

## Post-exercise effect of fitness atmosphere on the score of emotional experience scale of the elderly

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**Abstract: Subjective:** To explore the post-exercise effect of fitness atmosphere on the score of emotional experience scale of the elderly. **Method:** 90 elderly patients aged 70-79 years old were screened from urban nursing homes and randomly divided into an individual group and a collective group, with 45 patients in each group. The individual group uses the method of walking alone for exercise, while the collective group uses the method of collective fitness. After the first exercise and 2 weeks of continuous exercise, the post-exercise psychological emotional state of the two groups of elderly people was measured and compared using the Post-exercise Emotional Experience Scale. **Result:** After the first exercise, the emotional experience scale score of the collective groups was significantly higher than that of the individual group ( $P < 0.05$ ). After 2 weeks of continuous exercise, there was no significant difference in the two scores of the individual group, while the score of the group was significantly better than its score at the same time point after the first exercise ( $P < 0.05$  or  $P < 0.01$ ). **Conclusion:** To the extent that the content of the exercise is identical, the effect of collective activities of the elderly is significantly better than that of individual activities, and the difference grows more significant over time. Tip: Different forms of fitness exercise atmosphere will have significant differences on the emotional experience scale scores of the elderly, which should be related to the physical and mental characteristics of the elderly who are afraid of loneliness and desirous for communication.

### 1. Introduction

In the old age, people's physiological functions naturally decline, and the disease caused by degenerative diseases is increasing, which seriously jeopardizes the health and the quality of life of the elderly [1, 2]. In addition, at such age, the lack of family ties, especially the loneliness of empty nesters, the transformation of identity roles and the sense of loss after retirement, as well as the property issues, issues on respect for the elderly, neighborhoods, and emergencies, are an important factor bothering their physical and mental health [3]. The use of sports means to intervene in the daily life of the elderly and make sufficient physical adjustment of their physical and mental health to improve their mental state and physical function is conducive to improving the quality of their life [4-5]. In recent years, with the rapid improvement of the living standards and the understanding of fitness for the elderly, various forms of daily fitness activities (such as fitness walking, Tai Chi, square dance and dance for the aged) have been rapidly promoted and popularized among the elderly. However, although related researches have been reported from the perspective of the physical fitness improvement effect of the fitness exercise program for the elderly, there is less study on the effect of the fitness atmosphere on the physical and mental intervention. Based on the special physical and mental characteristics of the elderly such as their physical decline, fear of loneliness and sense of loss, this study used the same exercise programs and content to create a different exercise atmosphere to observe the post-exercise impact on the emotional experience scale of the elderly.

## 2. Subjects and Methods

### 2.1 Subject Selection and grouping

Select for observation 90 elderly people aged 70-79 years old without fitness exercise habits, including 40 males and 50 females. Inclusion criteria: (1) In order to improve the controllability and convenience of the observation process, all selected persons were the elderly from the nursing home of Dongcheng District, Jiaozuo City; (2) They have no special tendency fitness exercise habits (i.e., enthusiastic about a certain activity); (3) In order to avoid the effect of such interference factors as academic qualifications, occupation and living environment on the emotional experience of the subjects, the selected candidates are of primary or secondary education, long-term urban residents, aged 70-79 years old and used to be a worker or an individual professional. Exclusion criteria: patients with severe cardiovascular and cerebrovascular diseases, limb dysfunction, cognitive dysfunction, and mental illness, which make it inconvenient to participate in practical observation. All the candidates were informed and agreeable and able to cooperate in the practice. The patients were divided into an individual group and a collective group by random number table method, with 45 patients in each group, including 20 males and 25 females respectively. There was no significant difference between the two groups ( $P>0.05$ ). See Table 1.

Table 1. Comparison of basic data between the two groups of patients

Groups	M/F	Average Age ( $\bar{x} \pm s$ )	Fitness Habit		Education Background Primary Secondary	Previous Job	
			Yes	No		worker	Self-employed
Individual Group	20/25	67.22 $\pm$ 3.21	17	28	15	33	12
Collective Group	20/25	67.85 $\pm$ 3.40	20	25	29	31	14
					16		

Note: all  $P>0.05$

### 2.2 Research Tools

The Post-exercise Emotional Experience Scale is used to evaluate the emotions of the elderly after their physical exercise, which mainly covers seven items of "tension, anger, fatigue, depression, confusion, energy and self-esteem" including a total of 40 questions, with 0 to 4 scores for each question ("0" point for "almost no", "one" point for "a little" points, "2" points for "moderate", "3" points for "a lot of points" For, and "4" points for "very"). The final score is calculated as follows: the total score of the top 5 questions for negative emotional components, minus the total score of the last 2 questions for positive emotional components, plus 100 points. The lower the final score, the better the emotional state.

### 2.3 Intervention Method and Evaluation

The individual group exercised in the form of a separate fitness walk. The group of subjects walked alone along the park trail with the walking speed controlled to moderate to low intensity (the subject wore a heart rate monitor to control its heart rate at 100 times/min) once a day for 25 minutes each time. The collective group exercise in the form of collective fitness. They met at a fixed place every day, and then led by the team leader with a musical accompaniment to walk along the park trail for the same number, duration and load of exercise. After the first exercise and two weeks of continuous exercise, the post-exercise psychological emotional state of the two groups of subjects was evaluated by the "Post-exercise Emotional Experience Questionnaire". Inter-group and intra-group test data comparisons were performed on the two time points.

### 2.4 Statistical Processing

Statistical analysis was performed on the test data of the two groups of subjects using the SPSS 21.0 statistical software package. The mean data were expressed as ( $\pm s$ ), the t test was used to compare the measurement data, and the count data was compared.  $P<0.05$  means that the difference

was statistically significant.

### 3. Result

As can be seen from Table 2, after the first exercise, the comparison of the emotional experience scale scores of the two groups of older people showed that the activity of the collective group was significantly better than the individual group (<sup>1)</sup>  $P < 0.05$ ); after 2 weeks of continuous exercise, there was no significant difference between the two scores ( $P > 0.05$ ) of the individual group, but the scores for continuous exercise showed a trend of deterioration; while the scores of the two groups in the collective group were significantly different in that the scores of the emotional experience scale after the exercise for 2 weeks were significantly better than the first exercise (<sup>2)</sup>  $P < 0.05$ ), and significantly better than the individual group at the same time point (<sup>3)</sup>  $P < 0.01$ ).

Table 2. Comparison of post-exercise emotional experience scale scores of the two groups ( $\bar{x} \pm s$ )

Group	M/F	Emotional experience scale scores after the first exercise	Emotional experience scale scores after two weeks of continuous exercise
Individual Group	20/25	153.91±20.17	159.40±19.65
Collective Group	20/25	136.08±18.44 <sup>1)</sup>	119.31±16.30 <sup>2) 3)</sup>

<sup>3)</sup>  $P < 0.01$ . Note: after the first exercise, inter-group comparison showed <sup>1)</sup>  $P < 0.05$ , intra-group comparison showed <sup>2)</sup>  $P < 0.05$ ; after 2 weeks of exercise, inter-group comparison showed <sup>3)</sup>  $P < 0.01$ .

### 4. Discussion

After entering the old age, people's bodily functions are declining obviously, and, compared with their young and middle age, their psychological needs also change greatly. They are eager to stay healthy and spend their last years in physical and mental pleasure. XXX et al [6], after surveying the health of the elderly, found that the elderly are not optimistic about their physical health. Although they are able to recognize the importance of fitness training to maintain good health and eager to participate in activities and communicate with people in such activities, the overall chances of participating in fitness exercises are not high. This may attribute to the failure of the fitness exercise methods to form a good cohesive force for the enthusiasm and fun of the elderly fitness exercise. As we all know, different methods of exercise will produce different effects on the psychology of the elderly. For example, such exercise methods as bicycle, swimming, Tai Chi, dance, Yangko, and jogging are effective in promoting the cognitive function of the elderly, and the traditional Qigong and Tai Chi exercise methods are better for adjusting the emotional state of the elderly [7-8]. There are also reports that [9-10] the elderly fitness lifestyle is mainly characterized by relatively fixed activity venues, strong group affinity and good interpersonal relationships. It can be seen that the choice of fitness activities for the elderly is more inclined to psychological needs or feelings, and they are more willing to participate in group fitness activities.

In order to explore the effect of collective fitness activities on the emotional experience of the elderly, this study aimed to intervene in the same exercise content of the two groups of elderly people to observe the similarities and differences between the two forms of exercise (the difference is that the individual group adopts the walking exercise alone, while the collective group used collective walking exercise). After the first exercise, it was found that the emotional experience scale score of the elderly in the collective group was significantly better than the individual group; in particular, with the continuation of the exercise, the score advantage of the collective group became more and more significant. This should be related to the following special psychological needs of the elderly for fitness activities: relevant reports suggest [11-12] that, as their life circle shrinks and the opportunities for interpersonal communication decrease, it will lead to their sense of

isolation, loneliness and attachment, which is more prevalent in empty nests or elderly people. Participation in collective fitness activities can provide an effective way for them to return to and integrate into the society or provide them with a sense of respect. XXX [13] pointed out that self-entertainment and self-exercise of one elderly alone will, on the one hand, increase the sense of loneliness due to lack of necessary communication during the exercise, and reduce their enthusiasm and effectiveness for lack of interaction on the other hand; Gallè et al [14] also believe that, regardless of the type of fitness activities, more attention should be paid to the fear of the elderly for loneliness, and their psychological need to communicate and to be recognized. Communication or skill learning among the elderly can help to reduce their sense of loneliness and enhance their sense of existence, which is beneficial to improve their mood and maintain a positive and positive psychological state for a long time.

In summary, based on the special physical and mental needs of the elderly, the fitness atmosphere will have a significant impact on the subjective feelings of the elderly. The collective fitness activities are more conducive to mobilizing the enthusiasm and interest of the elderly to participate in such activities and maintain their positive emotional experience and mentality, which has been verified by this study. Tip: For the elderly group, collective activities should be more used to create a strong fitness atmosphere, because they can meet the special physical and mental needs of the elderly, and provide a high positive recognition of the post-exercise emotional experience.

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