Am J Transl Res 2021;13(9):10477-10484
www.ajtr.org /ISSN:1943-8141/AJTR0130960

Original Article

Effects of plaza dancing and its impact on the figure, physical function and quality of life in middle-aged and elderly women

Jiawei Zheng, Yang Cao

Physical Education Department, Qiqihar Medical University, Qiqihar, Heilongjiang Province, China

Received January 28, 2021; Accepted May 11, 2021; Epub September 15, 2021; Published September 30, 2021

Abstract: Objective: To investigate the effects of plaza dancing and its impact on the figure, physical function and quality of life in middle-aged and elderly women. Methods: A total of 109 middle-aged and elderly women in a community, were selected as the study subjects by the Department of Physical Health in Qiqihar Medical University, and divided into Group A (n=54) and Group B (n=55) in accordance with the exercise methods. Group A did not receive special intervention, and lived and worked normally, while Group B performed plaza dancing. The changes in the scores of Pittsburgh sleep quality index (PSQI) and Wechsler Memory Scale-Revised in China (WMS-RC), figure, physical function and fitness and quality of life were compared between the two groups before and after intervention. Results: Compared with Group A, Group B had a smaller body mass index (BMI), waistline and hipline, lower weight, heart rate at the resting state, PSQI scores, and systolic and diastolic blood pressure, as well as a higher vital capacity and scores of WMS-RC and quality of life, a shorter duration of quadrant jumps, a longer duration of standing on one leg with eyes closed and distance reached in seated forward bending, after intervention ($P < 0.05$). Conclusion: The effect of plaza dancing is satisfactory, and plaza dancing is conducive to improving the figure, physical function and fitness, memory function, sleep quality and quality of life in middle-aged and elderly women.

Keywords: Middle-aged and elderly women, plaza dancing, figure, physical function, physical fitness, quality of life, memory, sleep

Introduction

With an aging population, China has become an aging society. The aging population is a challenging problem [1]. With the rapid development of society, people are under increasing pressure in their daily life and attach less importance to their health, and the proportion of the sub-healthy population in China keeps rising [2, 3]. A survey by the World Health Organization shows that the sub-healthy population in China occupies approximately 70% of the total population [4]. People in middle age experience declined physical functions and mental and psychological pressures, reducing their overall health. Most retired older adults have a reduced life expectancy, and are prone to the negative feeling of "An Old Man is Useless" and the adverse psychological emotions (*e.g.*, loneliness, disappointment, pessimism) [5, 6]. This requires us to pay close attention to the health status of middle-aged and elderly people.

An authoritative and exact definition of plaza dancing is not available at home and abroad, and some scholars classify plaza dancing as a category of dancing [7]. At present, plaza dancing plays an important role in people's physical exercises in China. Plaza dancers in rural and urban areas dance anywhere they can find enough space, and most people who often do taiji qigong, taijirouli ball, taijiquan, and mulanquan become plaza dancers [8, 9]. Plaza dancing has become a preferred sports activity, and its popularity with most middle-aged and elderly people can be attributable to its easiness to learn, flexibility and moderate exercise intensity [10]. Additionally, plaza dancing is cheerful and relaxing, which can effectively alleviate the stress of dancers [11].

In view of this, this study explored the impact of plaza dancing on the physical function, human figure, quality of life, sleep quality and memory function in middle-aged and elderly women in the context of the prevailing plaza dancing,

demonstrating a representative, contemporary and realistic significance and exhibiting innovation.

Materials and methods

General data

A total of 109 middle-aged and elderly women in a community were selected as the study subjects by the Department of Physical Health in Qiqihar Medical University, and they were divided into Group A (n=54) and Group B (n=55) in accordance with the exercise methods. Group A did not receive special intervention, and lived and worked normally, while Group B performed plaza dancing. (1) Inclusion criteria: females; voluntary participation in the study and voluntary signing of informed consent form; those without long-term participation in regular health activities; being without nervous system diseases, locomotor disease and sensory system disease; those without chronic diseases; healthy extremities and those without major diseases; and not having prior participation in plaza dancing before enrollment. (2) Exclusion criteria: withdrawal halfway; those with serious somatic diseases or psychosis. The trial was approved by the Medical Ethics Committee of Qiqihar Medical University.

Methods

Group A did not receive special intervention, and lived and worked normally, while Group B performed plaza dancing for 24 weeks. At Weeks 1 and 24, the same physicians measured the indicators for the health-related physical fitness of the subjects indoors. The subjects were instructed to wear light clothes and take off their shoes and socks beforehand. At Weeks 2-23, the subjects performed plaza dancing for 90 min each time, and plaza dancing was performed three times a week. The specific training contents were as follows: a new set of plaza dancing movements were learned every 4-5 weeks, the new movements were practiced in the first two exercises every week, the learned movements were reviewed in the third exercise, and a specially-designated sports instructor provided the teaching guidance for all subjects. At Weeks 22 and 23, the subjects were organized to review all dances, including *Dancing Tonight* (Weeks 1-5), *Coolest Ethnic* (Weeks 6-10), *Little Apple* (Weeks 11-15), and *Beautiful China* (Weeks 16-24). Before plaza dancing started, all subjects conducted warm-up for 40 min, the instructor conducted all necessary explanations and demonstrations for 20 min, and then 40 min was spent practicing the learned movements, and the last 10 min was used to instruct the subjects to conduct regular breathing with soothing music for full relaxation. Subsequently, the subjects relaxed and stretched the Achilles tendon, thigh, waist, shoulders and head.

Observational indexes

Figure indexes: the body mass index (BMI), weight, waistline and hipline were measured before intervention (Week 1) and after intervention (Week 24).

Physical function indexes: the cardiopulmonary function (*e.g.*, vital capacity and heart rate at the resting state) and blood pressure (*e.g.*, systolic and diastolic blood pressures) were measured in the two groups before and after intervention.

Physical fitness indexes: before and after intervention, the results of quadrant jump test, standing on one leg with eyes closed test, and seated forward bend test were obtained in the two groups. The quadrant jump test, standing on one leg with eyes closed test and the seated forward bend test were used to reflect body's agilities, balance abilities and flexibility, respectively.

Sleep quality [12]: the sleep qualities were measured in the two groups using Pittsburgh sleep quality index (PSQI) before and after intervention, including the influences on daytime function, the use of sleeping pills, sleep disorders, sleep efficiency, hours of sleep, the time to fall asleep and sleep quality. All the measured items were evaluated using a scoring system of 1-3 points. A total score of the scale of ≥ 7 points indicated sleep disorders.

Memory function [13]: the memory function was evaluated in the two groups using Wechsler Memory Scale-Revised in China (WMS-RC) before and after intervention, including immediate memory (memorization of numbers), short-term memory (understanding, touch, association, regeneration, recognition, picture recall), number sequence, and long-term mem-

Table 1. Comparison of general data between the two groups [n (%)]/($\bar{x}$±s)

Data	Group A (n=54)	Group B (n=55)	t/χ^2	*P*
Age (years)	58.96±2.19	59.03±2.17	0.167	0.867
BMI (kg/m^2)	27.15±1.18	27.18±1.16	0.134	0.894
Weight (kg)	59.96±1.05	59.99±1.03	0.151	0.881
Waistline (cm)	96.15±1.18	96.19±1.13	0.181	0.857
Hipline (cm)	100.25±1.09	100.29±1.06	0.194	0.846

ory (orientation, experience). A higher total score indicated a better memory function of the subjects.

Quality of life [14]: the qualities of life were evaluated in the two groups using the 36-Item Short Form Survey (SF-36) before and after intervention, including eight dimensions: physiological function and role, physical pain, general health, energy, social function, emotional function and mental health. All dimensions were evaluated using the hundred-mark system. A higher score indicated a higher quality of life.

Statistical methods

SPSS 22.0 was adopted for statistical analysis. GraphPad Prism 8.0 was adopted for statistical plotting. The measurement data were represented by mean ± standard deviation (mean ± SD). The data conforming to a normal distribution were detected by *t* test, and those not conforming to a normal distribution were detected by Mann-Whitney U test. The enumeration data were represented by [n (%)], and the comparison of enumeration data between groups was carried out by χ^2 test. $P < 0.05$ indicated a statistical significance.

Results

Comparison of general data between the two groups

There was no statistically significant difference in the general data (e.g., gender, BMI, weight, waistline and hipline) between the two groups ($P > 0.05$) (**Table 1**).

Comparison of figure indexes between the two groups

There was no marked difference in BMI, weight, waistline and hipline between the two groups before intervention ($P > 0.05$). Compared with those before intervention, BMI, weight, waistline and hipline were decreased in Group B after intervention ($P < 0.05$), while BMI, body weight, waistline and hipline in Group A were not markedly changed after intervention ($P > 0.05$). Compared with Group A, Group B had a smaller BMI, waistline and hipline and a lower weight after intervention ($P < 0.05$) (**Figure 1**).

Comparison of cardiopulmonary function between the two groups

Compared with those before intervention, the vital capacity was increased and the heart rate at the resting state was decreased in Group B after intervention ($P < 0.05$), while the vital capacity and heart rate at the resting state in Group A were not remarkably changed after intervention ($P > 0.05$). Compared with Group A, Group B had a higher vital capacity and a lower heart rate at the resting state after intervention ($P < 0.05$) (**Figure 2**).

Comparison of blood pressure between the two groups

Compared with those before intervention, systolic and diastolic blood pressure were decreased in Group B after intervention ($P < 0.05$), while systolic and diastolic blood pressure in Group A were not markedly changed after intervention ($P > 0.05$). Compared with Group A, Group B had lower systolic and diastolic blood pressure after intervention ($P < 0.05$) (**Figure 3**).

Comparison of physical fitness indexes between the two groups

Compared with those before intervention, the duration of quadrant jumps was shortened, the duration of standing on one leg with eyes closed was longer, and the distance reached in seated forward bend was longer in Group B after intervention ($P < 0.05$). Compared with Group A, Group B had a shorter duration of quadrant jumps, a longer duration of standing on one leg with eyes closed, and a longer distance reached in the seated forward bend after intervention ($P < 0.05$) (**Figure 4**).

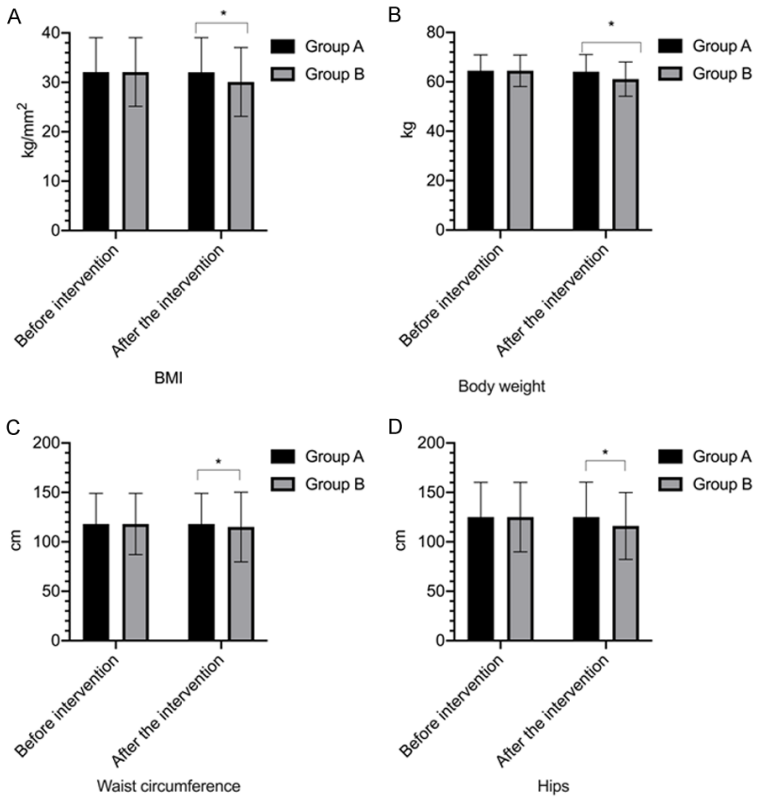

Figure 1. Comparison of figure indexes between the two groups. A. Shows the comparison of BMI between the two groups before intervention ($P > 0.05$), and BMI in Group B was lower than that in Group A after intervention ($P < 0.05$). B. Reveals the comparison of weight between the two groups before intervention ($P > 0.05$), the weight in Group B was lower than that in Group A after intervention ($P < 0.05$). C. Exhibits the comparison of waistlines between the two groups before intervention ($P > 0.05$), and waistlines in Group B were smaller than those in Group A after intervention ($P < 0.05$). D. Demonstrates the comparison of hiplines between the two groups before intervention ($P > 0.05$), and hiplines in Group B were smaller than those in Group A after intervention ($P < 0.05$). *indicates the comparison with Group A, $P < 0.05$.

Comparison of scores of sleep quality and memory function between the two groups

Compared with those before intervention, PSQI scores were decreased and WMS-RC scores were increased in Group B after intervention ($P < 0.05$), while the scores of PSQI and WMS-RC in Group A were not significantly changed after intervention ($P > 0.05$). Compared with Group A, Group B had lower PSQI scores and higher WMS-RC scores after intervention ($P < 0.05$) (**Figure 5**).

Comparison of quality of life scores between the two groups

Compared with those before intervention, the scores of quality of life were elevated in Group B after intervention ($P < 0.05$), while the scores of quality of life in Group A were not noticeably changed after intervention ($P > 0.05$). Compared with Group A, Group B had higher scores of quality of life after intervention ($P < 0.05$) (**Tables 2** and **3**).

Discussion

It is commonly known that middle-aged and elderly people experience noticeable declined physical functions and remarkably increased bone fragility, and their bodies often slowly enter a negative calcium balance period. Middle-age and elderly women with menopause can have an expedited rate of bone calcium loss and higher incidence of fractures in the vertebral column, hip joint and wrist joint, which causes physiological pain to middle-aged and elderly people and has a negative impact on their mental health and quality of life. Therefore, it is necessary to improve the physical function of middle-aged and elderly women [15, 16]. Plaza dancing is a health activity, which is entertaining and is conducive to fitness. It is an exercise routine performed to music in public squares, plazas or parks [17]. Plaza dancing is not only a dance exercise, but also a physical activity conducive to fitness. With a view to improving the figure, physical function and fitness, memory function and the quality of sleep and life in middle-aged and elderly women, this study investigated effects of plaza dancing.

The study results showed that compared with Group A, Group B had a smaller BMI, waistline and hipline and a lower weight after intervention ($P < 0.05$), suggesting that plaza dancing could effectively improve the figure in middle-aged and elderly women. Zhuo et al. also found that the body weight, BMI, waistline, hipline and body fat percentage of 30 middle-aged and

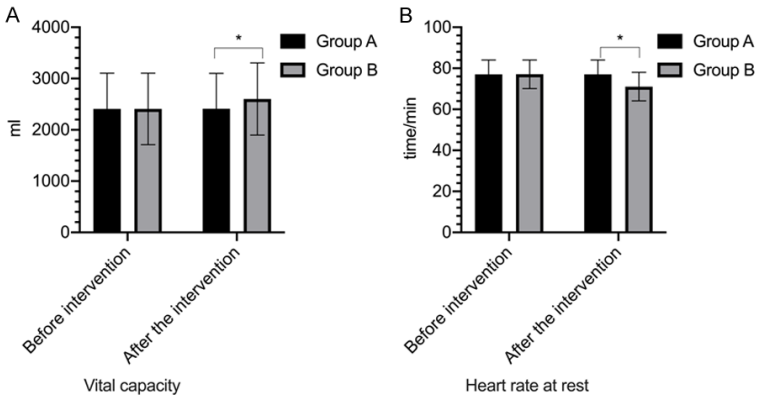

Figure 2. Comparison of cardiopulmonary function between the two groups. A. Reveals the comparison of vital capacity between the two groups before intervention ($P > 0.05$), and vital capacity in Group B was higher than that in Group A after intervention ($P < 0.05$). B. Shows the comparison of the heart rate at the resting state between the two groups before intervention ($P > 0.05$), and the heart rate at the resting state in Group B was lower than that in Group A after intervention ($P < 0.05$). *indicates the comparison with Group A, $P < 0.05$.

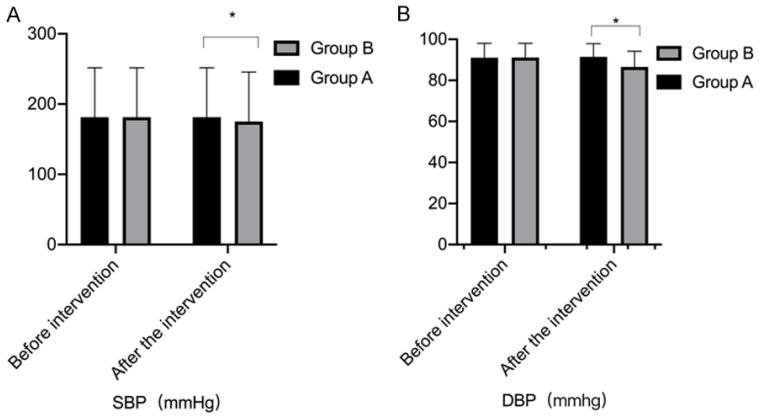

Figure 3. Comparison of blood pressure between the two groups. A. Demonstrates the comparison of systolic blood pressure between the two groups before intervention ($P > 0.05$), and systolic blood pressure in Group B was lower than that in Group A after intervention ($P < 0.05$). B. Exhibits the comparison of diastolic blood pressure between the two groups before intervention ($P > 0.05$), and diastolic blood pressure in Group B was lower than that in Group A after intervention ($P < 0.05$). *indicates the comparison with Group A, $P < 0.05$.

elderly women were significantly improved after plaza dancing exercise, which was highly consistent with the results of this study [18]. The investigation of the mechanism of action suggested that under the condition of constant intake of energy and food, long-term regular physical exercises are conducive to consuming excess energy and reducing weight and BMI [19]. Plaza dancing is not only an aerobic exercise, but also a moderate physical exercise. It can effectively improve the body system functions, promote blood circulation, and reduce weight, as well as the waistline and hipline. In addition, the study results demonstrated that compared with Group A, Group B had a higher vital capacity and a lower heart rate at the resting state after intervention ($P < 0.05$). This further proved the effectiveness of plaza dancing. The investigation of the mechanism of action suggested that this may be attributed to the reason that plaza dancing is an aerobic exercise, and can improve pulmonary function, activate blood circulation and metabolism, and remove noxious substances in tissues and blood in middle-aged and elderly people [20, 21]. Moreover, plaza dancing can reduce the heart rate, and long-term plaza dancing can delay aging and improve the oxidation resistance of body [22]. After intervention, the blood pressure level in Group B was lower than that in Group A. This may be due to the fact that plaza dancing can help dilate the capillaries, improve the imbalance between the peripherial nervous system and the central nervous system, and effectively regulate the blood pressure level [5]. Second, plaza dancing performed to music can promote vasodilation, reduce the sensitivity of the myocardium to vaso-excitor materials, and improve vasodilation abilities [23]. Compared with Group A, Group B had a shorter duration of quadrant jumps, a longer duration of standing on one leg with eyes closed, and a longer distance reached in seated forward bend after intervention, suggesting that plaza dancing could improve pliability, balance ability and reaction sensitivity. This may be because the pliability of the body is closely related to the stretching abilities of the

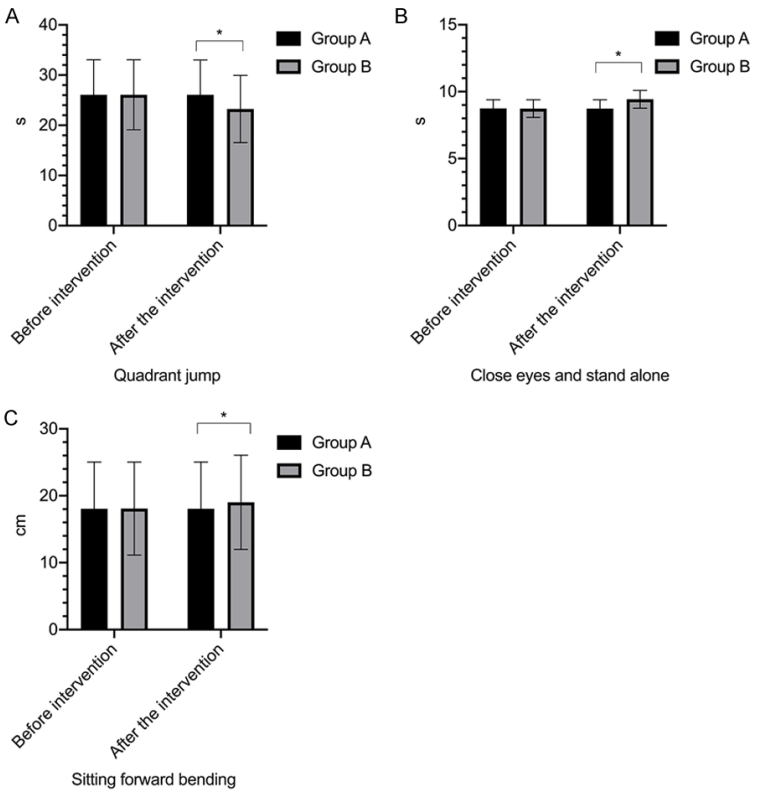

Figure 4. Comparison of physical fitness indexes between the two groups. A. Shows the comparison of duration of quadrant jumps between the two groups before intervention ($P > 0.05$), and the duration of quadrant jumps in Group B was shorter than that in Group A after intervention ($P < 0.05$). B. Reveals the comparison of duration of standing on one leg with eyes closed between the two groups before intervention ($P > 0.05$), and the duration of standing on one leg with eyes closed in Group B was longer than that in Group A after intervention ($P < 0.05$). C. Demonstrates the comparison of distance reached in seated forward bend between the two groups before intervention ($P > 0.05$), and the distance reached in seated forward bend in Group B was longer than that in Group A after intervention ($P < 0.05$). *indicates the comparison with Group A, $P < 0.05$.

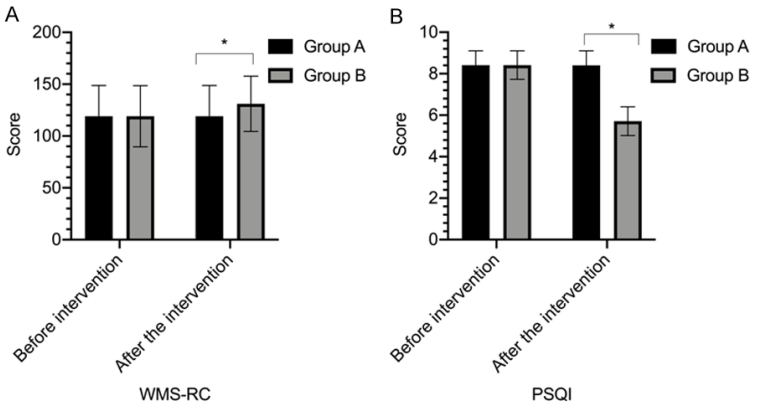

Figure 5. Comparison of scores of sleep quality and memory function between the two groups. A. Reveals the comparison of WMS-RC scores between the two groups before intervention ($P > 0.05$), and WMS-RC scores in Group B were higher than those in Group A after intervention ($P < 0.05$). B. Shows the comparison of PSQI scores between the two groups before intervention ($P > 0.05$), and PSQI scores in Group B were lower than those in Group A after intervention ($P < 0.05$). *indicates the comparison with Group A, $P < 0.05$.

skin, ligaments, muscles and skeleton, and plaza dancing can improve the coordination of the body and avoid muscular dystrophy [24]. Furthermore, some jumping movements in plaza dancing require the dancers to stand with one leg as the center of gravity. Such movements require high balance of the body. Therefore, plaza dancing can improve the balance abilities of the body. Although plaza dancing movements seem simple, there are multiple changes in plaza dancing movements, and such movements require a high physical sensitivity. Therefore, regular plaza dancing can help improve the physical sensitivity in middle-aged and elderly women [25]. Compared with Group A, Group B had lower PSQI scores and higher WMS-RC scores after intervention ($P < 0.05$), exhibiting that plaza dancing can improve memory function and sleep quality. The investigation of the mechanism of action demonstrated that plaza dancing could increase the neurotransmitter concentration in blood plasma to play a sedative and hypnotic role, and regular physical exercise can effectively regulate the biocycle and rhythm of the body, raise the core temperature in the central nervous system, promote sleepiness, and improve sleep quality. Additionally, multiple dance movements are available in plaza dancing, requiring a stronger memory ability of dancers. Long-term plaza dancing can improve the memory functions of dancers. Eventually, our

Table 2. Comparison of quality of life scores between the two groups before intervention ($\bar{x}$±s, points)

Groups	Physiological function	Physiological role	Physical pain	General health	Energy	Social function	Emotional function	Mental health
Group A	45.15±2.15	51.12±0.25	50.17±1.18	46.52±2.25	50.33±3.16	49.63±3.27	51.17±2.17	45.57±1.29
Group B	45.18±2.12	51.19±0.22	50.19±1.16	46.58±2.21	50.38±3.12	49.65±3.25	51.19±2.12	45.59±1.23
t	0.073	1.553	0.089	0.141	0.083	0.032	0.049	1.160
P	0.942	0.124	0.929	0.889	0.934	0.975	0.961	0.249

Table 3. Comparison of quality of life scores between the two groups after intervention ($\bar{x}$±s, points)

Groups	Physiological function	Physiological role	Physical pain	General health	Energy	Social function	Emotional function	Mental health
Group A	45.19±2.10	51.16±0.27	50.19±1.16	46.55±2.22	50.36±3.17	49.65±3.21	51.19±2.16	46.01±1.36
Group B	78.52±3.63*	80.12±5.16*	80.47±2.27*	79.99±3.57*	81.16±3.19*	85.15±2.18*	76.15±3.23*	77.86±3.19*
t	58.534	41.184	87.447	58.599	50.556	67.654	32.164	67.582
P	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001

Note: *indicates the comparison with Group A, $P < 0.05$.

study results also exhibited that plaza dancing could improve the quality of life of dancers. The investigation of the mechanism of action suggested that the pleasant and relaxing music and cheerful dance movements can help people feel refreshed and release their pressure [26]. In addition, plaza dancing offers a good platform for interpersonal communication among middle-aged and elderly women, so as to promote interpersonal communication, enrich their lives, and improve their quality of life [27].

In summary, the effect of plaza dancing is satisfactory, and plaza dancing is conducive to improving the figure, physical function and fitness, memory function, sleep quality and quality of life in middle-aged and elderly women.

Limitation analysis: Although this study proves that plaza dancing is conducive to improving the physical and mental health of middle-aged and elderly women, the plaza dancing should be continuously performed for a long time, and the standard movements should be conducted, so as to achieve the satisfactory dancing effects. Moreover, the impact of plaza dancing on the sense of happiness of middle-aged and elderly women needs further research.

Acknowledgements

This work was supported by the Qiqihar Philosophy and Social Science Project (No. QSX2015-53YB).

Disclosure of conflict of interest

None.

Address correspondence to: Yang Cao, Physical Education Department, Qiqihar Medical University, No. 333, Bukuibei Street, Qiqihar, Heilongjiang Province, China. Tel: +86-13314527680; E-mail: caoyangy@21cn.com

References

[1] Yu CW, Rau PP and Liu X. Development and preliminary usability evaluation of a somatosensory square dance system for older Chinese persons: mixed methods study. JMIR Serious Games 2020; 8: e16000.

[2] Franco MR, Sherrington C, Tiedemann A, Pereira LS, Perracini MR, Faria CSG, Negrão-Filho RF, Pinto RZ and Pastre CM. Effect of senior dance (DanSE) on fall risk factors in older adults: a randomized controlled trial. Phys Ther 2020; 100: 600-608.

[3] Sun ZF, van Hemert MC, Loreau J, van der Avoird A, Suits AG and Parker DH. Molecular square dancing in CO-CO collisions. Science 2020; 369: 307-309.

[4] Barranco-Ruiz Y, Paz-Viteri S and Villa-González E. Dance fitness classes improve the health-related quality of life in sedentary women. Int J Environ Res Public Health 2020; 17: 3771.

[5] Morice E, Moncharmont J, Jenny C and Bruyneel AV. Dancing to improve balance control, cognitive-motor functions and quality of life after stroke: a study protocol for a randomised controlled trial. BMJ Open 2020; 10: e037039.

[6] Wang S, Yin H, Meng X, Shang B, Meng Q, Zheng L, Wang L and Chen L. Effects of Chinese square dancing on older adults with mild cognitive impairment. Geriatr Nurs 2020; 41: 290-296.
[7] Norouzi E, Hosseini F, Vaezmosavi M, Gerber M, Pühse U and Brand S. Zumba dancing and aerobic exercise can improve working memory, motor function, and depressive symptoms in female patients with fibromyalgia. Eur J Sport Sci 2020; 20: 981-991.
[8] Mattle M, Chocano-Bedoya PO, Fischbacher M, Meyer U, Abderhalden LA, Lang W, Mansky R, Kressig RW, Steurer J, Orav EJ and Bischoff-Ferrari HA. Association of dance-based mind-motor activities with falls and physical function among healthy older adults: a systematic review and meta-analysis. JAMA Netw Open 2020; 3: e2017688.
[9] Varilek BM and Isaacson MJ. The dance of cystic fibrosis: experiences of living with cystic fibrosis as an adult. J Clin Nurs 2020; 29: 3553-3564.
[10] May T, Chan ES, Lindor E, McGinley J, Skouteris H, Austin D, McGillivray J and Rinehart NJ. Physical, cognitive, psychological and social effects of dance in children with disabilities: systematic review and meta-analysis. Disabil Rehabil 2021; 43: 13-26.
[11] Tison L, Duer A, Púčiková V, Greggers U and Menzel R. Detrimental effects of clothianidin on foraging and dance communication in honey bees. PLoS One 2020; 15: e0241134.
[12] Wanke EM, Haenel J and Groneberg DA. Musculoskeletal pain in Latin American formation dance: localization, assessment, and related behavior. J Dance Med Sci 2020; 24: 24-32.
[13] Shaki S and Fischer MH. Nothing to dance about: unclear evidence for symbolic representations and numerical competence in honeybees. A comment on: symbolic representation of numerosity by honeybees (apis mellifera): matching characters to small quantities. Proc Biol Sci 2020; 287: 20192840.
[14] DiPasquale S and Kelberman C. An integrative dance class to improve physical function of people with developmental and intellectual disabilities: a feasibility study. Arts Health 2020; 12: 236-249.
[15] Dos Santos Delabary M, Monteiro EP, Donida RG, Wolffenbuttel M, Peyré-Tartaruga LA and Haas AN. Can samba and forró Brazilian rhythmic dance be more effective than walking in improving functional mobility and spatiotemporal gait parameters in patients with Parkinson's disease? BMC Neurol 2020; 20: 305.
[16] Carapellotti AM, Stevenson R and Doumas M. The efficacy of dance for improving motor impairments, non-motor symptoms, and quality of life in Parkinson's disease: a systematic review and meta-analysis. PLoS One 2020; 15: e0236820.
[17] Jeffries AC, Wallace L, Coutts AJ, Cohen AM, McCall A and Impellizzeri FM. Injury, illness, and training load in a professional contemporary dance company: a prospective study. J Athl Train 2020; 55: 967-976.
[18] Zhuo ZW and Xu GX. Effects of square dance exercise on anthropometric parameters and quality-of-life of middle-aged and elderly women. Phys Educ Rev 2015; 34: 111-112, 118.
[19] Cherriere C, Robert M, Fung K, Tremblay Racine F, Tallet J and Lemay M. Is there evidence of benefits associated with dancing in children and adults with cerebral palsy? A scoping review. Disabil Rehabil 2020; 42: 3395-3402.
[20] De-la-Cruz-Torres B, Barrera-García-Martín I, De la Cueva-Reguera M, Bravo-Aguilar M, Blanco-Morales M, Navarro-Flores E, Romero-Morales C and Abuín-Porras V. Does function determine the structure? Changes in flexor hallucis longus muscle and the associated performance related to dance modality: a cross-sectional study. Medicina (Kaunas) 2020; 56: 186.
[21] Southcott J and Joseph D. "If you can breathe, you can dance": fine lines contemporary dance for mature bodies in Melbourne, Australia. J Women Aging 2020; 32: 591-610.
[22] Dogru-Huzmeli E, Fansa I, Cetisli-Korkmaz N, Oznur-Karabicak G, Lale C, Gokcek O and Cam Y. Dancing: more than a therapy for patients with venous insufficiency. Vascular 2020; 28: 189-195.
[23] Su YH and Keller PE. Your move or mine? Music training and kinematic compatibility modulate synchronization with self- versus other-generated dance movement. Psychol Res 2020; 84: 62-80.
[24] Horter DA, Heslin K, Forgie M, Malloy E and Kram JJF. Dancing during labor: are women down to boogie? J Patient Cent Res Rev 2020; 7: 349-354.
[25] Papageorgiou E, Xanthou F, Dardiotis E and Tsironi EE. Dancing eyes syndrome from West Nile virus encephalitis. Postgrad Med J 2020; 96: 442.
[26] Calverley P. Angels dancing on the tip of a needle: interpreting clinical trials in chronic obstructive pulmonary disease. Am J Respir Crit Care Med 2020; 202: 1206-1207.
[27] Toberna CP, Horter D, Heslin K, Forgie MM, Malloy E and Kram JJF. Dancing during labor: social media trend or future practice? J Patient Cent Res Rev 2020; 7: 213-217.