2.468±1.069 |
| | Q7 Gender of sports coaches | 2.740±1.107 | 2.633±1.120 |
| | Q8 No role models around to inspire and motivate the women's movement | 2.708±1.146 | 2.802±1.108 |
| | Q9 Family members may be concerned that it is not safe for women to go out and play sports | 2.928±1.172 | 2.695±1.130 |
| Social sports climate environment | Q10 Society's misconceptions about female athletes | 2.715±1.135 | 2.486±1.068 |
| | Q11 Thinks female coaches are not as professional as male coaches | 2.525±1.132 | 2.275±1.070 |
| | Q12 Think it's normal for women to be physically inactive | 2.532±1.152 | 2.479±1.084 |
| | Q13 Exercise does nothing for you | 2.481±1.174 | 2.630±1.123 |
| | Q14 Think too much exercise will cause damage to my body | 2.893±1.120 | 2.772±1.075 |
| | Q15 Exercise is not a major topic of concern for women | 2.423±1.086 | 2.430±1.048 |
| | Q16 Few voices in society speak up for women's sport | 2.609±1.139 | 2.541±1.078 |
| | Q17 Women who love sports are more likely to be perceived as gay | 2.043±1.117 | 1.856±0.955 |
| | Q18 The importance of women's role in the family far exceeds that of men | 2.836±1.197 | 2.783±1.155 |
| Site environment | Q19 Safety hazards in sports facilities | 3.390±1.101 | 3.097±1.095 |
| | Q20 Sports facilities are too dilapidated and in poor sanitary conditions | 3.642±1.077 | 3.391±1.136 |
| | Q21 sports ground is too remote and too far from home | 3.777±1.069 | 3.579±1.127 |
| | Q22 Too many people at the Games venue | 3.744±0.947 | 3.701±1.020 |
| Natural environment | Q23 Inadequate access to sports venues | 3.763±0.969 | 3.695±1.024 |
| | Q24 Bad weather | 3.950±0.974 | 3.877±1.006 |
| | Q25 Too much sun and high temperatures in summer | 4.120±0.927 | 4.222±0.928 |
| Sporting environment | Q26 Too cold in winter | 3.910±0.945 | 4.073±0.922 |
| | Q27 Sports activities are mostly organized and staffed by men | 2.964±1.057 | 2.981±1.062 |
| | Q28 Lack of sense of belonging in the participatory environment | 3.245±1.065 | 3.248±1.023 |

| Barrier factors | Title item | Exercise habit group | No exercise habit group |
|--------------------|--|----------------------|-------------------------|
| | | M±SD | |
| Policy environment | Q29 Haven't heard of policies to promote female sports participation | 2.737±1.145 | 2.739±1.100 |
| | Q30 is located in a neighborhood with fewer sports activities specifically for women | 3.133±1.093 | 3.131±1.061 |
| | Q31 Local sports clubs do not provide exercise opportunities for women | 2.994±1.103 | 2.938±1.052 |
| | Q32 No services available or affordable when participating in the campaign | 3.037±1.128 | 2.986±1.043 |
| | Q33 Haven't heard of women's sports teams and clubs | 2.831±1.142 | 2.853±1.124 |
| | Q34 Lack of sports facilities for women around the residence | 3.037±1.104 | 3.033±1.093 |
| | Q35 Don't know where to propose or complain about sports services | 3.027±1.109 | 2.946±1.098 |

Discussion

The Interpersonal Environment

There is a positive and significant influence of interpersonal support on physical activity engagement (Dong, 2020), which includes school interpersonal support (Wang et al., 2021), family support (Pan et al., 2022), and peer support (Dong et al., 2018). In addition to the perception of support, the social capital formed by interpersonal relationships has an important influence on the motivation of the general public to participate in physical activity (Hu et al., 2020), meaning that the behavioral characteristics of those around them affect people's willingness to participate in sport, which is also reflected in this study. The perceptions of the people around them about the sport influence female university students' sports participation, regardless of whether they have a sporting habit or not. Human beings are social animals, adept at exploring themselves in group life. The interpersonal environment intervenes in the way people behave, whether they are under real or perceived group pressure to change their behavior and beliefs, or whether they are motivated and inspired by the atmosphere of the group. The interpersonal relationships that female students are exposed to are mainly at school and home, and the role of the small community within the school cannot be ignored in the context of the normalization of epidemic prevention and control. When no one around them is physically active, female students who are habitual exercisers are less likely to participate in sports, while those who are not habitual exercisers are more likely to give up the sport. Family support is also an important factor in increasing an individual's commitment to physical activity, and female students who do not exercise are more likely to be influenced by their families. The family sporting environment influences the way people live their sporting lifestyle from early childhood (Lv et al., 2020) and this influence continues to be present in the individual's development. This shows that building a good interpersonal environment is the only way to cultivate female students' willingness to participate in sports and increase their motivation to participate in sports.

Social and Sporting Climate Environment

Although there are no perceived barriers for female students under the social and physical environment dimension, the data reflects the problem's reality. Among female university students who

exercise, the three factors that ranked as the top three barriers were that family members would worry that it was unsafe for women to exercise outside, that too much exercise would cause damage to their bodies, and that the importance of the family role that women take on is much greater than that of men. Safety in sports is the most important prerequisite for sports participation. Not only does it include sports safety incidents during sport, but the double disadvantage of women in terms of strength, physical fitness, and other biology and sociology in the context of residual patriarchy makes women highly vulnerable to illegal aggression even in the public arena. The issue of normative guidance and social safety governance in sports deserves attention. In addition to this, from a feminist perspective, sports itself is a public patriarchal system designed to maintain male privilege by keeping women contained within a family-centered social circle. Therefore, the perception is that women tend to have greater family responsibilities and time commitments than men, which leads to the crowding out of leisure time. Unlocking female university students' sports participation first requires further emancipation in the ideological sphere. Among female university students who are not in the habit of exercising, role models who inspire and motivate women to exercise are one of the most important factors influencing their sports participation. Such role models have a wide scope; for example, from primary school onwards, girls look up to female teachers as role models and develop good behavior (Li, 2016), and female teachers can bring a sense of security and the power of role models to female students on campus (Haugen et al., 2014). It is thus clear that promoting female students' participation in sports is an integrated, systematic, and structured process.

Site Environment and Natural Environment

Despite the increasing investment in public sports facilities in various regions of China, there is still a gap compared with the increasing sports demand of the public society, which cannot meet the growing physical fitness needs of the people (Shi, 2022). The lack of venue facilities is the most intuitive obstacle affecting university students' sports participation (Samara et al., 2015). Whether it is the safety hazards of sports facilities or the poor sanitary conditions of sports grounds, these reflect the lack of perfection in the reserve of sports hardware facilities and sports grounds management systems in China. In particular, special sports equipment and venues suitable for women's body types are in short supply, and women still have more difficulties in accessing sports material resources than men, for example, fitness equipment is mostly designed according to the body type of adult men, which is not fully applicable to women. The lack of sporting venues is reflected in the distance, crowd density, and traffic, as well as the natural environment. Excessively cold and hot weather interferes with the normal way of life, not only affecting people's travel plans but also greatly interfering with outdoor sports. This reflects, on the one hand, the fact that female students are not firmly aware of exercise and are easily disturbed by uncontrollable factors, and on the other hand, the lack of indoor sports venues. Especially in the context of the normalization of the new epidemic, the need for exercise as a means of releasing stress and venting emotion has become a necessity in the face of irregular home patterns. Studies have shown that women experience increased stress and higher levels of psychological depression than men during the epidemic (Li, 2021), and the need for physical exercise to regulate their emotions and relieve stress has increased. Therefore, increasing investment in the construction of high-quality sports venues and paying attention to the supply of material resources for women's sports is an important part of promoting female students' sports participation.

Sporting Atmosphere Environment

The two groups of girls showed similar levels of perception in the sporting environment, although only the lack of belonging was a strong factor in the participation environment, the fact that the staff organizing the sporting activities were mostly male was no less significant, showing that the sporting

environment also plays a significant role in female students' participation in sport. A sense of belonging is the psychological expression of a particular group and its affiliation. In the first place, the history of the female community has determined the intrinsic ties that exist between women. The early feminist movement, which already used the bond of inclusive, universal, and global sisterhood for support and strength (Yuan, 2021), speaks volumes about the weakness and insecurity of women in the face of patriarchal gazes. Therefore, in a sporting environment that emphasizes male power, the lack of a sense of belonging directly results from the fact that sporting activities are organized and staffed mostly by men. Secondly, a sense of belonging comes from self-identification, and when individuals have a low level of self-identification they also lack a sense of belonging to the environment they are in, believing that they do not belong in the field. The lack of a sense of belonging in the process of sports participation may be reflected in dissatisfaction with the current environment and a desire to avoid it, while non-exercising female students may have higher demands on the sports participation environment due to a lack of commitment to sports participation. Finally, the lack of a relationship between the sporting environment and the individual may also contribute to a lack of a sense of belonging. An important constraint to women's participation in sports is their lack of role models for active participation in sports. Women need a role model for active participation in the sport that tells them how to integrate sports into their lives and make their sporting lives socially acceptable (Vrazel et al., 2019). For example, women prefer to engage in recreational sports with people they know in a familiar environment to increase their sense of security (Xiong, 2012), remove social barriers, and engage in sports in a relaxed manner.

Policy Environment

In the policy environment dimension, the lack of sports activities specifically for women in their neighborhoods and the lack of sports facilities for women around their places of residence are strong perceptions shared by both groups of female students. On the one hand, this reflects the lack of women-friendly sports facilities in China, and on the other hand, the lack of sports participation opportunities available to women in China. Both of them reflect the problem of insufficient protection of women's sports rights and interests in China. As society progresses, the protection of women's rights and interests is being strengthened, but there is still a long process to go through to achieve the ideal state. First of all, there is a lack of legislation describing the rights and interests of women in sports. Although the Chinese Constitution Law and Law of the People's Republic of China on the Protection of Rights and Interests of Women both emphasize that "women enjoy equal rights with men", there is no legislation on women's rights and interests in sports in China, and it is more at the theoretical level of "gender discrimination" in sports. However, focusing on the field of sports, there is no legislative expression of women's sports rights and interests in China, but more on the theoretical level of "gender discrimination" in sports (Ma, 2021). Secondly, the implementation of policy implementation deviation. China has emphasized the promotion of women's sports participation in policy documents such as the Outline of the National Fitness Program and the Outline of the Construction of a Strong Sports Country, which shows the importance China attaches to the development of women's sports, but the data from this survey still reflects the lack of resources for women's sports, which shows the blockage between top-level design and grassroots implementation in China. Finally, it takes a long and systematic process for women to enjoy equal power with men. The feudal patriarchal system of male power has been a part of Chinese history for over 2,000 years, manifesting itself in the maintenance and rationalization of male privilege. Therefore, the remnants of history and the legacy of the system need to be gradually faded away over time.

Conclusions

The two groups of women differed in their perceptions of the barriers, with those with exercise habits having a stronger perception of the interpersonal environment, social sporting climate environment, venue environment, and policy environment, while those without exercise habits had a stronger perception of the natural environment and sporting climate environment.

Acknowledgments

Thanks to the support of the Liaoning Social Science Planning Fund.

Authors' contributions

NRJ is responsible for data compilation and analysis, article conception, writing, and revision. YY is responsible for article conceptualization as well as strict and critically revised manuscripts. All authors read and approved the final manuscript.

Funding

This study received support from the Social Science Planning Fund of Liaoning Province, China (L20BTY005)

Declarations Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

References

- Abadi, E. R., & Diane, L. G. (2020). The Role of Socializing Agents on Dropout and Continuing Participation of Adolescent Girls in Masculine-Typed Sports. *International Journal of Kinesiology in Higher Education*, 4, 77 - 90. <https://doi.org/10.1080/24711616.2019.1656118>
- Dong, B., & Mao, L. (2020). The relationship between school interpersonal support, exercise identity, and adolescent exercise behavior. *Journal of Beijing University of Physical Education and Sport*, 43(09), 86-98. <https://doi.org/10.19582/j.cnki.11-3785/g8.2020.09.010>
- Dong, B., & Zhang, H. (2016). Gender roles, subjective exercise experience, exercise commitment, and exercise behavior: A chain mediation mode. *Journal of Tianjin Institute of Physical Education*, 31(05), 414-421. <https://doi.org/10.13297/j.cnki.issn1005-0000.2016.05.008>
- Dong, B., Zhang, H., Zhu, L., & Chen, Y. (2018). The effects of health beliefs, self-efficacy, and social support on adolescents' leisure exercise. *Journal of Shandong Institute of Physical Education*, 34(05), 106-112. <https://doi.org/10.14104/j.cnki.1006-2076.2018.05.018>
- Dong, Y., Ge, Y., & Ding, F. (2022). The effect of cumulative ecological risk on physical activity among college students: mediating effects of exercise climate and exercise self-efficacy. *Chinese Journal of Health Psychology*, 30(08), 1244-1249. <https://doi.org/10.13342/j.cnki.cjhp.2022.08.025>
- Fagaras, S. P., Radu, L. E., & Vanvu, G. (2015). The level of physical activity of university students. *Procedia Social and Behavioral Sciences*, (197), 1454-1457. <https://doi.org/10.1016/j.sbspro.2015.07.094>

- Han, H., & Zheng, J. (2016). A review of research related to physical activity among youth in Western countries - an analysis based on a social-ecological perspective. *Sports Science*, 36(05), 62-70+77. <https://doi.org/10.16469/j.css.201605009>
- Haugen, C. S., Klees, S. J., & Stromquist, N. P., Lin, J., Choti, T., & Corneilse, C. (2014). Increasing the number of female primary schoolteachers in African countries: effects, barriers, and policies. *International Review of Education*, 60(6), 753-776. <https://doi.org/10.1007/s11159-014-9450-0>
- Hillsdon, M., Thorogood, M., & White, I., Foster, C. (2002). Advising to take more exercise is ineffective: A randomized controlled of physical activity promotion in primary care. *International Journal of Epidemiology*, 31(4), 808-815. <https://doi.org/10.1093/ije/31.4.808>
- Hu, D., Zong, B., Wang, B., & Zhang, W. (2020). A study on the behavior and promotion of home physical exercise among college students during the new crown pneumonia epidemic. *Journal of Wuhan Institute of Physical Education*, 54(06), 80-86. <https://doi.org/10.15930/j.cnki.wtxb.2020.06.012>
- Ji, Y., Pan, Y., Lu, M., Wang, K., & Shi, Y. (2022). A path study on the influence of social support on physical activity behavior of college students in a Beijing university. *Medicine and Society*, 35(08), 53-57. <https://doi.org/10.13723/j.yxysh.2022.08.010>
- Jiang, X. (2019). Sports industry development: New opportunities and challenges. *Sports Science*, 39(07), 3-11. <https://doi.org/10.19873/j.cnki.2096-0212.2020.04.002>
- Li, H. (2016). A review of the current status of research on boys' education. *Journal of China Women's College*, 28(02), 42-46. <https://doi.org/10.13277/j.cnki.jcwu.2016.02.005>
- Li, M., Qin, S., & Zhang, D. (2021). A socio-ecological analysis of the barriers to female college students' sports participation in China in the context of healthy China. *Journal of Shenyang Sports College*, 40(03), 72-80. <https://doi.org/10.12163/j.ssu.20210011>
- Li, M., Qin, X., & Niu, M. (2022). A socio-ecological analysis of barriers to female sport participation at different ages in China. *Chinese Society of Sport Science. Compilation of Abstracts of the Twelfth National Congress of Sport Science--Special Presentations (Physical Fitness and Health Division)*, 257-259. <https://doi.org/10.26914/c.cnkihy.2022.005078>
- Li, X., & Wu, X. (2021). Same city, different depression: gender, class and mental health disparities in the new crown epidemic. *Population and Development*, 27(06), 95-105.
- Liang, H. (1994). *The Chinese Encyclopedia of Aging-Physical-Psychological-Longevity Volume*. Ningxia People's Publishing House.
- Lv, H. L., Wang, K. Z., & Liu, H. (2020). Family physical education environment and young children's physical education lifestyle: the mediating role of family social capital. *Journal of Beijing Sport University*, 43(05), 77-88. <https://doi.org/10.19582/j.cnki.11-3785/g8.2020.05.008>
- Ma, H. (2021). Experimental discussion on establishing and improving the legal system of sports in China: A perspective on the revision of the Sports Law of the People's Republic of China. *Sports Science*, 41(01), 7-20. <https://doi.org/10.16469/j.css.202101002>
- Pan, L. (2019). A Study of Women's Leisure Sports in Modern China from a Physical Perspective. *Journal of Beijing Sports University*, 42(09), 96-104. <https://doi.org/10.19582/j.cnki.11-3785/g8.2019.09.011>
- Pan, Y., Ji, Y., & Shi, Y. (2022). The effect of social support on changes in physical activity behavior of students in a Beijing university. *Medicine and Society*, 35(09), 5-9. <https://doi.org/10.13723/j.yxysh.2022.09.002>
- Park, Y. (2022). The effects of loneliness, mobile phone addiction, and sleep disorders on physical activity among college students: a moderated chain mediation model. *Journal of Tianjin Institute of Physical Education*, 37(04), 467-474. <https://doi.org/10.13297/j.cnki.issn1005-0000.2022.04.014>
- Samara, A., Nistrup, A. Al-Rammah, T. Y., & Aro, A. R., (2015). Lack of facilities rather than sociocultural factors is the primary barrier to physical activity among female Saudi university students. *International Journal of Women's Health*, (7), 279-286. <https://doi.org/10.2147/IJWH.S80680>

- Shi, L., & He, Q. (2022). The Public service provision of national fitness in China: logic, dilemma, and Relief. *Journal of Sports Culture*, (08), 43-49. <https://doi.org/10.3969/j.issn.1671-1572.2022.08.008>
- Vrazel, J., Saunders, R. P., & Wilcox, S. (2019). An overview and proposed framework of social-environmental influences on the physical activity behavior of women. *American Journal of Health Promotion*, 23(1), 2-12. <https://doi.org/10.4278/ajhp.06070999>
- Wang, X., Wan, Y., & He, Y. (2021). Research on physical exercise commitment of college students in the perspective of positive psychology. *Nanjing Normal University Journal (Natural Science Edition)*, 44(04), 140-148. <https://doi.org/10.3969/j.issn.1001-4616.2021.04.019>
- Wu, M., (2020). Structural equation modeling. Chongqing University Press.
- Xiong, H. (2012). On the construction and influencing factors of leisure sports on urban women's social space. *Journal of Beijing Sport University*, 35(08), 11-16. <https://doi.org/10.19582/j.cnki.11-3785/g8.2012.08.003>
- Yuan, Z., & Wu Y. (2021). From "sisterhood" to "female difference"- a paradigm shift in American women's history study. *Social Science Front*, (07), 121-130.
- Zhang, Y., Zhu, X., & Luo, F. (2023). Research on Influencing Factors of Young Students' Participation in Sports Activities Based on Social Ecology Theory. *Science Innovation*, 11(3), 118-125. <https://doi.org/10.11648/j.si.20231103.14>
- Zhi, J., Zhao, Z., Cui, S., et al. (2023). Driving Mechanisms of Sports Participation Behavior from a Social Link Perspective - A Data Analysis Based on Tennis Participants. *Journal of Shanghai Institute of Physical Education*, 47(06),76-87. <https://doi.org/10.16099/j.sus.2022.10.15.0005>