

Exploring factors influencing whether residents participate in square dancing using social cognitive theory

A cross-sectional survey in Chongqing, China

Feng Peng, MD^{a,b,c,d,e}, Hongjia Yan, BS^{a,c,d,e}, Manoj Sharma, PhD^f, Ying Liu, BS^{c,d,e,g}, Ying Lu, BS^{a,c,d,e}, Shijie Zhu, BS^{a,c,d,e}, Peiqian Li, BS^{a,c,d,e}, Nianying Ren, BS^{a,c,d,e}, Ting Li, BS^{a,c,d,e}, Yong Zhao, MD^{a,c,d,e,*}

Abstract

Physical inactivity is a worldwide public health problem, and it is a risk factor for several chronic diseases. Square dancing nightly may be an efficient way to promote physical activity among Chinese residents. This study aims to explore factors that affect resident participation in square dancing on the basis of social cognitive theory constructs (outcome expectations, outcome expectancies, self-efficacy, self-control, and environment) that may provide a scientific basis for designing interventions to promote physical activity in the future.

Forty squares near neighborhood communities in Chongqing were randomly selected. A sample of 1732 residents who came to these squares at 18:00–21:00 were interviewed using a social cognitive theory questionnaire jointly developed by researchers from Chongqing Medical University and Jackson State University.

Among 1732 respondents, 279 (16.1%) were male and 1457 (83.9%) were female. A total of 939 (54.2%) of the respondents were square dancers. The mean age of the dancers was 58.6 (SD=9.1) years. Of the dancers, 825 (87.9%) danced at least 150 minutes every week, and 792 (84.2%) indicated that they had danced for more than 1 year. All the constructs of social cognitive theory were significantly different between residents whether they danced or not ($P < .001$ for all). Women (OR=1.54, 95% CI: 1.03–2.31) were more likely to dance. Nonretired residents (OR=0.53, 95% CI: 0.39–0.74) were less likely to dance. Residents with income of more than CNY 4000 per month were less likely to dance (OR=0.44, 95% CI: 0.23–0.86). Residents with high self-efficacy (OR=2.01, 95% CI: 1.81–2.22), and high self-control (OR=1.26, 95% CI: 1.18–1.34) were more likely to dance.

This study provides salient implications for developing interventions to promote square dancing by using social cognitive theory. Gender, retirement, income, and self-efficacy would be the factors influencing whether residents participate in square dancing.

Abbreviations: CI = confidence interval, NCD = noncommunicable disease; OR = odds ratio, SCT = social cognitive theory, SD = standard deviation.

Keywords: dance, physical activity, social cognitive theory, square

Editor: Massimo Tusconi.

FP and HY contributed equally to this work.

This research was funded by the seventh phase of the juvenile innovative talent cultivation "Young eagles plan" program from Chongqing Municipal Education Commission (project number: CY180406) in 2018.

The authors have no conflicts of interest to disclose.

^a School of Public Health and Management, ^b School of Nursing, ^c Research Center for Medicine and Social Development, ^d The Innovation Center for Social Risk Governance in Health, ^e Chongqing Key Laboratory of Child Nutrition and Health, Chongqing Medical University, Chongqing, China, ^f Department of Behavioural and Environmental Health, Jackson State University, Jackson, MS, ^g The Second Clinical College, Chongqing Medical University, Chongqing, China.

* Correspondence: Yong Zhao, Chongqing Medical University, Chongqing 400016, China (e-mail: zhaoyong@cqmu.edu.cn).

Copyright © 2020 the Author(s). Published by Wolters Kluwer Health, Inc. This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial License 4.0 (CCBY-NC), where it is permissible to download, share, remix, transform, and buildup the work provided it is properly cited. The work cannot be used commercially without permission from the journal.

How to cite this article: Peng F, Yan H, Sharma M, Liu Y, Lu Y, Zhu S, Li P, Ren N, Li T, Zhao Y. Exploring factors influencing whether residents participate in square dancing using social cognitive theory: A cross-sectional survey in Chongqing, China. *Medicine* 2020;99:4(e18685).

Received: 30 July 2019 / Received in final form: 11 November 2019 / Accepted: 8 December 2019

<http://dx.doi.org/10.1097/MD.0000000000018685>

1. Introduction

Physical inactivity is a worldwide public health problem. The eighth edition of the 2015 to 2020 Dietary Guidelines for Americans recommends that adults need at least two and a half hours of moderate physical activity and should practice muscle-building exercises at least 2 days per week.^[1] However, in 2015, among the 50 states and District of Columbia, 45 had over a fifth of their adults without any leisure-time physical activity, and 8 had over 30% of residence without physical activity.^[2] The Dietary Guidelines for Chinese Residents (2016) recommend that people should engage in moderate physical activity at least 5 days per week and at least 30 minutes each day, corresponding to a weekly total of at least 150 minutes.^[1] In 2015, the overall prevalence of physical inactivity in residents aged more than 40 years in China was 63.1%.^[3]

Insufficient physical activity may result in serious health risks, and it has already been a leading risk factor for global mortality and is rising in many countries, adding to the burden of noncommunicable diseases (NCDs) and affecting general health worldwide. In addition, NCDs prevalence is a public health problem. By 2020, NCDs would account for approximately 70% of the global burden of disease.^[4] Therefore, the WHO has developed a new global plan on physical activity 2018 to 2030: increasing the number of active people for a healthier world to

help countries scale up policy actions to promote physical activity.^[5] However, finding suitable forms of physical activity to promote and improve physical activity is a challenge worldwide.

Square dancing, also known as dama square dance,^[6] is participated by dancers almost every night in the midst of or adjacent to housing units and recreation spaces, squares, parks, playgrounds, or courtyards all over China. Square dancing can be classified as a moderate intensity exercise that increases the heart-rate and generates light sweat according the Dietary Guidelines for Chinese Residents.^[1] Square dancing is accompanied by music and usually led by a local leader. It is gaining popularity with middle-aged and older-adult women.^[6] “The National Fitness Program (2016–2020)” promulgated by the China State Council in 2016, recommends this form of dancing for fitness exercise programmes.^[7] Studies have shown that square dancing not only has a remarkably effect on reducing body mass index,^[8] enhancing muscle strength, promoting body balance and other indicators,^[9] but also has a positive contribution in protecting against many NCDs such as diabetes^[10] and osteoporosis.^[11] However, few studies have conducted quantitative investigations to explore factors that affect residents’ participation in square dancing on the basis of any behavioral theory.

Identifying reasons for the failure to exercise is also a challenge. Social cognitive theory (SCT) presents a useful framework to understand exercise behavior.^[12] SCT constructs of self-efficacy, self-control, outcome expectation and outcome expectancy, as well as research on the influencing factors of the environment, provide a suitable framework for assessing participation in square dancing. Self-efficacy describes the belief in one’s ability to organize and execute the course of action required to produce a certain level of achievement. Outcome expectations describe the expected benefits of the outcome of a person’s behavior. Outcome expectancies describe the assessment of each resident’s idea about the importance of expectation benefits. Self-control describes setting goals and developing plans to accomplish chosen behaviors, and it is enhanced by goal-setting, self-monitoring, and self-rewarding skills to enhance target behavior. Environment describes the surrounding physical or social environment or conditions.^[13,14]

This study aims to explore factors that affect residents’ participation in square dancing on the basis of SCT constructs (outcome expectations, outcome expectancies, self-efficacy, self-control, and environment), possibly providing a scientific basis for promoting physical activity in the future.

2. Methods

2.1. Ethical review

The present study protocol was approved by the Ethics Committee of Chongqing Medical University (number: 2016001).

2.2. Research methods and samples

A cross-sectional survey on residents, which used an interview questionnaire, was conducted in Chongqing from March to September in 2018. By adopting the random cluster sampling method, 40 urban and suburban communities in Chongqing were randomly selected. All residents who appeared in the square between 18:00–21:00 were selected for the 1-to-1 interview using a questionnaire survey. Exclusion criteria were as follows: those aged <18 years old; nondancers who already exercised enough

based on the Dietary Guidelines of Chinese Residents (2016); those who suffer from any medical condition, including any physical disability that prevented them from being physically active; and those who are unable to understand the questionnaire due to limited hearing or comprehension. All investigators had medical backgrounds and have received unified training. A total of 1800 questionnaires were distributed and 1732 valid questionnaires were returned. The study population consisted of 279 (16.1%) male and 1453(83.9%) female respondents. All subjects provided informed consent prior to participating in this study.

2.3. Questionnaire and instrument

The questionnaire was developed by research analysts from Jackson State University and Chongqing Medical University.^[15] The questionnaire consists of 3 parts. The first part is demographic characteristics, including gender, age, registered permanent residence, education level, retirement status, and monthly disposable income. The second part is about square dancing; this part assesses the frequency of dancing per week, the intensity of dancing per week, the total minutes of dancing per week, and the years of experience that dancers have. Residents who did not participate in dancing would not answer this part. The third part consists of the 5 constructs of SCT, namely, outcome expectations, outcome expectancies, self-efficacy, self-control, and environment. The internal consistency of the section of dancing among 1732 participants based on SCT was acceptable (Cronbach’s alpha =0.87). The questions about SCT constructs were as follows: 5 questions were about outcome expectations to assess residents’ beliefs about the benefits of square dancing, 5 questions were about outcome expectancies to assess residents’ perceptions of the importance of expected return; 2 questions were about self-efficacy, 3 questions were about self-control, and 3 questions were about the dancing environment. High scores on each subscale were hypothesized to be associated with the likelihood of participation in square dancing (Table 1).

2.4. Statistical analysis

We used EpiData3.1 to create a database for statistical analysis using IBM SPSS 22.0 software (SPSS Inc, Chicago, IL). Descriptive variables are reported in terms of frequency, percentage, mean, standard deviation, minimum, and maximum. To evaluate the correlation between variables, binary logistic regression was used. Independent variables were gender, age, registered permanent residence, education level, retirement status, monthly disposable income, and SCT (outcome expectations, outcome expectancies, self-efficacy, self-control, and environment). The dependent variable was whether residents dance. We set nondancers to 0 and dancers to 1. The statistical test included a double-sided test, and $P < .05$ was considered statistically significant.

3. Results

3.1. Characteristics of the sample

This survey involved 1732 residents, which included 939 (54.2%) dancers and 793 (45.8%) nondancers, who all answered the questions. Of all interviewees, 1453 (83.9%) were female and 279 (16.1%) were male. Respondents were between 18 and 86

Table 1
Specific problems in social cognitive theory constructs.

Constructs	Specific problems
Outcome-expectations*	If I try to engage in square dancing, I will... (1) ...have fewer illnesses? (2) ...have better figure? (3) ...have more friends? (4) ...enjoy life more? (5) ...have a sense of belonging?
Outcome-expectancies†	How important is it to you that you. . . (1) ...have fewer illnesses? (2) ...have better figure? (3) ...have more friends? (4) ...enjoy life more? (5) ...have a sense of belonging?
Self-efficacy*	Do you agree that you will... (1) ...confidence to go to square dance once (2) ... confidence to go to square dance despite difficulties
Self-control*	Do you agree that you will... (1) . . . set goals to go to square dance? (2) ... Remind and supervise yourself to go to square dance? (3) ...reward yourself with something you like for going to square dance?
Environment*	If you want to square dance, can you... (1) . . . have a suitable place for square dancing? (2) ..afford to pay for the site? (3) ...get to the site easily?

* Response options were "Totally disagree" (0 points), "disagree" (1 points), "Agree sometimes" (2 points), "agree" (3 points), "Totally agree" (4 points).

† Response options were "not at all important" (0 points), "not important" (1 points), "slightly important" (2 points), "important" (3 points), "extremely important" (4 points).

years old, whose mean age was 57.9 (SD = 10.2) years. A total of 252 (14.5%) were not attending/had not graduated from primary school, 563 (32.5%) had only completed primary school, 579 (33.4%) had completed junior middle school, 230 (13.3%) had completed high school/technical school, and 107 (6.3%) had completed junior college degrees or above. A total of 965 (55.7%) were retired and 767 (44.3%) were not retired. A total of 392 (22.6%) earned less than CNY 1000, 596 (34.3%) earned CNY 1000 to 2000, 443 (25.5%) earned CNY 2 001 to 3000, 176 (10.1%) earned CNY 3001 to 4000, and 127 (7.3%) earned more than CNY 4000 each month. Gender ($P < .01$), age ($P < .01$), education level ($P < .01$), retirement status ($P < .01$), and personal disposable income ($P < .01$) significantly varied between dancers and nondancers (Table 2).

3.2. Exercise level of residents who dance

Among 939 dancers, 825 (87.9%) danced at least 150 minutes in the past week. A total of 695 (74.0%) danced at least 5 days in the past week. A total of 879 (93.6%) on average danced at least 30 minutes a day in the past week. A total of 792 (84.3%) had been dancing more than 1 year (Table 3).

3.3. Descriptive statistics of SCT constructs

We summarized the means and standard deviations of the SCT constructs. Compared with nondancers, dancers had a significantly higher score of expectations in total score ($P < .001$), self-efficacy ($P < .001$), self-control ($P < .001$), and environment ($P < .001$) for participating in square dancing (Table 4).

Table 2
Demographic characteristics of residents who dance and not dance in Chongqing, China.

Variable	Total (n = 1732) n(%) / mean ± SD	Dancer (n = 939) n(%) / mean ± SD	Nondancer (n = 793) n(%) / mean ± SD	χ^2/t	P value
Gender				77.864	<.001 [†]
Female	1453 (83.9)	855 (91.1)	598 (75.4)		
Male	279 (16.1)	84 (8.9)	195 (24.5)		
Age [18–86 y old]	57.9 ± 10.2	58.6 ± 9.1	57.0 ± 11.3	3.065	<.001 [†]
Registered permanent residence				5.521	.063
Urban	617 (35.6)	341 (36.3)	276 (34.8)		
Rural area	585 (33.8)	295 (31.4)	290 (36.6)		
Agricultural to nonagricultural	530 (30.6)	303 (32.3)	227 (28.6)		
Education level				18.240	.001 [†]
Not attending/not graduating from primary school	252 (14.5)	119 (12.7)	133 (16.8)		
Primary school	563 (32.5)	316 (33.7)	247 (31.1)		
Junior middle school	579 (33.4)	329 (35.0)	250 (31.5)		
High school/technical School	230 (13.3)	133 (14.2)	97 (12.2)		
Junior college degree or above	107 (6.3)	42 (4.4)	65 (8.5)		
Retired				23.406	<.001 [†]
Yes	965 (55.7)	573 (61.0)	392 (49.4)		
No	767 (44.3)	366 (39.0)	401 (50.6)		
Monthly income				16.336	.003 [†]
CNY <1000	388 (22.4)	211 (22.5)	177 (22.3)		
CNY 1000–2000	596 (34.4)	352 (37.5)	244 (30.8)		
CNY 2001–3000	443 (25.6)	239 (25.5)	204 (25.7)		
CNY 3001–4000	176 (10.2)	80 (8.5)	96 (12.1)		
CNY >4000	127 (7.4)	56 (5.9)	71 (9.1)		

Statistically significant ($P < .05$).

[†] Statistically significant ($P < .01$).

Table 3
The exercise level of the residents who dance in Chongqing, China.

Variable	Number	Percentage
How long did you dance altogether in the past week?		
≥ 150 min	825	87.9
<150 min	114	12.1
How many days have you dancing the square in the past week?		
≥ 5 d	695	74.0
<5 d	244	26.0
How long have you been dancing on average every day in the past week?		
≥ 30 min	879	93.6
<30 min	60	6.4
How long have you stick to the dance?		
<1 y	147	15.7
≥ 1 y	792	84.3

3.4. Binary logistic regression to identify factors that affect residents' inclination to dance

In multivariable analyses, self-efficacy and self-control were associated with whether residents participate in square dancing or not. Residents with a high score in self-efficacy were likely to participate in square dancing, as were residents with a high score in self-control. Women were more likely to participate in square dancing than men. Nonretired residents were less likely to participate in square dancing than retired residents. Residents with higher income were less likely to participate in square dancing than those with lower income (Table 5).

4. Discussion

Square dancing is participated by dancers almost every night in China. It is especially popular among middle-aged and older-adult women. This study determined that the constructs of self-efficacy and self-control of SCT can be the factors that affect whether residents participate in square dancing. Moreover, gender, retirement, and personal income of more than CNY 4000 per month were considered factors. An estimated 80% of dancer-residents could reach the amount of exercise recommended in the Dietary Guidelines for Chinese Residents (2016).

In this study, 939 (54.2%) of residents participated in square dancing; this level of participation is much higher than the 30.7% reported in a survey conducted by the Administration of Sports of Chongqing.^[16] All respondents in this study were investigated on selected squares near communities, where the square dancing occurred. However, the data reported by the government were collected from a household survey. The marked difference of the proportion indicated that the number of potential residents who

Table 5
The influencing factors of whether to dance behavior by binary logistic regression in Chongqing, China.

Variables	β	OR	95% CI	P value
Gender				
Male		1		
Female	0.43	1.54	1.03–2.31	.04 [†]
Age [18–86 y old]	0.01	1.01	0.99–1.03	.22
Registered permanent residence				
Urban		1		
Rural area	−0.08	0.92	0.63–1.35	.68
Agricultural to nonagricultural	0.00	1.00	0.69–1.44	.98
Education level				
Not attending/not graduating from primary school		1		
Primary school	0.17	1.18	0.77–1.82	.45
Junior middle school	0.34	1.40	0.89–2.20	.14
High school/technical school	0.03	1.03	0.57–1.86	.92
Junior college degree or above	−0.07	0.93	0.42–2.05	.86
Retired				
Yes		1		
No	−0.63	0.53	0.39–0.74	.00 [‡]
Monthly income				
CNY <1000		1		
CNY 1000–2000	0.03	1.03	0.71–1.48	.89
CNY 2001–3000	−0.33	0.72	0.47–1.11	.14
CNY 3001–4000	−0.41	0.66	0.38–1.16	.15
CNY >4000	−0.82	0.44	0.23–0.86	.02 [†]
Social Cognitive Theory constructs				
Expectations total score*	0.00	1.00	1.00–1.01	.33
Self-efficacy	0.70	2.01	1.81–2.22	.00 [‡]
Self-control	0.23	1.26	1.18–1.34	.00 [‡]
Environment	−0.06	0.95	0.88–1.01	.11

CI=confidence interval, OR=odds ratio.

* Multiply each outcome expectations by the corresponding outcome expectancies to get the outcome expectations total score.

[†] Statistically significant ($P < .05$).

[‡] Statistically significant ($P < .01$).

can be involved in square dancing is large. This number includes, in particular, those who watch TV at home and do not exercise enough or none at all, despite their family numbers or friends dancing.

This study is the first in China to associate SCT with square dancing among residents. Residents with high self-efficacy were likely to participate in square dancing, which is similar to the results found in a dance intervention study.^[17] By finding a good dancer, especially a good friend, to reinforce encouragement and show skill in square dancing, an interested person can practice dancing in small steps, thereby enhancing his or her self-efficacy

Table 4
Social cognitive theory constructs among residents in Chongqing, China.

Constructs	Possible range	Observed range	Mean (SD)	Cronbach alpha	Dancer (mean±SD)	Nondancer (mean±SD)	P value
Expectations total score*	0–80	0–80	40.77 (19.01)		46.81 ± 17.85	33.62 ± 17.83	<.001 [‡]
Self-efficacy	0–8	0–8	5.05 (2.34)	0.85	6.43 ± 1.46	3.42 ± 2.14	<.001 [‡]
Self-control	0–12	0–12	6.23 (3.28)	0.88	7.93 ± 2.56	4.21 ± 2.89	<.001 [‡]
Environment	0–12	0–12	9.15 (2.56)	0.79	9.77 ± 1.94	8.41 ± 2.98	<.001 [‡]
Total				0.87			

* Multiply each outcome expectations by the corresponding outcome expectancies to get the outcome expectations total score.

Statistically significant ($P < .05$).

[‡] Statistically significant ($P < .01$).

for participating in the exercise. A systematic review indicates that dance may be a valuable approach to strengthen aspects of self-efficacy.^[18] Thus, success in participating in square dancing, even once, may be the critical factor for residents who are interested in this form of exercise. In this study, residents with high self-control were likely to participate in square dancing; this finding is similar to that of a previous study.^[19] A present meta-analysis suggests that repeated practice can improve self-control.^[20] Further health promotion measures that strengthen one's self-monitoring by repeated practice, provide opportunities for setting goals to square dancing and give rewards for reinforcing accomplishment of goals can enhance self-control for participating in exercise.

Women were more likely to participate in square dancing than men; this result is similar to that of a previous study.^[6] In our previous interviews with male audiences on square dancing, men found dancing movements too soft to constitute exercise; thus, male audiences felt reluctant to dance. A previous study showed a similar result.^[21] Moreover, dance movements are so gentle that men consider dancing feminine, constituting another possible critical factor. Vigorous and high-intensity dancing especially designed for men may be needed in the future. A previous study reported that the main factor that affected the enjoyment of square dancing was age.^[22] However, the present study found that age did not significantly vary between residents who danced and those who do not; a possible reason for this finding may be the fact that all respondents were selected from squares, including dancing-resident and the audience around them. This result indicated that attracting such audiences to be dancer-resident may be a good idea.

The Dietary Guidelines for Chinese Residents (2016) recommends that adults should perform moderate-intensity physical activity at least 5 times per week, for at least 30 minutes per instance; in other words, moderate-intensity aerobic physical activity for at least 150 minutes every week.^[1] Many previous studies have shown that square dancing had a good exercise function. This study presented a quantitative result for the first time; an estimated 80% of dancer-resident could reach the recommended amount of exercise, which indicated that square dancing seems to be an efficient way to promote physical activities of residents. Health promotion workers can conduct a series of interventions to encourage them to participate in square dancing. Such interventions will be particularly helpful for residents who are retired, middle-aged, and older-adult women who earn less than CNY 4000 per month, who would otherwise be watching around in the square or staying at home.

5. Limitations

This study has several limitations. First, data were obtained using self-report questionnaires. Issues that arise from self-reporting include dishonesty or a lack of understanding. Second, the majority of the participants were women. Further studies should confirm and improve the applicability of the conclusion among male participants. Third, the survey was conducted on squares; thus, the crowd selection may be biased. The study was unable to capture the perception among the entire Chongqing square dance community, especially of those who stayed at home or were not present at squares while people were dancing. Further research with household surveys is needed to improve the understanding of the influencing factors. Finally, the temporality of association cannot be determined because this survey design was cross-sectional.

6. Conclusions

This study determined the role of outcome expectations, outcome expectancies, self-efficacy, self-control, and environment on residents' participation in square dancing. This study provides implications for enhancing participation in square dancing by using SCT. Gender, retirement, income, and self-efficacy would be the factors influencing whether residents participate in square dancing.

Acknowledgments

Thank you to all research participants who volunteered for this study and the research staff who contributed to the data collection process, especially thanks to Pro. Ian M. Newman from University of Nebraska, Lincoln, Lumey LH, and Chihua Li from Columbia University, Luotao Lin from University of Massachusetts Amherst, Yanhao Wang, Ziwei Zhang, and Ke Liu from Chongqing Medical University for their significant contribution to assisting in the research design and paper modification. Thanks to Mao-jie Chen, Jing-hao Chen, and Lei Chen from Chongqing Zishui Middle School for their help. Thank you to team members for their support and contributions to this study.

Author contributions

Study design: Feng Peng, Yong Zhao.

Questionnaire: Feng Peng, Manoj Sharma.

Conceptualization: Yong Zhao.

Data curation: Shijie Zhu, Peiqian Li, Nianyong Ren, Ting Li.

Formal analysis: Hongjia Yan, Ying Liu, Ying Lu.

Funding acquisition: Yong Zhao.

Investigation: Feng Peng, Hongjia Yan, Ying Liu, Ying Lu, Shijie Zhu, Peiqian Li, Nianyong Ren, Ting Li.

Methodology: Feng Peng, Hongjia Yan, Manoj Sharma, Ying Lu.

Project administration: Feng Peng.

Resources: Yong Zhao.

Supervision: Yong Zhao.

Validation: Yong Zhao.

Writing – original draft: Feng Peng, Hongjia Yan.

Writing – review & editing: Feng Peng, Yong Zhao.

Feng Peng orcid: 0000-0002-0806-2017.

References

- [1] Wang SS, Lay S, Yu HN, et al. Dietary Guidelines for Chinese Residents (2016): comments and comparisons. *J Zhejiang Univ Sci B* 2016;17:649–56.
- [2] An R, Xiang X, Yang Y, et al. Mapping the Prevalence of Physical Inactivity in U.S. States, 1984–2015. *PLoS One* 2016;11:e0168175.
- [3] Zhou Y, Wu J, Zhang S, et al. Prevalence and risk factors of physical inactivity among middle-aged and older Chinese in Shenzhen: a cross-sectional study. *BMJ Open* 2018;8:e019775.
- [4] Boutayeb A, Boutayeb S. The burden of non communicable diseases in developing countries. *Int J Equity Health* 2005;4:2.
- [5] Organization WH. Global action plan on physical activity 2018–2030: more active people for a healthier world (2018). Secondary Global action plan on physical activity 2018–2030: more active people for a healthier world (2018) 2018. Available at: <https://apps.who.int/iris/bitstream/handle/10665/272722/9789241514187-eng.pdf>. Accessed March 1, 2018.
- [6] Zhou L. Music is not our enemy, but noise should be regulated: thoughts on shooting/conflicts related to Dama square dance in China. *Res Quart Exercise Sport* 2014;85:279–81.

- [7] Jiangang Q, Qi F, Hong I. Research on the Governance and Development of Chinese Square Dance in the New Era. *J Chengdu Sport Univ* 2019;45:70–5.
- [8] Sheng-jie L, Xian-de G. Comparative research of middle-aged women fitness effects of Taiji Quan and Square Dance. *China Sport Sci Technol* 2013;49:103–5.
- [9] al QCe. The comparative research about the effect on the constitution of the middle and aged women through different kinds of body exercising ways. *J Phys Educ Issue* 2000;13–5.
- [10] Yin H, Su-fen L, al TX-be. Effect of square dance on elderly female patients of type 2 diabetes with unsatisfactory blood glucose control. *Hainan Med J* 2015;26:2976–8.
- [11] Jian-yu L, Jia-jun X, al WX-le. Effects of square dance on bone mineral density, estrogen and balance ability of postmenopausal women. *China Sport Sci Technol* 2014;50:78–82.
- [12] Bandura A. Health promotion from the perspective of social cognitive theory. *Psychol Health* 1998;13:623–49.
- [13] Bandura A, Walters RH. *Social learning theory*[M]. Englewood Cliffs, NJ: Prentice-hall; 1977.
- [14] Bandura A. Health promotion by social cognitive means. *Health Educ Behav* 2004;31:143–64.
- [15] Xu X, Pu Y, Sharma M, et al. Predicting physical activity and healthy nutrition behaviours using social cognitive theory: cross-sectional survey among undergraduate students in Chongqing, China. *Int J Environ Res Public Health* 2017;14: E1346.
- [16] Chongqing. AoSo. A survey report on the proportion of regular physical exercise participants in Chongqing in 2014. Secondary A survey report on the proportion of regular physical exercise participants in Chongqing in 2014. 2014. Available at: http://tyj.cq.gov.cn/ty_portal/article/details?id=1374&columnId=. Accessed March 13, 2018.
- [17] Staiano AE, Beyl RA, Hsia DS, et al. Twelve weeks of dance exergaming in overweight and obese adolescent girls: transfer effects on physical activity, screen time, and self-efficacy. *J Sport Health Sci* 2017;6:4–10.
- [18] Schwender TM, Spengler S, Oedl C, et al. Effects of dance interventions on aspects of the participants' self: a systematic review. *Front Psychol* 2018;9:1130.
- [19] Pfeffer I, Strobach T. Behavioural automaticity moderates and mediates the relationship of trait self-control and physical activity behaviour. *Psychol Health* 2018;33:925–40.
- [20] Friese M, Frankenbach J, Job V, et al. Does self-control training improve self-control? A meta-analysis. *Perspect Psychol Sci* 2017;12:1077–99.
- [21] Jette M, Inglis H. Energy cost of square dancing. *J Appl Physiol* 1975;38:44–5.
- [22] Xiao J, Hilton A. An investigation of soundscape factors influencing perceptions of square dancing in urban streets: a case study in a county level city in China. *Int J Environ Res Public Health* 2019;16: E840.