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The comparison of mental health of elderly men in three athletic, active, and sedentary groups

Gholamreza Lotfi[1], Farshid Tahmasbi[2], Faraz Pakzamir[1]

Journal of Research & Health
Social Development & Health Promotion Research Center
Vol. 6, No. 4, Sep & Oct 2016
Pages: 431- 437
DOI: 10.7508/jrh.2016.04.008
Original Article

1. Department of Motor Behavior, Faculty of Physical Education and Sport Sciences, Shahid Rajaee Teacher Training University, Tehran, Iran
2. Department of Motor Behavior, Faculty of Physical Education and Sport Sciences, Tehran University, Tehran, Iran
Correspondence to: Gholamreza Lotfi, Department of Motor Behavior, Faculty of Physical Education and Sport Sciences, Shahid Rajaee Teacher Training University, Tehran, Iran
Email: gholamrezalotfi@srttu.edu

Received: 28 Jun 2015
Accepted: 15 Sep 2015

How to cite this article: Lotfi Gh, Tahmasbi F, Pakzamir F. The comparison of mental health of elderly men in three athletic, active, and sedentary groups. *J Research & Health2016*; 6(4): 431- 437.

Abstract

As a main basis of health, the mental health is required for a good, efficient, and satisfactory personal life. The aim of this study was to compare the mental health and its subscales between elderly men in athletic, active, and sedentary groups. Therefore, we examined 150 elderly men in three groups of athletes, active, and sedentary and proceeded to complete the questionnaires. We administered the general health questionnaire-28. Also, to assign aging participants in two groups of active and sedentary, we used the Yale physical activity questionnaire and Baecke's questionnaire. The athletes aged group was separately selected from the veteran's soccer teams over 60 years. The results of this study revealed that there was a significant difference between three groups in physical activity levels, mental health, and two sub-scales of mental health including depression symptoms, and social function. Also, there was a significant difference between active and sedentary groups and between athletic and sedentary groups in physical symptoms, as well as anxiety and sleep disorder subscales. However the difference was not significant between the athletic and active groups. These results suggest that adapted physical activity programs to the structural and psychological characteristics of elderly men can improve their mental health and lifestyle as much as their physical health.

Keywords: Athletes, Elderly, Male, Mental health, Veterans

Introduction

As a main basis of health, the mental health is required for a good, efficient, and satisfactory personal life. The mental health of individuals in a community, especially with respect to constructive and effective groups, ensures dynamism, growth, and improvement of the community. The aging is not a disease; it is an inevitable fact in natural life span. Nowadays, psychologists assert that individuals psyche is directly affected by their physical and psychological conditions. The healthy and efficient members of community in terms of physical conditions and mental status are leading in progress, dynamism, and improvement of community. Undoubtedly, a prosperous society is the main result of a balance between physical and mental health [1].

In recent years, the attitudes toward aging have changed due to the growth of aging population and increasing of life expectancy. The main problems in improving the health and quality of life in elderly people are maintaining their independence, improving their physical and cognitive health, and making their life active

[2]. The sport and physical activities can delay the aging process. The elderly people with more mobility have greater health and vitality. Therefore, the exercise and physical activity is one of the most effective methods to prevent aging disorders [3].

Eyigor and colleagues reported that the exercise in older women may increase muscle strength and physical function in knee and ankle and enhance the quality of life scores [4]. In a study on the effect of exercise on quality of life in elderly people, it was concluded that using a regular and consistent exercise program may improve different aspects of quality of life among these people and pave the way for healthy aging [5]. In other studies on the effect of physical activity on physical and mental health of people with bipolar disorder, it was revealed that the physical activity has a positive effect on mental and physical health of people with bipolar disorder [6].

The comparison of personality traits of sedentary and active elderly men and studying the relationship between these traits and psychosocial development showed that sporting activities in elderly men can cause personality traits improvement and mental-social development [7]. Also, Japanese researchers examined the impact of mental health on daily life activities of elderly men and concluded that an increase in daily living activities can improve mental health, particularly depression in elderly people [8].

In a study on physical activity and physical health, the researchers concluded that physical activity may jeopardize the mental health, especially when doing hard and severe sporting activities [9]. Many studies which examined the impact of exercise on physical and mental conditions of elderly people in Iran and other countries concluded that regular exercise programs can improve physical conditions including better balance and ability to walk independently, improve health indices, increase mental performance level, and show a positive effect on older people's life quality [10-17].

According to above, the exercise training is not only an important and reliable strategy for maintaining and improving the mental health of elderly people [18]. Also it has been revealed that positive effects of physical activity on physical, psychological, and social health is the best way to promote individuals' physical activity [19]. Another study reported a mutual relationship between health and activity. This means that psychological factors such as increased fear, stress, anxiety, depression, loss of self-esteem, and isolation may impact elderly people's physical activity and increase the risk of disease due to aging [20].

There is much less information about elderly people's motor development than children's motor development. Therefore, the research on aging factors is important on the subject of development and motor learning area. The study on elderly people in different subjects and dimensions is now one of the most active and developing areas of research in countries all around the world. In recent years, this issue also has been considered in academic circles of Asia and its theoretical and empirical development has been relatively well studied. However, in general and especially in Iran, there is a significant gap in this area. Although, the aging population in Iran is not a widespread phenomenon, elderly people are still a special part of population in Iran.

There is a little research concerning all factors affecting elderly in Iran. However, these factors can delay aging in people and above all, the physical activity and exercise has important and undeniable role in improving mental and physical fitness in elderly people. Therefore, the identification of influential factors that facilitate elderly people's life is very important from different aspects. The main advantage of these studies compared to other studies is a great deal of research in this field for concerning the difference of mental health between athletic and non- athletic and sedentary and active groups. None of studies, however, has mentioned the difference between athletic and active groups. Also, most of studies have examined the mental health in general whereas its subscales have

not been separately considered. In this regard, the present study aimed to comparatively examined the mental health and its subscales among three athletic, active, and sedentary groups and investigate the effect of sporting activities, regular activity, and lack of physical activity on mental health in elderly people through ex-post facto design. According to above, it seems that the comparison of mental health in athletic, active, and non-active elderly people helps us understand the factors leading to the possible observed differences and the aim of this study was to compare the mental health and its sub- scales between elderly men in athletic, active, and sedentary groups.

Method

This was a causal-comparative (ex-post facto) analytic study. It aimed to compare the effect of three levels (athletic, active, and sedentary) of physical activity on mental health scores and its four sub-scales.

The study population consisted of all men aged over 60 years in all the regions of Tehran. Totally, 150 elderly men were selected as the participants. Since elderly athletes are rarely found in normal elderly population, they were selected among the individuals who participated in Tehran's veterans soccer teams aged over 60 years old. The active and sedentary groups were selected according to the obtained scores on physical activity questionnaire. Among the total magnitude of 58 elderly athletes aged over 60 years old who took part in Tehran's veterans soccer teams, 50 cases were randomly selected and evaluated. The demographic questionnaire and the two other questionnaires were distributed among more than 400 volunteer elderly men in parks and pools to determine the participants who were eligible for being in active and sedentary groups. The incomplete questionnaires were excluded and the remained questionnaires (365 cases) were ordered based on the scores of elderly people physical activity questionnaire. According to the number of individuals in the athletes group, 50 participants with the lowest weekly physical activity were determined as sedentary group and 50 cases who consumed energy in a week more than others were determined as active group. The scores of second questionnaire, Baecke's activity level questionnaire, were also ordered to ensure proper screening of persons based on activity level. Then, the total scores of two questionnaires for active and sedentary groups were determined and the data related to these cases were analyzed. The Goldberg and Hiller's General Health Questionnaire (GHQ) in 1979, which is known as GHQ-28, was used to assess the mental health of participants. This is a screening questionnaire based on self-reporting. It is used in clinical sets to trace those who have mental health problems. The GHQ-28 questionnaire has four sub-scales: 1- somatic symptoms, 2- anxiety and sleep disorder, 3- social function, and 4- depression symptoms.

The validity of the above mentioned questionnaire was determined using three methods including test-re-test (0.70), bisection (0.93), and Cronbach's alpha (0.90). The validity of GHQ was determined using three methods including concurrent validity, correlation between total score of the questionnaire sub-tests and factor analysis, and correlation coefficients between the sub-tests of this questionnaire and total score (obtained values between 0.72 and 0.87) [21]. Also, Malakooti and colleagues [22] reported that the GHQ with 28 items has a satisfactory reliability and validity for application in clinical and epidemiological studies among elderly population, especially in urban areas.

In this study, the Yale's elderly people's physical activity questionnaire was used to measure the physical activity level of elderly people. This questionnaire consists of 7 questions and evaluates three components including intensity of activity, activity duration, and consumed energy during the activity. In this questionnaire, the hours of activities of elderly in a week are self-reported and consumed energy during the activity is calculated. After calculating the energy consumption in terms of kcal per

week, the consumed energy is converted into Matt unit. Using test-re-test method, the reliability coefficient of this tool was obtained as 0.91. Also, the Cronbach's alpha was used to estimate the internal reliability of questionnaire (0.88) [23]. Several studies have reported an acceptable reliability and validity for this questionnaire among elderly [24,25]. The Baecke's Physical Activity Questionnaire was used as an auxiliary tool to ensure the more accurate screening of active groups and sedentary groups. This questionnaire consists of 16 questions on three domains: business, sport, and leisure. It calculates the total physical activity intensity. The retest coefficient for this questionnaire was obtained as 0.89. Also, the Cronbach's alpha was used to evaluate the internal reliability of this research tool (0.91) [26].

Kolmogorof- Smirnov test was used to investigate the normality of data distribution. The one-way ANOVA was used to compare the mean scores of mental health and each of the four sub-scale scores among the three groups of elderly participants.

Results

The mean and standard deviation of individual characteristics of participants in three groups are shown in Table 1:

Table 1 *Mean and standard deviation of individual characteristics of participants*

Group	n	Height (cm)	Weight (kg)	Age (year)
Athlete	50	171.2±4.8	71.1±5.3	62±2.21
Active	50	170.4±3.9	73.6±4.7	63.26±2.98
Sedentary	50	167.5±4.3	74±4.2	62.96±2.7

The ANOVA results showed no significant differences in demographic characteristics among the participants in three groups. The obtained mean score for physical activity of elderly by Physical Activity Questionnaire in athletes, active, and sedentary groups was 14.09±2.64, 10.06±2.1, and 4.3±1.54, respectively. The one-way analysis of variance showed a significant difference among the three groups in terms of their physical activity level ($p<0.001$). This may be a confirmation on the right assignment of participants in the three groups.

The mean and standard deviation of mental health and its subscale scores in three groups are shown in Table 2.

Table 2 *Mean and standard deviation of mental health and its subscale scores in three groups*

Group	Somatic symptoms	Anxiety and sleep disorder	Social function	Depression symptoms	Mental health
Athlete	1.71±2.03	2.4±2.2	4.75±1.97	0.44±1.46	9.31±5.68
Active	2.9±2.65	4.66±3.19	6.16±2.31	1.44±3.05	15.16±8.91
Sedentary	6.56±3.7	8.1±4.25	8.1±2.29	4.4±4.27	27.17±11.4
ANOVA	p= 0.001	p= 0.001	p= 0.001	p= 0.001	p= 0.001

The presuppositions including normal data distribution and homogeneity of variances were evaluated and confirmed using Kolmogorof- Smirnov test and Levin test, respectively. In other words, the used data had normal distribution and data variance was homogeneous ($p>0.05$). Therefore, the use of one-way analysis of variance was permissible.

The ANOVA test was used to compare the mean scores of mental health and each of the four sub-scale scores among the three groups of elderly participants. Due to the significant difference between the groups, the Tukey test was used to determine the location of differences. The results of the analysis are summarized in Table 3.

According to the Table, the results of ANOVA showed that there was a significant difference between the three groups of elderly participants in terms of mental health

and its four subscale scores. This difference was significant in two sub-scales of anxiety disorder and social function and mental health scores among the three groups. In other words, the scores of athlete elderly were significantly lower than active elderly; and the scores of both groups were significantly lower than the scores of sedentary elderly. The scores of two active and athlete elderly groups were significantly lower than non-active group in two physical symptoms and depression symptoms sub-scales. However, there was no statistically significant difference between the athletes and active elderly groups.

Table 3 *Results of ANOVA and Tukey test*

Scale	F	p-value	Results of Tukey test
Somatic symptoms	50.57*	0.001	Sedentary > Active &Athlete
Anxiety and sleep disorder	37.65*	0.001	Sedentary > Active > Athlete
Social function	29.16*	0.001	Sedentary > Active >Athlete
Depression symptoms	21.55*	0.001	Sedentary >Active &Athlete
Mental health	51.75*	0.001	Sedentary > Active > Athlete

significant at level of p<0.001*

Discussion

This study aimed to compare the mental health and its subscales among three athletes, active, and sedentary male elderly groups. It was found that mental health, the subscales of social functioning and anxiety were significantly different between the three groups. This means that the mental health, social functioning, and anxiety are improved in athlete group than other groups. The mental health, social functioning, and reduced anxiety also are better in active group than sedentary group. In other words, the higher the level of activity of the elderly, their mental health and social function will be better and anxiety will be less. The results are consistent with the results of most studies [5,6,13,14,20,22]. However, the results are inconsistent with the results obtained by Pluso [9]. In this study, the athlete elderly group had lower mental health than other elderly. The lack of consistency in the results of these two researches may be due to the different used tests to measure mental health and different way of assessing the elderly activity and the type of competitive sporting activities in these researches. However, although it seems that regular physical activity (being active) has positive effects on mental health and many important mental factors of elderly, the regular participation in exercise and sports (being athlete), especially group sports such as football, may provide more mental health and impacts on the indicators such as their social functioning and reduced anxiety more than active elderly people. If the daily life of older people is not occupied with useful activities, their physical and mental health will be damaged. One third of the patients in mental hospitals are persons who are more than forty-five years old. If the old people in the community have fruitless life and constantly immerse in the imagination of past life, their numbers will probably increase in mental hospitals [27]. Therefore, the regular participation in exercise and physical activity not only prevents isolation and loneliness of elderly and fills a large part of their time, but also improve their mental health.

Another finding of this study was that in comparison of the two subscales including physical symptoms and depression among the three elderly male athlete, active, and sedentary groups, there was a significant difference between active and athlete groups and sedentary group. However, there was no significant difference between athlete and active elderly groups in terms of two mentioned sub-scales. In other words, regular physical activity is sufficient for improving physical symptoms and depression among the elderly and the participation in exercises, games, and sport competitions does not cause significant advantage in terms of these two subscales. These results can be evidence to Havighurst's activity theory who believed that

activity enhances health in aging. So, the adults who are active are encouraged in activities, acquire new positions, relationships, hobbies, and interests, and get old happily and relaxed [28]. The regular physical activity (being active) is sufficient to achieve these benefits in elderly and being athlete has no particular advantage.

Due to the limited number of older athletes, access to them was difficult and one of the limitations of this study was the access only to older athletes in soccer.

With regard to the different effects of various sports on mental health, it is offered to compare and examine the mental health of older athletes in different sports.

Conclusion

The results showed that if the level of physical activity of older people shifts from sedentary to active and athlete, their mental health will improve and the sub-scale scores such as depression and anxiety will reduce. Also, according to the results of this research, it can be concluded that the movement and exercise programs which are appropriate to the structural and psychological characteristics of elderly not only cause their physical health, but also prepare them to live mentally better and healthier.

Acknowledgements

The authors wish to express their deepest gratitude for all those who helped and conducting this study.

Contribution

Study design: FP, GhL, FT
Data collection and analysis: FP, GhL, FT
Manuscript preparation: GhL, FP

Conflict of Interest

" The authors declare that they have no competing interests. "

Funding

The author (s) received no financial support for the research, authorship and/or publication of this article.

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