

Research Paper**Assessing and Comparing of Balance and Flexibility Among Elderly Men and Women in the Age Group of 60-79 Years*****Vahid Valipour Dehnou¹**, **Reza Motamedi²**

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**Citation:** Valipour Dehnou V, Motamedi R. [Assessing and Comparing of Balance and Flexibility Among Elderly Men and Women in the Age Group of 60-79 Years (Persian)]. Iranian Journal of Ageing. 2018; 13(2):210-221.

Received: 11 Oct 2017

Accepted: 23 Mar 2018

ABSTRACT**Objectives** Functional fitness is a concept that reflects an older adult's ability to perform physical activities of daily living with relative ease. The aim of the present study is to assess and compare balance and flexibility in elderly men and women in the age group of 60-79 years in Khorramabad.**Methods & Materials** In this descriptive and comparative study, 140 elderly people (35 males and 35 females aged 60 to 69 years and 35 males and 35 females aged 70 to 79 years) were conveniently selected and voluntarily participated. To examine balance and flexibility, functional reach and sit and reach tests were used, respectively. For ease of use, tests were performed at the subjects' residence. Independent samples t-test was used to identify any significant difference, and statistical significance was set at $p < 0.05$.**Results** Results showed that significant differences were observed between balance and flexibility of males aged 60 to 69 years and 70 to 79 years ($P < 0.05$); significant differences were observed between balance and flexibility of females aged 60 to 69 years and 70 to 79 years ($P < 0.05$); significant differences were observed between balance and flexibility of males and females aged 60 to 69 years and 70 to 79 years ($P < 0.05$) and 69 to 79 years. Balance and flexibility of both males and females decreased progressively, and the rate of decrement was greater in females than males (-15.79% vs. -14.55% for balance and -17.79% vs. -12.63% for flexibility).**Conclusion** Given the significant role of balance and flexibility in the better performance of daily activities and the reducing them in elderly men and women, it is important to reinforce these two factors of physical fitness throughout life. And to reinforce them, a multicomponent exercise intervention could be the best option.**Key words:**Physical fitness,
Flexibility, Balance,
Elderly females,
Elderly males**Extended Abstract****1. Objectives**

Today, due to the rising life expectancy, aging has become a global epidemic as it is associated with deterioration of ability of individuals to live independently and deterioration in

the quality of good life [1]. In addition, due to the advances in health and medicine over the past century, generally, life expectancy and the population of elderly people has increased [2]. Aging is generally associated with a progressive decline in physical activity, and the concept of functional readiness reflects the elderly's ability to carry out the physical activities of everyday life with relative ease. It is proven that age-related functional declines include muscle strength, flexibility, balance, agility, jogging, and cardio-respiratory

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Figure 1. Balance Test (functional each)

IRANIAN JOURNAL of
AGEING

readiness, that have a negatively impact on the quality of life [2-4]. Therefore, the purpose of this study was to evaluate and compare the balance and flexibility of elderly women and men aged 60 to 79 years in Khorramabad city and provide solutions to strengthen them.

2. Methods and Materials

This cross-sectional descriptive-comparative study was conducted in 2014 in Khorramabad city and the study population consisted of elderly people in the age group of 60 to 79 years. A total of 140 elderly people were selected as a statistical sample with available sampling methods and volunteers for research. Subjects were divided into four groups (35 men and 35 women aged 60-69 years, and 35 men and 35 women in the age group of 70 to 79 years) and were examined. Inclusion criteria were: should be in the age group of 60 to 79 years, inclination to participate in research, lack of physical-motor disability, not suffering from cognitive or psychological impairment, according to elderly family members, not history of fracture in the recent past and no illness that would



Figure 2. Sit and Reach Test

IRANIAN JOURNAL of
AGEING

prevent them from taking the tests properly. The exclusion criteria were error during the tests and not having enough ability to do tests. First, the desired test was administered by the researcher, after that, each of the subjects performed it experimentally. After performing the tests properly, the subject performed specific stretching exercises and then the test was administered. Each subject performed 3 special tests and their average was recorded as the subject score. Balance and flexibility tests (Figures 1 and 2) were administered between 16:00 and 18:00 hrs for all the subjects. To assess the balance status, stretching the hands forward in the standing position (functional reach) (dynamic equilibrium) and [3, 5] and to evaluate flexibility, the sit and pass test were used [6, 7]. The method of this study was approved by the Ethics Committee of Islamic Azad University, Boroujerd Branch. Independent t-test was used to examine the differences and the percentage change was used to check the amount of reduction in the age group of 69-60 years to 70-79 years.

3. Results

In this study, 140 elderly men and women, residents of Khorramabad city, were investigated including 70 men and 70 women. Descriptive statistics showed that balance

Table 1. Independent and independent t-tests

Indices Variables	Groups	T-Test	P
Balance	Women aged 60-69/aged 70-79	0.001	3.621
	Men aged 60-69/aged 70-79	0.001	4.961
	Women aged 60-69/aged 70-79	0.004	4.324
	Men aged 60-69/aged 70-79	0.003	3.554
Flexibility	Women aged 60-69/aged 70-79	0.001	3.772
	Men aged 60-69/aged 70-79	0.001	3.506
	Women aged 60-69/aged 70-79	0.004	2.984
	Men aged 60-69/aged 70-79	0.003	3.123

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AGEING

in women and men in the age group of 69-60 years was 20.90 ± 3.09 and 24.60 ± 4.08 cm, respectively, and it was 17.67 ± 4.40 and 21.02 ± 3.70 cm in the age group of 70-79 years, respectively. The findings also showed that flexibility in men and women aged 69-60 years was 26.03 ± 2.80 and 28.50 ± 3.80 cm, respectively, and in the age group of 70-79 years, it was 21.4 ± 5.60 and 24.90 ± 3.70 cm, respectively. These findings clearly show that in every age range, men's balance and flexibility are more than women. Inferential statistics are presented in [Table 1](#).

These results showed that there was a significant difference between the balance and flexibility of women and men in the age group of 60-69 years and 70-79 years ($P < 0.05$). There was a significant difference between the balance and flexibility of men aged 60-69 years and 70-79 years ($P < 0.05$). There was also a significant difference between the balance and flexibility of women aged 60-69 and 70-79 years ($P < 0.05$). Balance and flexibility in both men and women showed a progressive decline from the age of 60 to 79, and this decline was higher in women than in men. To calculate the percentage change of the mean scores in each age range, the following formula was used:

$$(\text{Post Test} - \text{Pre Test} / \text{Pre Test}) \times 100$$

The percentage change is as follows: -15.79 versus -14.55 percent for balance and -17.79 versus -12.63% for flexibility. This difference in the balance between men and women may be justified with the amount of daily physical activity and the type of physical activity of men and women in the society. The results of the balance show that men's balance is better than women in every age range and the difference in the strength of the lower extremity muscles perhaps may be able to justify well the difference between the two genders as well as between two age groups in men and women. Given the gender differences, most studies showed that women have more flexibility than men of all ages [8]. The reason for the difference of the results of this study may be due to the daily activities of the subjects in the study, who actively participated in daily life activities, and also men are naturally more active than women.

4. Conclusion

Inevitable reduction in the skeletal muscle mass and its associated decreased strength with age [9-11] can justify lower balance and flexibility of individuals in the age group of 79-70 years, compared to those in the age group of 69-60 years. In this regard, Roma et al. showed that two days a week of strength training for six months or a year increased the elderly's balance and flexibility [12]. Therefore, physical activity is recommended for the elderly. Weight-bearing ex-

ercises can mainly increase balance and flexibility. Strength exercise is also enhanced by improving strength, ability, mechanics and speed walking and helps in improving balance and thus reduces falls. Resistance stretching can increase flexibility. Considering the decline of the faster pace of balance and flexibility in women, they need to pay more attention to their balance and flexibility as compared to men.

Ethical Considerations

Compliance with ethical guidelines

The ethics committee of Islamic Azad University of Boroujerd Branch has approved this study.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest

The authors declare no conflict of interest.

Acknowledgements

We thank all the subjects of this study because of their participation in the study and the excellent cooperation with the researcher.