**International Journal of Current Advanced Research**
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 8; Issue 03 (A); March 2019; Page No. 17652-17656
DOI: http://dx.doi.org/10.24327/ijcar.2019.17656.3356

**Research Article**

# ASSESSMENT OF SENIOR FITNESS TEST IN ELDERLY POPULATION OF TRIBAL AREA OF AHMEDNAGAR DISTRICT: A DESCRIPTIVE STUDY

**Dr.Neha Chauhan[1] and Deepali Hande[2]**

[1]MPT, Community Physiotherapy Department, Dr. A.P.J Abdul Kalam College Of Physiotherapy, PIMS (DU),Loni
[2] Proffessor Community Physiotherapy Department, Dr. A.P.J Abdul Kalam College Of Physiotherapy, PIMS (DU),Loni

**A R T I C L E I N F O**

***Article History:***
Received 4th December, 2018
Received in revised form 25th January, 2019
Accepted 18th February, 2019
Published online 28th March, 2019

***Key words:***
Physical Fitness, Tribal Area, Elderly Population

**A B S T R A C T**

**Background:** Aging is a physiologic process that affects all of our body systems and it is characterized by a physiological decline in bodily functions. Physical fitness helps to maintain a good quality of life as it also exposes elderly people to higher risk of diseases. Assessing their functional fitness using fitness assessment tools like Senior Fitness Test (SFT) is helpful in elderly care. The main aim of our study was to assess physical fitness in tribal area using Senior Fitness Test (SFT). This test analyses strength, flexibility, balance and endurance. These components are periodically used in one's daily occupation and thus helpful to estimate physical health. It is necessary to understand if there is a variance in demands on their bodily systems which will affect their fitness parameters, hence this study was undertaken.

**Materials and method:** This descriptive study was conducted in elderly people and the data was collected from tribal area of Ahmednagar district. The objective of this study was to assess the upper and lower body strength, flexibility and endurance by using 30 second chair sit to stand test, 30 second arm cur test, 2 minute step test, chair sit and reach test, back scratch test, 8 foot up and go test.

**Result:** Comparison of mean and standard deviation values of senior fitness test among men and women were calculated. The mean baseline value was evaluated by using senior fitness test. For 30 second sit to stand test in men was done, the mean was 8.17 with standard deviation ± 2.39 and women was 8.36 ± 2.54 respectively where the p value is >0.005 and Z value is 1.23 which shows there is no statistically significant difference observed.

**Conclusion:** Study concluded that with aging, physical fitness decreases in men and women. Moreover, it was determined that aging results in reduction of muscle strength causing lower levels of flexibility, agility, and endurance with progressive aging. Thus their work ability and physical fitness are many times reduced.



## INTRODUCTION

Betty Friedan (1921-2006) said "Aging is not lost youth but a new stage of opportunity and strength." Aging is defined as a development process starting at conception. Old age is a period of life but aging is a continuous process which occurs throughout life. The global population aged 60 years and above were two times greater enumerate 962 million in 2017, as in 1980 when there were 382 million older persons .[1]According to the World Health Organization (WHO) the elderly population of age 60 years and above will increase to 2 billion between years of 2015 to 2050 i.e., an increase of 12% to 20% of the entire world's population. Indian population is consistently on the rise in the demographic cycle and is presently in the late expanding phase.[2]In India, 427 groups have been recognized as 1 scheduled tribes. They form approximately 8% of the total Indian population.[3,4] The occurrence of population ageing has become a major fear for all the policy makers all over the world for both developed and developing countries in last two decades.[4]Musculoskeletal disorders are the most common chronic conditions that affects 14 % of people aged 65 years and above. The mean healthy life expectancy has also changed a bit for women in 2008 .However, the major task in preventing elderly care is decrease in physical activity with age and inactive older people are at greater risk of diseases.[5] The health problems need special attention in context of tribal communities of India.[3]Malnutrition is the most essential for nutrition related research which includes a wide range of deficiencies. India has large and diverse tribal population with respect to nutritional status and access to and use of nutrition and health services.[6]As the tribal population is more dependent on primitive agricultural practices the irregularities of food supply serves as transition of occupation as daily wagers.Nutrition has also been found to be associated with many morbidity conditions and mortality. Low socioeconomic status and poor dietary pattern with negligible intake of vegetables and fruits, is a pointer of greater health threat.[7]

**Corresponding author:* **Dr.Neha Chauhan**
Community Physiotherapy Department, Dr. A.P.J Abdul Kalam College Of Physiotherapy, PIMS (DU),Loni

The age-dependent decline in lean body mass is well known and is primarily due to loss and atrophy of muscle cells.[8] There are some physiologic changes which take place with aging are the skeletal tissue deterioration which begins in the third decade of life Degenerative joint disease occurs in 85 percent of persons older than 70 years of age.[9]Between the ages of 30 and 80 years there is 30%- 50% reduction in muscle mass and strength, this is due to reduction in the number of muscle fibres and atrophy of type II muscle fibres, there is also decrease in bone mineral density because of diminished osteoblastic activity and enlarged osteoclastic activity, changes collagenous tissue like loss of water from matrix, loss of elastic fibers, reduction in lean body mass and rise in fat mass, there is also alteration in nervous system which contain myelin loss, axonal loss, and sensory neuron loss, and pulmonary changes include a reduction in the functional capacity of the lung.[8, 9,10]A drop in functional capacity (strength, endurance, agility, and flexibility) is perceived with advancing age and causes complications in daily living activities. Additionally, older adults incline to be less active with progressing age, although it is well-known that physical activity is important for independent living, prevention of long-lasting health problems, and quality of life.[11]

Level of physical fitness or 'functional fitness', defined as "having the physiologic capacity to perform normal everyday activities safely and independently without undue fatigue" can be determined by various test protocols. The Senior Fitness Test (SFT) developed by Rikli RE and Jones CJ is one of the simplest and best tools in assessing six important 'functional fitness' parameters for the elderly, including body composition, lower and upper body strength, flexibility, agility/dynamic balance and aerobic endurance,. Each test component of the SFT has been selected for its high reliability in a fitness facility or large community facility.[12]

Physical activity has a important role in maintaining functional capacity and also fundamental to health, which can be developed through long-term, regular involvement in exercise and preservation of a healthy lifestyle.[13] However, with the rising and falling growth in the population of older persons, it has become important for older adults to also maintain sufficient muscle strength, flexibility, balance, and aerobic endurance to achieve everyday tasks.[13,14] Physical activity including ADL denotes to bodily movement involving muscle contraction and increased energy expenditure. By practicing simple physical fitness, older adults are able to screen their own functional status to accomplish healthy aging in their senior years. Significant functional limitations can be intervened by assessing these indicators of fitness. There is, however, a lack of tests suitable to assessing the physical fitness of those 65years and above.[15, 16]A large amountof older adults may live unsafe close to important verges of physically ability that may reduce them dependent. The reduced quality of life and the social and economic (health-care) values are surprising. In terms of public health the benefits resulting with a more physically active elderly population may be essential in the maintenance of our health-care system.[16,17]

## MATERIALS AND METHOD

Total hundred and six male and female participants who functionally independent were included in the study. Out of these, sixty participants were screened according to the inclusion and exclusion criteria. Participants with age group 60 year and above, functionally independent, participant with no physical limitation and cognitive limitation on MMC score >21%, participant who were willing to participate were selected for the study. Participants withacute illnesses, who have unstable musculoskeletal injury, high blood pressure and vision problems such as low vision, cataract etc. were excluded from the study.

The study received approval from Institutional Ethical Committee of Dr. APJ Abdul Kalam College of Physiotherapy, Pravara Institute of Medical Sciences, Loni. Written informed consent was taken from all the participants selected for the study.

### *Procedure*

The study received approval from Institutional Ethical Committee Ref no. PIMS/CPT/IEC/2018/71 ofDr. A. P. J. Abdul Kalam College of Physiotherapy, Pravara Institute of Medical Sciences (DU), Loni. Total hundred and six participants (n=106) were selected out of thesesixty were eligible for the study and they agreed to participate and screened according to inclusion and exclusion criteria. Informed written consent form was obtained from the patient

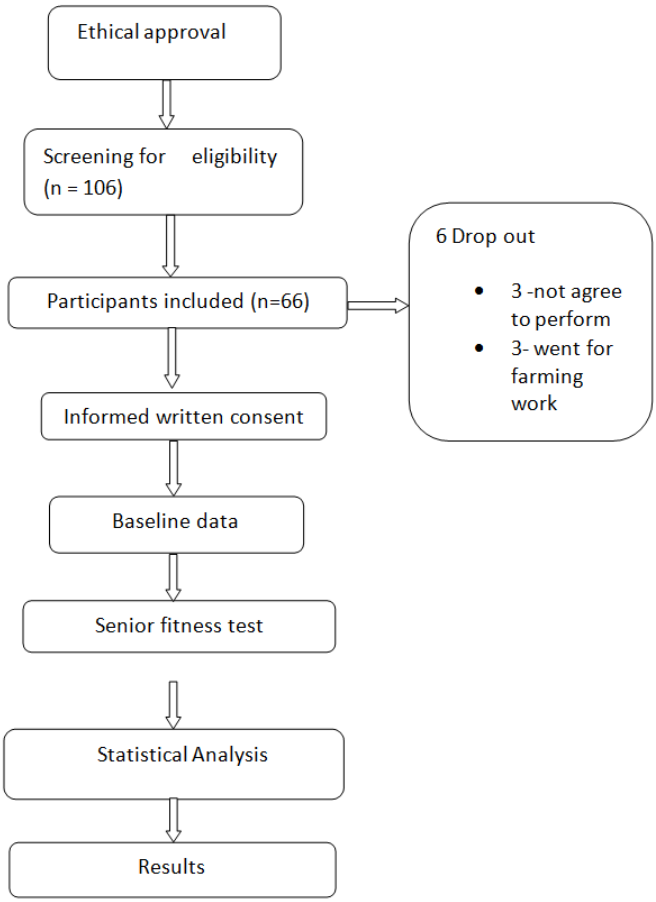



**Figure** Flow chart representing the procedure of selection of participants

***Outcome Measure***

The specific assessment was computed by using six items of senior fitness test in elderly population of tribal area.

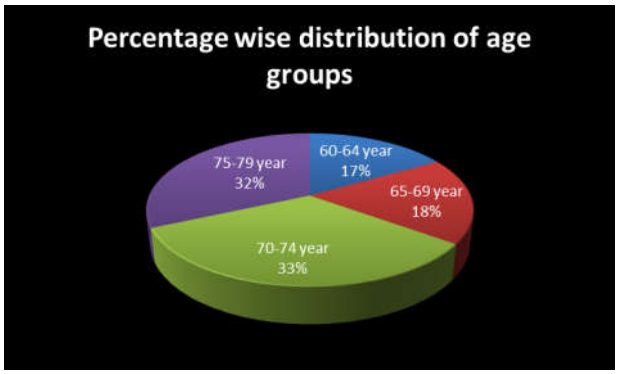
## DATA ANALYSIS AND RESULT

The objective of this study was to assess the upper and lower body strength and flexibility by using 30 second chair sit to stand test, 30 second arm cur test, 2 minute step test, chair sit and reach test, back scratch test, 8 foot up and go test. This descriptive study was conducted in elderly people and the data was collected from tribal area of Ahmednagar district. The results were analyzed on basis of the data obtained using the Six Senior fitness tests. Data was analyzed by using descriptive statistics as mean, SD, percentage etc. Comparison of gender wise data was done Z test of difference between two means at 95% (p, 0.05) and 99% (p, 0.01) confidence limits. P<0.05 was considered as significance level and was used to signify the results. Statistical analysis software namely, Graph Pad Instat Trial Version 13.3 was used.

10 participants of age under 60-64years (17%), 11 participants of age 65-69 years (18%), 20 participants of age 70-74 years (33%), 19 participants of age 75-79 of age (32%). Comparison of mean and standard deviation values of senior fitness test among men and women were calculated. The mean baseline value was evaluated by using senior fitness test. For 30 second sit to stand test in men was done, the mean was 8.17 with standard deviation ± 2.39 and women was 8.36 ± 2.54 respectively where the p value is >0.005 and Z value is 1.23 which shows there is no statistically significant difference observed. For 30 second arm curl test the mean value in men was 7.71 with standard deviation is ±2.57 and women was 7.88±2.96 respectively where the p value is >0.005 and Z value is 1.02 which shows no significant difference. For 2 minute step test the mean and standard deviation value of men was 64.8 ± 13.3 and for women is 63.04 ± 7.68 where the p value is >0.005 and Z value is 1.26 which shows no significant difference. For chair sit and reach test the mean and standard deviation value of men was 6.17± 1.88 and for women is 7.68 ± 3.06 where the p value is >0.005 and Z value is 1.41 which shows no significant difference. For back scratch test the mean and standard deviation value of men was 5.37± 1.33 and for women is 4.92 ± 1.28 where the p value is >0.005 and Z value is 1.36 which shows no significant difference. For 8 foot up and go test the mean and standard deviation value of men was 22.11 ± 6.62 and for women is 20.52 ± 6.97 where the p value is >0.005 and Z value is 1.18 which shows no significant difference.

**Table 4.2** Demographic data of number of participants according to age groups

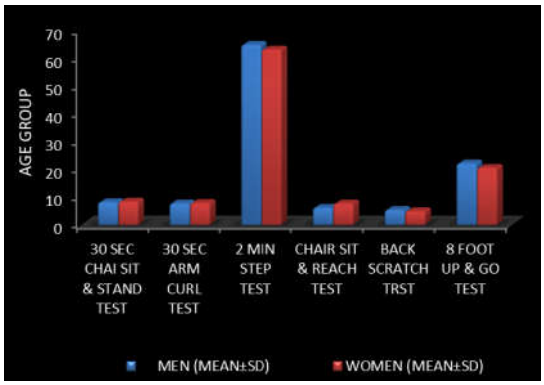
| Age group | Number of participants |
|---|---|
| 60-64year | 10(17%) |
| 65-69year | 11(18%) |
| 70-74year | 20(33%) |
| 75-79year | 19(32%) |




**Graph 4.2** Represents percentage wise distribution of age groups.

**Table 4.3** Comparison of gender wise data of mean and standard deviation values of senior fitness test

| Tests | Men (mean±sd) | Women (mean±sd) | Z test value | 'p' value and significance |
|---|---|---|---|---|
| 30 sec chair sit & stand test | 8.17±2.39 | 8.36±2.54 | 1.23 | P>0.05, not significant |
| 30 sec arm curl test | 7.71±2.57 | 7.88±2.96 | 1.02 | P>0.05, not significant |
| 2 min step test | 64.8±13.3 | 63.04±7.68 | 1.26 | P>0.05, not significant |
| Chair sit & reach test | 6.17±1.88 | 7.68±3.06 | 1.41 | P>0.05, not significant |
| Back scratch test | 5.37±1.33 | 4.92±1.288 | 1.36 | P>0.05, not significant |
| 8 foot up & go test | 22.11±6.62 | 20.52±6.97 | 1.18 | P>0.05, not significant |




## DISCUSSION

Elderly age group is an age group where there is large number illness leading to disability, impairment, morbidity or mortality. Both Central and State Governments have implemented new welfare programs for elderly age people to improve their socio economic status and health conditions. The elderly age illnesses sometimes have no permanent solution in terms of cure whereas there may be a major financial burden on the family that makes the situation even worse.[18] The level of physical activity decreases with age and was associated with a decline in functional fitness.[9] Therefore, the main goal of this study was to evaluate the level of physical fitness of elderly population of tribal area of Ahmednagar district. The most marked observation from this study is the relative consistent and progressive decline in performance in all test variables for both men and women.

Several studies have discovered an age-related decline in muscle strength and performance which can be enhanced through training.[19]One of the Study by Zoran Milanović *et al* 2013 on Age-related decrease in physical movement and functional fitness among ageing men and women. The results

of this study confirm that the level of physical activity decreases with the aging process, which in turn decline men's and women's functional fitness.[9]These results confirm the observation that the level of physical activity is related with the maintenance or increase of physical fitness. June 2017 report of India's ageing states that by 2020, India will have about 12 million aging people with difficulty in achieving activities of daily living.[20]

In our study, we found that there was uniform decrease in muscle strength and flexibility of upper and lower extremity with progressive increase in age. During the aging process there is significant loss and atrophy of muscle cells, which may cause the decrease in physical activity but similarly increase the risk of falls and injuries in older people.[21]Sarcopenia, is a multifactorial process and one of the commonest age related changes in elderly people. . A linear decline in agility/dynamic balance and aerobic capacity was noted among the age group of elderly population in our study. The level of physical activity decreases with age and was associated with a decline in functional fitness.[9]Therefore, the main goal of this study was to evaluate the level of physical fitness of elderly population of tribal area of Ahmednagar district. The most marked observation from this study is the relative consistent and progressive decline in performance in all test variables for both men and women.

## CONCLUSION

This study concluded that with aging, there is decline in physical fitness in men and women. Furthermore, it was determined that aging results in reduction of muscle strength which result in decrease in levels of flexibility, agility, and endurance with progressive aging. Thus their work capability and physical fitness are many times reduced.

### *Limitations*

1. This study has been undertaken in elderly population who are functionally independent.
2. Further, the study has been carried out in tribal population from one region of country.
3. Therefore there is a need for future study for assessing health related fitness for both functionally dependent and independent elderly from both urban and tribal communities from different regions of the country.

### *Suggestions for Future Research*

Further study with addition of intervention to increase the upper and lower body strength and flexibility of elderly people and community access is suggested. Also this study only includes tribal population, decrease in upper and lower body strength and flexibility of urban elderly people is still unclear.

**Acknowledgements**

Authors are thankful to the Almighty, the College Principal, Staff for the continuous support and encouragementand all the participants who very well co-operated for the study. Special thanks to those who directly and indirectly helpedus forthe study.

**Ethical Approval Ref. no.:** PIMS/CPT/IEC/2018/71
**Conflict of Interest:** None
**Funding:** None

## References

1. United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Ageing 2017 - Highlights (ST/ESA/SER.A/397).
2. 2.https://www.who.int/news-room/fact-sheets/detail/ageing-and-health.
3. Sukhsohale ND, Bhattacharya S. Study Of Health Problems Of Adult Population Among Three Primitive Tribes Of Maharashtra, India. *Global Journal For Research Analysis.* 2018 Feb 8;6 (10).
4. Sonwane PV. Tribal Elderly Women and Their Health.
5. McPhee JS, French DP, Jackson D, Nazroo J, Pendleton N, Degens H. Physical activity in older age: perspectives for healthy ageing and frailty. Biogerontology. 2016 Jun 1;17(3):567-80.
6. Kumar Tiwari M, Sharma KK, Bharati S, Kumar Adak D, Ghosh R, Bharati P. Growth and nutritional status of the Bharia–A primitive tribe of Madhya Pradesh. Collegium antropologicum. 2007 Jan 4;31(1):95-101.
7. Kapoor AK, Dhall M. Poverty, Malnutrition and Biological Dynamics among Tribes of India. *Health Science Journal.* 2016; 10(3):1.
8. Boss GR, Seegmiller JE. Age-related physiological changes and their clinical significance. Western Journal of medicine. 1981 Dec;135(6):434.
9. Milanović Z, Pantelić S, Trajković N, Sporiš G, Kostić R, James N. Age-related decrease in physical activity and functional fitness among elderly men and women. Clinical interventions in aging. 2013;8:549.
10. Multani Narinder Kaur,Verma Satish Kumar, Principles of geriatric physiotherapy, 01st edition, Chapter no:02, Page no: 8-16.
11. Tuna HD, Edeer AO, Malkoc M, Aksakoglu G. Effect of age and physical activity level on functional fitness in older adults. European review of aging and physical activity. 2009 Oct;6 (2):99.
12. Bhattacharya PK, Deka K, Roy A, Saikia H. Normative Values of Physical Fitness Test in the Elderly: A Community Based Study in an Urban Population in Northeast India. *Journal of Clinical & Diagnostic Research*. 2017 Oct 1;11(10).
13. Tuna HD, Edeer AO, Malkoc M, Aksakoglu G. Effect of age and physical activity level on functional fitness in older adults. European review of aging and physical activity. 2009 Oct;6(2):99.
14. www.dnbm.univr.it/documenti/OccorrenzaIns/matdid/matdid182478.pdf
15. Chen HT, Lin CH, Yu LH. Normative physical fitness scores for community-dwelling older adults. Journal of nursing research. 2009 Mar 1;17(1):30-41
16. Loh DA, Hairi NN, Choo WY, Hairi FM, Peramalah D, Kandiben S, Lee PL, Gani N, Madzlan MF, Hamid MA, Akram Z. Multi Component Exercise and the RA peuticlife Style (CERgAS) intervention to improve physical performance and maintain independent living among urban poor older people-a cluster randomised controlled trial. BMC geriatrics. 2015 Dec;15 (1):8.
17. Paterson DH, Warburton DE. Physical activity and functional limitations in older adults: a systematic review related to Canada's Physical Activity Guidelines. *International Journal of Behavioral Nutrition and Physical Activity*. 2010 Dec;7(1):38.

18. Basu G, Mondal P, Roy SK. Health of elderly tribes: a community based clinico-epidemiological study in West Bengal, India. *International Journal Of Community Medicine And Public Health*. 2018 Feb 24;5(3):970-5.
19. Toraman NF, Erman A, Agyar E. Effects of multicomponent training on functional fitness in older adults. *Journal of Aging and Physical Activity*. 2004 Oct;12(4):538-53.
20. Engheepi FB, Sonowal NJ, Mehta VK, Rai AD. Functional impairments of elderly in rural areas of east Sikkim, India: cross-sectional study. *International Journal of Community Medicine And Public Health*. 2018 Jun 22;5 (7):3136-40.
21. Kalyani RR, Corriere M, Ferrucci L. Age-related and disease-related muscle loss: the effect of diabetes, obesity, and other diseases. The lancet Diabetes & endocrinology. 2014 Oct 1;2(10):819-29.

**How to cite this article:**

Dr.Neha Chauhan and Deepali Hande (2019) 'Assessment of Senior Fitness Test in Elderly Population of Tribal Area of Ahmednagar District: A Descriptive Study', *International Journal of Current Advanced Research,* 08(03), pp. 17652-17656. DOI: http://dx.doi.org/10.24327/ijcar.2019.17656.3356

*******