

Community Dance and Its Multidimensional Health Impacts in China: Empirical Evidence from Hunan and Hubei Provinces

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Abstract: Grounded in the three-dimensional health framework, this study explores the holistic health benefits of community dance among Chinese residents using empirical data from Hunan and Hubei provinces. Using empirical data from participants in Hunan and Hubei provinces in China, the research reveals a demographic pattern predominantly composed of middle-aged and older women. Participants exhibit diverse health-related needs, with physical fitness as the primary motivation, supplemented by desires for social interaction and cultural engagement. Findings demonstrate that community dance significantly enhances physical functioning, particularly in slowing age-related physical decline. Moreover, it contributes to improved mental health through artistic expression and social interaction, while its social health benefits are especially notable among older adults. The results suggest that frequent and sustained participation generates cumulative health benefits. Cross-regional comparisons indicate that residents in economically less-developed areas experience more rapid and pronounced health improvements, underscoring the complementary role of community-based cultural and recreational activities in public health services. Based on these insights, the study advocates for the development of scientifically guided health intervention systems, gender-responsive dance formats, and the integration of community dance into chronic disease prevention strategies—providing practical approaches to health governance in aging societies.

Keywords: community dance; multidimensional health; health promotion

1. Introduction

Health, as a timeless theme in human development, has seen its connotation continually deepened alongside the evolution of medical paradigms. The World Health Organization's (WHO) concept of three-dimensional health—defining health as a state of complete physical, mental, and social well-being^[1]—has become a fundamental framework for global health research. In China, propelled by the dual forces of the National Fitness Program and the Healthy China Initiative, community dance has emerged as a vital medium for public wellness. Blending artistic expression, social engagement, and accessibility, this practice transcends conventional exercise by not only enhancing physiological markers like cardiopulmonary function and muscular strength but also fostering psychological resilience and social cohesion through collective participation.

Current scholarship reveals pronounced disciplinary fragmentation: physical health studies prioritize biomechanical metrics such as body composition (body fat percentage, BMI), cardiopulmonary indices (heart rate variability, VO₂ max), and motor skills (balance, flexibility); mental health evaluations rely on standardized instruments like the SCL-90 Symptom Checklist, SDS Depression Scale, and CD-RISC Resilience Measure; while social health research predominantly focuses on the social relationship domain within the WHO-QOL-BREF quality-of-life assessment. Current research demonstrates scarce implementation of tripartite health metric integration (CNKI, 2025). This study pioneers a biopsychosocial analytical framework, employing mixed-methods research to empirically investigate the multidimensional health impacts of community dance across Hunan and Hubei provinces.

2. Research Design

2.1 Activity Demographics Analysis

This section provides a comprehensive analysis of the basic characteristics of community dance

participants, including gender ratio, age distribution, motivations for participation, types of dance, and organizational forms. Through in-depth research in these areas, the study aims to identify existing problems in the implementation of community dance activities and propose targeted solutions to better leverage the health-promoting effects of dance. For instance, if a particular community shows a significantly higher proportion of female participants and low male involvement, it would be necessary to explore the reasons and consider strategies to attract more male participants, thereby achieving a more balanced gender participation ratio.

2.2 Tripartite Health Comparative Study

According to the World Health Organization's definition of health, which includes physical, mental, and social dimensions, this study uses self-assessment health scales to measure participants' health levels across these three aspects. A comparative analysis will be conducted between individuals who regularly participate in dance activities and those who do not, aiming to explore the unique health characteristics of dance participants. For example, if dance participants score higher in the physical health dimension, particularly in physical functioning, further analysis might attribute this to the improvement in coordination and flexibility brought about by dance training.

2.3 Key Determinants Analysis

This section systematically analyzes how factors such as frequency, intensity, and duration of participation in community dance activities affect health promotion outcomes. For instance, the study will examine the impact of different dance activity frequencies (e.g., once a week vs. multiple times per week) on participants' mental health, to determine whether there is an optimal frequency range that maximizes mental well-being. Such analysis aims to provide quantitative references for the scientific implementation of community dance activities, ultimately enhancing their health-promoting effectiveness.

3. Study Population

This study selects community dance participants from two central regions in China: Changsha City in Hunan Province and Changyang County in Hubei Province. Changsha, as a relatively developed city, has a higher economic level and abundant cultural resources, while Changyang, a less developed county, has a lower economic development level. The selection of these two regions serves dual purposes: on one hand, it provides a comprehensive set of data by considering community dance activities under different economic development levels; on the other hand, since the geographical locations of the two areas are close and the differences in social and cultural environments are relatively small, conducting the study in one sample helps minimize the interference of cultural factors and allows for a more accurate analysis of the impact of economic factors and community dance on health.

4. Methodology

4.1 Questionnaire Development Framework

The questionnaire consists of two parts: the self-designed Basic Information on Community Dance Activities Questionnaire and the *Self-Rated Health Measurement Scale (SRHMS)*.

The Basic Information on Community Dance Activities Questionnaire was designed by referencing questions from previous related studies. It comprehensively covers basic personal information of community dance participants, such as gender, age, and occupation, and also addresses key aspects such as motivations for participating in dance activities, dance styles, organizational forms, frequency, intensity, and duration of participation. The purpose of these carefully designed questions is to deeply explore the key factors and potential patterns that influence health in dance activities. For instance, by asking about the participants' occupation, it is possible to understand the characteristics of different occupational groups participating in dance activities and the potential relationship between these characteristics and health status.

The *Self-Rated Health Measurement Scale* was developed by Xu Jun et al. based on the World Health Organization's definition of health across three dimensions (biomedical, physiological, psychological, and social) in 1947. This scale incorporated the latest advancements in the humanities and used the

Delphi method and field surveys to select self-rating health evaluation indicators across three aspects: physiological, psychological, and social, establishing a health scale suited to China's national conditions and cultural background. The scale consists of 10 dimensions and 48 items, comprehensively covering the three aspects of individual health: physiological, psychological, and social health. The theoretical maximum scores for the subscales of self-rated physiological health, psychological health, and social health, as well as the total self-rated health scale, are 170, 150, 120, and 440, respectively, with a theoretical minimum value of 0. ^[2]

This study applies the *Self-Rated Health Measurement Scale* to score the nine dimensions of community dance participants' health, including their physiological, psychological, and social health. Due to limitations in research conditions, no control group was set up. Instead, data from existing research literature were used for comparative analysis. Specifically, data from Foshan, Shenzhen, Guangzhou, and Haikou were used as data for non-participants of community dance. By comparing these, the study analyzes the differences and their causes, thereby demonstrating the health-promoting effects of community dance. For example, if it is found that dance participants score higher on the social support dimension than non-participants, the study will further explore how dance activities promote participants' social support networks.

In this study, a total of 600 questionnaires were distributed, with 551 returned, of which 467 were valid.

4.2 Qualitative Data Collection

In this study, 10 people were selected as interview subjects, including local participants, organizers, managers, and folk artists of community dance activities.

The interviews focused on various aspects, such as the development of local community dance activities, organizational methods, management approaches, typical cases of how dance promotes physical and mental health, and local dance features. These interviews provided rich qualitative data, supplementing and deepening the quantitative research, offering a more comprehensive understanding of the health benefits of community dance, and uncovering deeper insights that might not be captured by quantitative research alone.

5. Empirical Findings

5.1 Gender Disparity in Participation

In the process of investigating the current state of community dance activities, the gender ratio of participants is a key factor that cannot be ignored. To accurately capture this situation within community dance, this study carefully designed a questionnaire survey. In the Basic Information on Community Dance Activities Questionnaire, a specific Gender option was included in the Personal Information section to collect comprehensive data. According to the survey results, female participants accounted for 64.29% of all those involved in dance activities.

When comparing this data with survey results from other regions, significant differences become apparent. Kong Xiangfei's research in Shandong reveals that the female participant proportion in local dance activities is as high as 96% ^[3]; Liu Jun's study in Shangqiu City, Henan Province, shows a female ratio of 89.8% ^[4]; and Wen Yurong's survey in Xiamen City found that females make up 95.4% ^[5]. Compared to these regions, the female proportion in the present study is noticeably lower. The underlying reason for this difference lies in the unique nature of the sample collected in this study, a significant portion of which comes from participants in self-organized community dance activities within the family compounds of employees in state-owned enterprises and government agencies in Changyang County, Hubei Province. In this area, the male proportion among employees in state-owned enterprises and government agencies is relatively high, and the preferred dance style is Zombie Dance, also known as Jiamusi. This dance features simple movements and a fast rhythm, focusing on joints such as the shoulders and neck, making it particularly effective in preventing cervical spondylosis and shoulder periarthritis for office workers who sit for long periods. As a result, it has greatly stimulated the interest of men in this region to participate in dance activities.

However, when looking at the overall situation of community dance activities nationwide, it is not difficult to observe, through a review of various literature, that women generally make up a significantly larger proportion of participants than men. This phenomenon is rooted in deeper socio-cultural factors.

In China's long-standing traditional culture, men have long been assigned the role of the primary economic providers for their families. They dedicate themselves fully to work during the day and often have to attend social events at night. The busy pace of life makes them more likely to choose relatively relaxing and convenient leisure activities, such as playing mahjong or poker, in their free time, rather than engaging in physical exercise. In contrast, women, after completing their daily work and household chores, typically have more disposable time. Women are naturally sociable and enjoy group activities, so in their leisure time, they are more likely to join community dance activities.

Furthermore, traditional prejudices against male participation in dance activities also influence the gender ratio to some extent. Community dances are diverse, elegant, and feature movements that often display more feminine traits, which contrasts with traditional views of masculinity. In some traditional perspectives, dance seems to be an activity domain primarily suited for women. Additionally, community dance performances are commonly held in open public squares, often with large crowds of spectators. This public performance environment leads some men to worry that dancing in front of an audience may be perceived as undermining their masculine image, causing psychological pressure and reducing their willingness to participate in community dance activities.

Overall, the gender ratio of participants in community dance activities is influenced not only by the unique characteristics of the regional sample but also by socio-cultural traditions and perceptions. A deeper analysis of these factors is crucial for further understanding the current state of community dance activities and promoting their broader and more balanced development. Future research can explore how to break traditional barriers and increase male participation, thereby promoting harmonious gender development in community dance activities.

5.2 Age - Specific Participation Patterns

This study conducted an empirical analysis of the age structure of participants using the Community Dance Activity Basic Information Questionnaire. The survey data indicates that community dance activities cover all age groups, but with a concentration in certain age ranges. According to the statistical results, the largest participating group is aged 50-59, a finding that both corroborates and diverges from existing literature at the data level. This finding aligns with existing literature and also presents certain data-level confirmations and differences. Kong Xiangfei's research indicates that the 45-59 and 60-74 age groups account for 31% and 41% ^[3], respectively. Liu Jun's study shows that 89.2% of participants are between the ages of 31 and 60 ^[4]. Wen Yurong's research records that the 50-59 age group accounts for 48.5% ^[5]. Although specific numbers fluctuate, the data across studies consistently confirms that the middle-aged and elderly groups are the core participants, with regional cultural differences and age segment standards being key variables that cause data discrepancies.

The low participation rate of the youth group can be attributed to multiple social factors: young people, being at a critical stage in their career development, face dual pressures from work intensity and family responsibilities, making their time resources highly scarce and directly limiting the possibility of participating in activities. Additionally, their peak physiological condition leads to a sense of health confidence, which results in relatively weak fitness awareness. In contrast, the 50-59 age group experiences a more stable career trajectory and reduced child-rearing pressures, thus having more time flexibility. Their increased willingness to accept novelty and greater social needs make community dance an ideal way to balance physical and mental health while expanding social connections. This group's active participation in public spaces is driven not only by material security but also by the emotional satisfaction gained from collective activities.

The insufficient participation of individuals aged 70 and above can be analyzed from both physical and mental perspectives. The decline in physical function leads to decreased mobility, while bone and joint diseases and weakened cognitive abilities create objective barriers to participation. Additionally, traditional values and cultural taboos about public performances form psychological barriers. Some elderly individuals, influenced by the mindset of exposing oneself in public is inappropriate, instinctively reject group dance activities. This generational cultural difference is particularly evident in comparative studies between urban and rural communities. It is worth noting that with the acceleration of modernization, the new generation of elderly people has become more open to public cultural and recreational activities. However, physical limitations remain the main restriction.

The differences in existing research data reflect the regional imbalance in the development of community dance. Economically developed regions, by improving public cultural service systems, have established institutional guarantees in areas such as venue facilities, professional guidance, and

organizational management, effectively promoting increased participation across all age groups. In contrast, economically underdeveloped regions, limited by resource supply, often struggle to break through the participation barriers for the elderly, a regional disparity that has been confirmed by research on community sports infrastructure. The differences in research methods should also not be ignored, especially the choice of age segment standards, which directly affect the comparability of data. For example, merging the 45-54 and 55-64 age groups for statistical purposes could lead to skewed conclusions.

5.3 Motivational Heterogeneity

Based on the data analysis of the Motivation and Purpose of Participation section in the Questionnaire on the Basic Situation of Community Dance Activities, the study reveals that the primary motivation for participants is to improve physical fitness (76.6%). This result is consistent with existing research: Liu Jun reported that 79.3% of participants identified improving physical fitness as their main purpose, and 63.2% selected weight loss and body shaping.^[4] Wen Yurong's study found that 74.2% focused on physical fitness, and 73.9% emphasized disease prevention.^[5] This trend reflects a significant increase in fitness awareness among urban residents.

Secondary motivational dimensions exhibit diversity: 28.02% of participants chose expand social interactions, 44.26% aimed to make more friends, 46.2% leaned toward enrich cultural life, and 43.67% emphasized self-entertainment. A horizontal comparison shows that Liu Jun's study identified factors such as leisure and entertainment (49.7%), enriching spare time (37.8%), stress relief (28.1%), and social expansion (20.3%) as common motives.^[4] Similarly, Wen Yurong's findings highlighted enhanced interpersonal interaction (39.2%) and entertainment needs (25.6%), collectively confirming the dual pursuit of both physical and mental well-being among modern participants.^[5]

The data indicates a multidimensional expansion in the functional understanding of community dance activities. Participants no longer view dance solely as a form of physical exercise but increasingly recognize its positive impact on mental health and the accumulation of social capital. This diversity in motivational structure affirms the practical value of dance as a comprehensive health intervention and its multidimensional contribution to enhancing residents' quality of life.

6. Health Impact Assessment

6.1 Physiological Benefits

This study used the Self-Reported Health Measurement Scale (SRHMS) to assess the physiological health levels of the research participants, with specific data shown in Tables 1 and 2. By referencing Xu Jun's study, "Gender and Age Characteristics of the Self-Reported Health Measurement Scale Scores of Residents in Shenzhen Special Economic Zone"^[6], Table 1 compares the physiological health scores of community dance participants in Hunan and Hubei provinces with those of ordinary residents in Shenzhen. The data shows that the SRHMS scores of dance participants across all age groups are significantly higher than those of the non-participants in Shenzhen, with the most noticeable difference being in the 65 and above age group (139.44 vs. 121.11).

Table 1. Comparison of Physiological Health Scores Between Non-Participants (Shenzhen) and Community Dance Participants

Age (years)	<25	25~	35~	45~	55~	65~
Non-Participants (Shenzhen)	142.21	141.34	141.54	140.11	133.59	121.11
Community Dance Participants	147.96	147.73	144.80	143.48	142.47	139.44

Table 2. Comparison of Physiological Health Scores Between Non-Participants (Guangzhou, Haikou) and Community Dance Participants

Age (years)	<20	20~	30~	40~	50~	60~	70~
Non-Participants (Guangzhou, Haikou)	140.13	140.27	135.43	122.64	124.77	121.35	104.05
Community Dance Participants	149.25	148.34	147.22	143.98	142.84	140.70	141.00

To further validate the study's conclusions, Table 2, based on Xu Jun's research data for residents in Guangzhou and Haikou^[7], compares the health scores of community dance participants in Hunan and Hubei. The results show that dance participants in all age groups maintain a significant advantage, particularly in the 70+ age group, where the score difference is the largest (141.00 vs. 104.05). The comparison of these two sets of data collectively indicates a close association between participation in community dance activities and the improvement of participants' physiological health, with sustained positive effects observed across different regions and age groups.

6.2 Psychological Outcomes

This study assessed the mental health of survey respondents using the *Self-Rated Health Measurement Scale*, with specific results shown in Tables 3 and 4. Referring to Xu Jun's study "Gender and Age Characteristics of SRHMS Scores among Residents in Shenzhen Special Economic Zone", Table 3 presents a longitudinal comparison of mental health scores between community dance participants in Hunan and Hubei provinces and ordinary residents in Shenzhen. The data indicate that mental health scores among dance participants are generally lower across all age groups compared to non-participants in Shenzhen, with the greatest difference observed in the 35-year-old group (87.74 vs. 107.90), and the smallest in the 65-year-old group (86.50 vs. 104.78).

Table 3. Comparison of Mental Health Scores between Non-Participants (Shenzhen) and Community Dance Participants

Age (years)	<25	25~	35~	45~	55~	65~
Non-Participants (Shenzhen)	108.03	107.66	107.90	109.76	110.43	104.78
Community Dance Participants	90.61	89.59	87.74	88.72	90.48	86.50

To further verify the stability of these findings, Table 4 provides a cross-sectional comparison based on demographic data from residents in Guangzhou and Haikou, as reported in Xu Jun's "Demographic Statistical Factors Study on the Revised Version of Self-Rated Health Measurement Scale"^[7], compared with data from Hunan and Hubei. The results again show that community dance participants in Hunan and Hubei consistently exhibit lower mental health scores across all age groups, with the most notable differences appearing in the 30-year-old group (88.41 vs. 101.46) and the 70-year-old group (89.00 vs. 94.61).

Table 4. Comparison of Mental Health Scores between Non-Participants (Guangzhou and Haikou) and Community Dance Participants

Age (years)	<20	20~	30~	40~	50~	60~	70~
Non-Participants (Guangzhou & Haikou)	100.47	100.85	101.46	95.22	100.77	99.08	94.61
Community Dance Participants	89.75	90.91	88.41	88.74	89.28	89.87	89.00

The study findings suggest a systematic difference in mental health scores between community dance participants and the general population. This phenomenon may be partially attributed to the scoring mechanism of the scale (where lower scores indicate better mental health), but it also reflects the potential influence of regional culture and socioeconomic factors on mental health assessment systems. Notably, in the elderly group aged 70 and above, dance participants maintained relatively stable mental health levels (89.00 vs. 94.61), warranting further exploration into the mechanisms sustaining their mental well-being. These findings highlight the multidimensional complexity of the relationship between community dance activities and mental health, underscoring the need for in-depth analysis based on the structure of the specific measurement scale used.

6.3 Social Health Enhancement

This study employed a Social Health Scale to quantitatively evaluate the survey respondents. Tables 5 and 6 present comparative results of social health scores across different regional groups. A horizontal comparison of data from Shenzhen (Table 5) shows that among individuals under the age of 55, non-participants in Shenzhen generally scored higher in social health than community dance participants in Hunan and Hubei. However, this trend reverses significantly in individuals aged 55 and above, where community dance participants show a clear advantage in social health scores.

Table 5. Comparison of Social Health Scores Between Non-Participants and Community Dance Participants

Age (years)	<25	25~	35~	45~	55~	65~
Non-Participants (Shenzhen)	89.24	88.24	87.89	88.18	85.27	79.46
Community Dance Participants	87.35	87.85	86.87	88.13	89.17	82.75

Longitudinal data (Table 6) indicate that for residents of Guangzhou and Haikou, there is no consistent difference in social health levels between non-participants and community dance participants under the age of 40. However, from the age of 40 onward, clear regional differentiation emerges. Community dance participants scored significantly higher than their counterparts across all age groups above 40.

Table 6. Comparison of Social Health Scores Between Non-Participants (Guangzhou and Haikou) and Community Dance Participants

Age (years)	<20	20~	30~	40~	50~	60~	70~
Non-Participants (Guangzhou & Haikou)	86.99	87.12	87.08	78.80	83.59	76.63	64.49
Community Dance Participants	74.50	88.14	86.74	87.88	88.55	88.67	83.00

This age-stratified phenomenon is hypothesized to result from shifts in social roles over the life course. For individuals under 40, structural factors such as career development and economic pressures are the primary influences on social health, while regional differences in cultural and sports activities have not yet formed a significant moderating effect. However, once individuals reach middle age (40–55 years), with occupational stress easing and family responsibilities lightening, cultural participation during leisure time begins to play a more prominent role in the accumulation of social capital and the maintenance of interpersonal relationships.

Group activities such as community dance, which combine physical activity and social interaction, may enhance participants' social health through several mechanisms: first, the reinforcement of community belonging through regular group training; second, the expansion of social support networks via dance performances; and third, the facilitation of intergenerational communication coupled with enhanced self-worth recognition through artistic expression.

It is noteworthy that a comparison of data between Shenzhen and the Guangzhou-Haikou region reveals significant regional differences in the positive effects of community dance. As a highly developed special economic zone, Shenzhen residents generally show higher levels of social health before age 55, likely benefiting from a well-established urban public service system. In contrast, community dance begins to show noticeable positive effects as early as age 40 in the Guangzhou-Haikou region, possibly reflecting the phased development of local community cultural infrastructure. This disparity suggests that social health interventions should be adapted to the regional level of development. In economically underdeveloped areas, priority may be given to community cultural and recreational activities as a means to compensate for the lack of public services.

6.4 Comprehensive Health Effects

This study employed the *Self-Rated Health Measurement Scale* to quantitatively assess the overall health status of respondents. Tables 7 and 8, along with Figure 1, systematically present the results of cross-regional and cross-age comparisons. Longitudinal data demonstrate that participation in community dance exhibits a pronounced age-gradient effect on health improvement.

According to the comparative data from Shenzhen (Table 7), in all age groups under 65, residents who did not participate in community dance generally had higher overall health scores than participants from the Hunan and Hubei regions. The difference was most striking in the under-25 age group (339.46 vs. 325.91). However, this trend undergoes a fundamental reversal among individuals aged 65 and above, with community dance participants scoring 3.33% higher than the Shenzhen control group (308.69 vs. 305.36). It is worth noting that signs of a health advantage shift already appear during the transitional phase of ages 55 to 64 (322.12 vs. 329.30), indicating that the potential turning point for intervention effectiveness may lie between the ages of 55 and 65.

Table 7. Comparison of Overall Health Scores Between Non-Participants (Shenzhen) and Community Dance Participants

Age (years)	<25	25~	35~	45~	55~	65~
Non-Participants (Shenzhen)	339.46	337.26	337.35	338.05	329.30	305.36
Non- Community Dance Participants	325.91	325.17	319.40	320.33	322.12	308.69

Data from the Guangzhou and Haikou regions (Table 8) further validate the age sensitivity of health improvements. At the key threshold of 40 years, individuals under this age in the control group maintained a higher overall health score (e.g., ages 30–39: 323.97 vs. 322.37). However, across all age groups above 40, community dance participants systematically outperformed their counterparts. This trend is particularly notable among those aged 70 and above, where the intervention group scored 18.94% higher than the control group (313.00 vs. 263.16), confirming that the health-sustaining benefits of community dance increase exponentially with age.

Table 8. Comparison of Overall Health Scores Between Non-Participants (Guangzhou and Haikou) and Community Dance Participants

Age (years)	<20	20~	30~	40~	50~	60~	70~
Non-Participants (Guangzhou & Haikou)	327.59	328.24	323.97	296.65	309.14	297.05	263.16
Community Dance Participants	313.50	327.39	322.37	320.60	320.67	319.25	313.00

Cross-dimensional analysis reveals that these health benefits arise from the combined effects of several factors. First, in terms of physical health, dance training directly improves cardiovascular function and enhances muscle coordination. Then, in the psychological dimension, artistic expression effectively alleviates symptoms of anxiety and depression. Furthermore, at the social level, group-based training strengthens participants' social support networks.

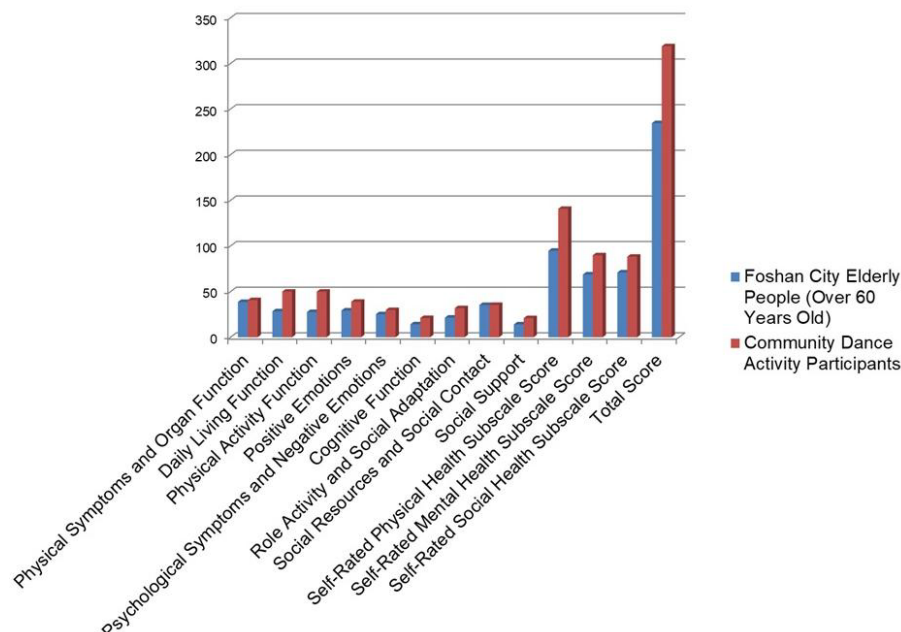


Figure 1. Comparison of Overall Health Scores Among Elderly

To further validate the above findings, this study compared the overall health assessment results of community dance participants in Hunan and Hubei with the research findings of Pan Yanwu & Lou Huai in the article "Application of SRHMS in the Health Status Survey of the Elderly in Foshan City" [8] (Figure 1). The results revealed that, compared to the elderly control group in Foshan, community dance participants in Hunan and Hubei performed better across all nine health dimensions. The most significant difference was observed in the physical function dimension (+48.44%), particularly in aspects such as physical activity functions (e.g., balance and flexibility) and chronic disease management. In terms of mental health, the positive emotion score showed a difference of 30.55%, indicating the alleviating effect

of dance activities on depressive symptoms. The 24.39% improvement in the social health dimension may be attributed to the accumulation of social capital through group performances.

It is important to note that the age-gradient nature of health benefits varies significantly by region. In economically developed areas such as Shenzhen, the turning point for health improvement due to community dance appears after age 55. In contrast, in the Guangzhou and Haikou regions, the effects of intervention emerge as early as age 40. This difference may stem from two main factors: first, in more developed areas, younger and middle-aged groups generally have higher baseline health and benefit from more comprehensive public service systems, which may dilute the marginal benefits of community activities; second, in less developed regions, these populations face greater health risks, thereby creating more room for improvement through interventions such as dance. These findings suggest that community health intervention strategies should incorporate dynamic adjustment mechanisms and establish age-specific priorities tailored to the region's level of development.

6.5 Analysis of the Impact of Dance Participation Characteristics on Health

This study utilized a self-developed Community Dance Activity Basic Information Questionnaire to systematically investigate the differentiated effects of dance activity frequency, intensity, and duration on health. The questionnaire design included gradient options for each dimension. For example, activity intensity was categorized into four levels, ranging from irregular participation to long-term regular participation for more than 2 hours. The following is a detailed analysis of the three core variables.

6.5.1 Health Promotion Effects of Activity Frequency

As shown in Table 9, the frequency of weekly dance participation among the subjects was significantly positively associated with health levels. In the group that participated once or less per week, the total health score was 315.78 ± 19.41 . When the frequency increased to more than five times per week, the total score significantly rose to 328.73 ± 15.47 (an increase of 4.1%). A detailed analysis of the dimensions showed that physiological health scores increased from 142.08 ± 7.68 to 145.29 ± 4.27 , psychological health improved by 3.38 points, and social health rose by 6.6%. The systematic growth in each subscale score indicates a dose-response relationship between participation frequency and health level, suggesting that increasing the frequency of dance activities can effectively promote coordinated development across multiple health dimensions.

Table 9. Impact of Dance Activity Frequency on Self-Rated Health Scores (Mean $\pm$ SD)

Weekly Activity Frequency	Physical Health	Mental Health	Social Health	Total Score
Once or less	142.08 $\pm$ 7.68	88.26 $\pm$ 9.15	85.43 $\pm$ 11.07	315.78 $\pm$ 19.41
2-3 times	144.5 $\pm$ 7.74	88.7 $\pm$ 10.68	86.82 $\pm$ 12.68	320.02 $\pm$ 23.77
4-5 times	145.27 $\pm$ 5.84	88.92 $\pm$ 5.94	89.51 $\pm$ 8.53	323.69 $\pm$ 14.24
More than 5 times	145.29 $\pm$ 4.27	91.64 $\pm$ 7.03	91.08 $\pm$ 9.47	328.73 $\pm$ 15.47

6.5.2 Health-Related Characteristics of Activity Intensity

The results in Table 10 show a nonlinear relationship between activity intensity and health indicators. Among those who participated regularly, the group engaging in activities for more than 1 hour per session exhibited the highest scores in mental health (91.52 ± 6.77) and social health (91.64 ± 10.25), with a total score 2.8% higher than the irregular group. Notably, the long-term regular for less than 1 hour group had a lower physiological health score (142.8 ± 6.81) than the irregular group, suggesting a possible threshold effect of exercise intensity on physical health. Overall, sustained regular high-intensity activities yield cumulative benefits across health dimensions, though this relationship should be considered in conjunction with other covariates such as frequency.

Table 10. Impact of Dance Activity Intensity on Self-Rated Health Scores (Mean $\pm$ SD)

Activity Intensity	Physical Health	Mental Health	Social Health	Total Score
Irregular, occasional participation	144.73 $\pm$ 7.76	87.79 $\pm$ 10.26	86.05 $\pm$ 12.1	318.56 $\pm$ 22.77
Long-term regular, <1 hour per session	142.8 $\pm$ 6.81	89.16 $\pm$ 7.66	87.37 $\pm$ 9.34	319.33 $\pm$ 16.11
Long-term regular, >1 hour per session	144.29 $\pm$ 5.41	91.52 $\pm$ 6.77	91.64 $\pm$ 10.25	327.45 $\pm$ 16.76

6.5.3 Cumulative Health Effects of Activity Duration

As shown in Table 11, health benefits appear to accumulate progressively with the length of dance participation. Participants with 2–5 years of experience showed significant improvements in mental health (89.58 ± 7.68) and social health (88.28 ± 9.8), while those in the 5–10 year group surpassed the 90-point threshold in social health. It is worth noting that participants with over 10 years of experience showed a slight decline in physical health scores (143.56 ± 7.3), which may be related to age-related physiological decline. The findings suggest that long-term participation in dance activities can generate cumulative health benefits, though the timing of benefits may vary across health dimensions.

Table 11. Impact of Dance Participation Duration on Self-Rated Health Scores (Mean $\pm$ SD)

Years of Participation	Physical Health	Mental Health	Social Health	Total Score
<1 year	143.4 ± 7.23	87.78 ± 12.17	84.8 ± 13.55	315.99 ± 25.84
2–5 years	144.46 ± 7.05	89.58 ± 7.68	88.28 ± 9.8	322.32 ± 17.38
5–10 years	144.51 ± 6.65	89.25 ± 5.58	90.03 ± 9.92	323.79 ± 16.59
>10 years	143.56 ± 7.3	90.06 ± 7.52	90.72 ± 10.15	324.34 ± 14.69

7. Conclusion

Based on the theoretical framework of three-dimensional health, this study systematically reveals, through a mixed-methods approach, the promotive effects of community dance in Hunan and Hubei provinces across physical, psychological, and social health dimensions. The findings indicate that community dance, as a comprehensive health intervention, exhibits significant multidimensional health benefits. Its mechanisms and effectiveness demonstrate marked sensitivity to life stages and regional differences.

In terms of physical health, participants in community dance scored significantly higher than non-participants, with the elderly group (aged 70 and above) showing a difference of up to 36.95 points. Dance activities improve cardiopulmonary function and enhance muscular coordination, effectively delaying degenerative physiological decline. These health benefits accumulate progressively with longer participation, with those engaged for over five years maintaining stable physical health scores at the 144-point threshold.

Psychological health assessments show that dance participants generally score lower on the scales compared to the general population. Given the reverse scoring mechanism, this reflects reduced levels of anxiety and depression and enhanced emotional regulation. Qualitative interviews uncovered three key mechanisms through which dance promotes psychological well-being: emotional release through artistic expression, social support from group interactions, and neuroendocrine regulation induced by physical activity.

In the social health dimension, a notable age-related reversal effect was observed: participants over 55 scored higher than their counterparts in the control group. This shift results from the synergy between the temporal flexibility of middle-aged individuals and the institutionalized social platform provided by dance activities, enhancing the density of social support networks. Particularly within the context of urbanization, dance acts as a vehicle for cultural identity and plays a unique role in strengthening community cohesion.

The frequency-intensity-duration three-dimensional model developed in this study reveals a dose-response pattern in health promotion: individuals who participate more than five times per week show a 4.1% increase in overall health scores, and those involved for over ten years surpass the 90-point threshold in social health.

A cross-regional comparison showed that in economically underdeveloped areas, health benefits emerge as early as age 40, with the elderly group (70+) experiencing a 18.94% higher benefit increase compared to developed regions. This gradient effect reflects structural imbalances in public service resource allocation.

This study contributes to health promotion theory in three key ways: it confirms the multidimensional health benefits of artistic physical activities, reveals the life-stage sensitivity of health interventions, and establishes a linkage model between cultural-sports activities and public health services. Practical recommendations include: establishing a community dance health index monitoring system, integrating

activity parameters into national fitness assessment standards; developing gender-adapted dance formats to improve male participation; and incorporating dance interventions into chronic disease management programs.

A limitation of this study is the cross-sectional design, which restricts the ability to establish causal relationships. Future research should employ longitudinal designs to deepen mechanism exploration. Key areas for further investigation include the specific mapping between dance types and health outcomes, the role of digital technology in enhancing participation rates, and the construction of a multimodal health assessment system. These explorations will advance the transformation of community dance from a popular fitness activity to a scientifically grounded health intervention, offering an empirical model for health promotion in aging societies worldwide.

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