International Journal of Research and Review
Volume 11; Issue: 6; June 2024
Website: www.ijrrjournal.com
Research Paper *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

Assessment of Physical Fitness in Geriatric Individuals in Loni: A Descriptive Study

Akshaya Sitaram Hembade[1], Dr. Aashirwad Mahajan (PT)[2]

[1]B.PT Student, [2]Professor of Cardio Respiratory Physiotherapy;
Dr.APJ Abdul Kalam College of Physiotherapy, Pravara Institute of Medical Sciences, Loni, Taluka – Rahata Dist. Ahmednagar – 413736 (Maharashtra)

Corresponding Author: Akshaya Sitaram Hembade

DOI: https://doi.org/10.52403/ijrr.20240611

ABSTRACT

BACKGROUND: Physical fitness in older adults is crucial due to decline in fitness, leading to negative health outcomes like falls, disability, and chronic disease. Assessing geriatric fitness helps identify health risks and take appropriate action, enabling independent living and improving physical performance, independence, and overall quality of life.
OBJECTIVE: The objective is to assess the fitness of elderly persons in Loni using a senior fitness test.
MATERIALS AND METHOD: The study involved 100 participants, including rural geriatrics, who were divided into four age groups and given a Mini Mental State Exam to assess cognitive function. Heart rate was monitored during the Senior Fitness Test. Participants were briefed in their language and performed six tests, including chair stand, arm curl, step, chair sit-and-reach, back scratch, and 8-foot up-and-go.
RESULT: The study analyzed data from 100 participants aged 60-65, 66-70, 71-75, and 76-80, with 49 males and 51 females. The mean age was 68.9 years. All participants underwent a senior fitness test. Results showed significant variation in physical fitness as age increased, indicating a decrease in fitness.
CONCLUSION: The study reveals that ageing results in equal physical activity and functional fitness losses for men and women, but differences in muscle strength, body fat percentage, flexibility, agility, and endurance.

Keywords: Physical fitness, Geriatric individuals, SFT

INTRODUCTION

The UN reports a 2% increase in the proportion of individuals over 60 years of age between 1950 and 2000, with projections of a 22% increase by 2050 due to longer life expectancies. The average terminal age for women is predicted to be 83.1 in 2040, while for men it will be 75.0. Practical methods to help the elderly maintain an active and healthy lifestyle are crucial, as older individuals have twice as many impairments and physical restrictions compared to those under 60. [(1)] The World Health Organization defined ageing as the culmination of several molecular and cellular deteriorations over time, resulting in a slow deterioration of general mental and physical health. [(2)] Functional fitness refers to the physical ability to perform daily tasks without assistance or exhaustion. As people age, physical fitness declines, making it harder for the elderly to function normally. despite the fact that physical activity (PA) is widely linked to independent living, avoiding chronic health issues, and a higher quality of life, elderly individuals engage in fewer daily activities. [(3)]

Maintaining physical activity and fitness is crucial in clinical geriatrics care for elderly individuals to live autonomously without assistance. Evaluating their physical activity level is essential for optimal health. [4]

The Indian population is growing, currently in the late increasing phase. Aging causes physiological changes, including skeletal tissue deterioration, collagenous tissue changes, increased fat mass, nervous system changes, and lung alterations. These changes occur in the third decade of life, leading to reduced bone mineral density, stiffness, and decreased lung function [5]

Geriatrics is a branch of medicine that focuses on diagnosing, treating, and preventing diseases in older people and addressing problems specific to aging. [6]

It is a sub specialization of internal medicine that involves comprehensive geriatric assessment to ensure successful preventive, diagnostic, and therapeutic approaches [7]

Geriatric medicine is concerned with the healthcare of elderly individuals and addresses the unique patterns of disease presentation and reactions to drugs in older people [8]. Geriatric care management combines healthcare and psychological care, along with other services such as housing and nutritional assistance. [9]

Total force fitness refers to a person, family, or organization's ability to maintain optimal health and performance, including physical fitness, social, psychological, behavioral, medical, and nutrition aspects. [10]

Researchers classify older individuals as youngest-old (65-74), oldest-old (75-84), middle-aged, and oldest-old (85+), with middle-aged individuals being the oldest. [11]

Research shows that functional fitness (FF) is crucial for older individuals' well-being, enabling them to perform daily tasks safely and independently, thereby enhancing their quality of life. [12]

As the elderly population ages, researchers are developing tests to assess their motor abilities and physical fitness, using everyday activities to determine their level of fitness or disability. [13]

Independent living requires dressage, household duties, stairs management, 10 pounds lifting, and 400 yards walking, but older individuals may not fully comprehend the extent of physical deficiencies contributing to mobility reductions. [14]

The Senior Fitness Test (SFT) is a straightforward tool used to evaluate six functional fitness parameters for older individuals: body composition, strength, aerobic endurance, flexibility, and agility/dynamic balance. It is used in fitness centers and community facilities due to its dependability in assessing the fitness of elderly individuals. Other fitness tests include AAPHERD and EPESE [4]

Rikli and Jones developed the SFT to measure functional fitness levels in older persons using criterion-referenced fitness standards and normative data. CR fitness standards provide a single number to estimate potential functional independence loss, while normative data provides context for evaluating physical capacity with population norms. [14]

The Senior Fitness Test was created by Rikli and Jones for persons over 60. It is mostly used to assess physical function in older, healthy individuals; however, it can also be applied to those who have dementia. Six functional tests covering strength, endurance, balance, agility, and flexibility are included. Every exam is given a unique score on many scales. There is no total score calculated from the scores.

- The Chair Stand Examination-This demands folk to stand up and sit down on a chair for 30 seconds each time. The number of stands is kept track of. This demonstrates lower-body strength.
- The biceps curl - This asks users to lift a 5 lb. (2.27 kg) weight (for women) or an 8 lb. (3.63 kg) weight (for males) for 30 seconds on each repetition. The number of lifts is kept track of. This demonstrates upper-body strength.
- The 6-minute Walk Test - This is measured in meters and represents aerobic endurance. The Senior Fitness Test used to

require individuals to walk on a rectangle course, but more current versions utilize a straight line. If a 6MWT is not possible, the 2-minute Step test might be used in its stead. The number of complete steps taken in 2 minutes is recorded.

- The Sit and Reach Test in a Chair. This is measured in centimeters and represents lower body flexibility.
- The Scratch Test on the Back. This is measured in centimeters and represents upper body flexibility.
- 8-foot up-and-go. This is measured in seconds and represents agility and dynamic balance. The major goal of this study was to compare PA levels and functional fitness in young elderly (60-69 years) and old elderly (70-80 years). [(3)]

AIMS AND OBJECTIVES

AIM: The aim is to evaluate the fitness of geriatric individuals in Loni through a senior fitness test.

OBJECTIVE OF THE STUDY: The purpose of this study was to measure physical fitness using the Senior Fitness Test (SFT). Another goal was for health professionals to use this assessment to inform their elderly patients about their level of physical fitness and, if of concern, to recommend exercise programs that target specific deficits.

LITERATURE REVIEW

1. Diane E. Adamo, Susan Ann Talley, and Alon Goldberg conducted a study in 2015 on age and task differences in functional fitness among older women: Comparisons with Normative and Criterion-Referenced Data from the Senior Fitness Test. The study was conducted on 34 older women. Participants consisted of three groups of women, aged 60 to 69, 70 to 79, and 80 to 92, who were administered the Senior Fitness Test (SFT) to determine age differences in physical abilities and risk for functional decline. The study found that the oldest group had significant differences in lower body strength, aerobic endurance, agility and dynamic balance compared to the other groups, which performed equally well. Lower body strength (50.6%) and dynamic balance and agility (45.7%) decreased faster than upper body strength (21.3%) and aerobic endurance (33.6%) in all groups. By criterion-referenced (CR) fitness standards, 45% of participants were at risk of loss of independent functional capacity. This study addresses age-related differences in physical fitness and risk of loss of independence later in life. The study concluded that levels of physical activity and functional fitness show differences between young and old elderly people.
2. Zoran Milanović, Saša Pantelić, Nebojša Trajković, Goran Sporiš, Radmila Kostić & Nic James in 2013 conducted a study on age-related decline in physical activity and functional fitness in older men and women. Young elderly (60-69 years) and old elderly (70-80 years) were tested for age-related decline. Physical activity levels of a total of 1288 participants were assessed with the International Physical Activity Questionnaire. Functional fitness was also estimated using the Senior Fitness Test. Significant differences were found between young older (60- 69 years) and old older (70-80 years) men, and similar results were found for women. Moderate physical activity was predominant, but with increasing age, the metabolic equivalent task value for total physical activity decreased significantly. The study concluded that the levels of physical activity and functional fitness were the same in men and women, but that the differences between young and old elderly people were due to muscle strength, body fat percentage, flexibility, agility, and endurance.
3. Prasanta Kumar Bhattacharya1, Kuldeep Deka, Aakash Roy conducted a study in 2015 titled A community-based study to assess test-retest reliability of senior

fitness test in the geriatric population in a northeastern Indian city. The study was conducted in a community-based prospective, nonexperimental study in Guwahati, Assam, India. Thirty-one physically active seniors (aged 65 to 75 years) were asked to perform the SFT at baseline and again after 2-3 days. The variability and intraclass correlation coefficients (ICC) of the SFT were evaluated, and the standard error of measurement (SEM), minimum detectable change (MDC), and log limits of agreement of Bland-Altman diagrams were used to assess test reliability. The study found that the relative reliability of the total physical fitness test (SFT) was excellent, with the ICC ranging from 0.933 to 1.000 in the 95% confidence interval (CI). The F-test values were significant for all tests, with the body mass index having the smallest CI and the arm curl test having the largest CI. The values of SEM and MDC were small, ranging from 0.43 to 0.8 for all tests except the 2- minute step test. The Bland-Altman plots for all tests were positively skewed and heteroskedastic. The study concludes that the test-retest reliability of the physical fitness tests was excellent and, therefore, these tests were suitable for cross sectional and controlled intervention studies for the elderly population.

MATERIALS & METHODS

- Source of Data: Samples was collected from Department of Physiotherapy
- Study Setting: Study was conducted in the department of physiotherapy in Dr, APJ Abdul Kalam college of Physiotherapy, PIMS Loni.
- Study Duration: 1 year
- Study Type: Descriptive type of cross-sectional study.
- Target Population: geriatric population (age group 60-80)
- Sampling Method: convenient sampling.
- Sampling Size:100

Tools and Materials Used:

- Tools:
- Pen
- Measuring tape
- Dumbbell
- Chair

Materials:

- Informed consent

OUTCOME MEASURES

- Mini–mental state examination
- Senior Fitness Test

SELECTION CRITERIA

Inclusion criteria

1. Participants willing to participate
2. Age criteria (60-80)
3. Both male and female rural geriatric subjects.
4. Mini Mental State Exam scores above 25 are required.
5. Participants should have no health limitations in performing physical activities.

Exclusion criteria

1. Individuals with acute or unstable musculoskeletal disorders.
2. Persons with disorders of the cardiovascular system and uncontrolled hypertension.
3. Individuals with ocular impairments that affect movement or test performance.
4. Any patients with less mini-mental score below 25.

PROCEDURE

- All the participants were screened according to inclusion and exclusion criteria.
- The purpose of the study was explained and written informed consent and demographic data was obtained from all the participants.
- This study will include geriatric population from rural area.
- Testing was done in the exercise lab.

- Data of 100 participants was analyzed and participants were divided into 4 groups as per there age Group A age ranging from 60-65, Group B 66-70, Group C 71- 75, Group D 76-80 Individuals wishing to engage in the study will be instructed on the nature of the study in the language best understood by them, and signed informed consent will be acquired.
- Each participant provided a general demographic information, to screen for general cognitive function, Mini Mental State Exam was done.
- The heart rate will be monitored at the start and during the test.
- Participants interested in participating in the study were briefed about the nature of the study in the language most easily understood by them. verbal commands were given during performing Senior Fitness Test.
- Before participants conducted the practice and test trials, evaluator displayed the performance of each test. Participants were thoroughly monitored for any negative physiological indicators related to test performance.
- The SFT will be carried out in accordance with the testing procedure described in the SFT handbook (Rikli & Jones, 2001). The chair stand test, arm curl test, 2- minute step test, chair sit-and-reach test, back scratch test, and 8-foot up-and-go test were among the six tests.

Components of the Senior Fitness Test –

1. The chair stand test measures lower body strength by having participants complete as many full stands as possible in 30 seconds.
2. The arm curl test measures upper body strength by having participants hold a 5-pound dumbbell extended and flex their arm 90 degrees in 30 seconds.
3. Participants were tested for aerobic endurance by stepping at an assigned step height multiple times in 2 minutes, with the researcher visually monitoring step height throughout the trial.
4. The chair sit-and-reach test measures lower body flexibility by having participants sit on a chair, extend one leg, lay their heel on the floor, flex their ankle, stretch their arms, and bend forward towards or past their toes. The distance between middle fingers was measured, with positive numbers indicating the distance before reaching their toes.
5. Participants were tested for upper body flexibility by stretching their fingers, placing their hand over the shoulder, and reaching behind their back. The closest distance between their middle fingers was measured, with positive numbers indicating overlap.
6. Participants performed an 8-foot agility and dynamic balance test, rising from a seated position, walking around a cone 8 feet away, and returning to a seated position.

- A single 45-minute visit was required for testing.
- After the test were done then the result was noted in data sheet
- The data of the four groups were compared.

RESULT

- Data of 100 participants was analysed and participants were divided into 4 groups as per there age Group A age ranging from 60-65, Group B 66-70, Group C 71-75, Group D 76-80. There were 49 males and 51 females in which mean age is 68.9 years. 39% belongs to age group 60-65, 20% belongs to age group 66-70, 22% belongs to age group 71-75 and 19 % belongs to group age group of 76-80. age group 76-80 have the lowest number of participants and age group 60-65 has the highest number of participants.
- The study analyzed the mean values of chair stand, arm curl, aerobic endurance, chair sit-and-reach, and back scratch tests among four age groups. The results

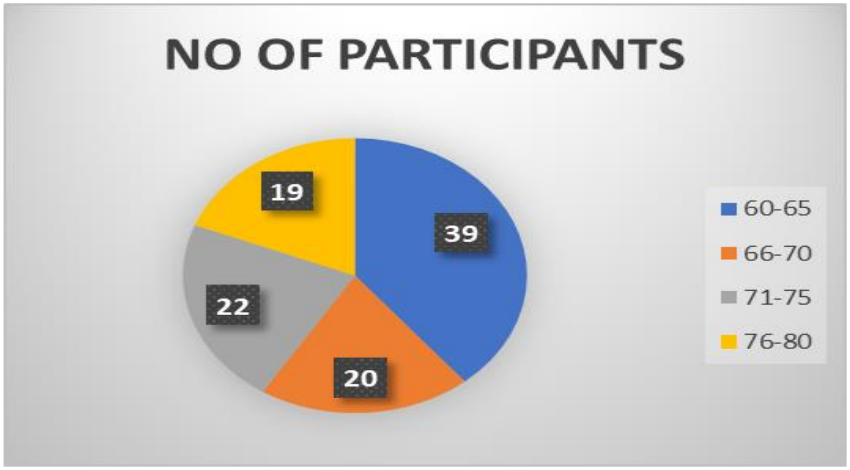
showed that Group A had the highest mean value, followed by Group B, Group C, and Group D. Arm strength also diminished with age. Aerobic endurance decreased as age increased, while flexibility in lower limbs decreased. Chair sit-and-reach showed that flexibility in lower limbs decreased as age increased. Back scratch test results showed that Group A had the highest mean score, followed by Group B, Group C, and Group D. Overall, the study highlights the importance of comparing the means of different age groups in various physical activities to understand their differences and potential improvements. Overall, the study provides valuable insights into the factors influencing physical health and fitness among different age groups.

AGE OF THE PARTICIPANTS

TABLE 1: AGE OF THE PARTICIPANTS

AGE	60-65	66-70	71-75	76-80
NO. OF PARTICIPANTS	39	20	22	19

GRAPH 1: AGE OF PARTICIPANTS



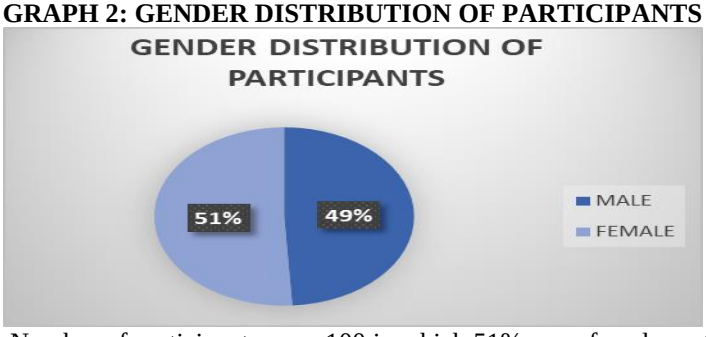
INTERPRETATION: Number of participants participating in the study were 100 in which mean age is 68.9 years. 39% belongs to age group 60-65,20% belongs to age group 66-70,22% belongs to age group 71-75 and 19 % belongs to group 76-80.age group 76-80 have the lowest number of participants and age group 60-65 has the highest number of participants.

GENDER DISTRIBUTION

TABLE 2: GENDER DISTRIBUTION

GENDER	MALE	FEMALE
NUMBER OF PARTICIPANTS	49	51

GRAPH 2: GENDER DISTRIBUTION OF PARTICIPANTS



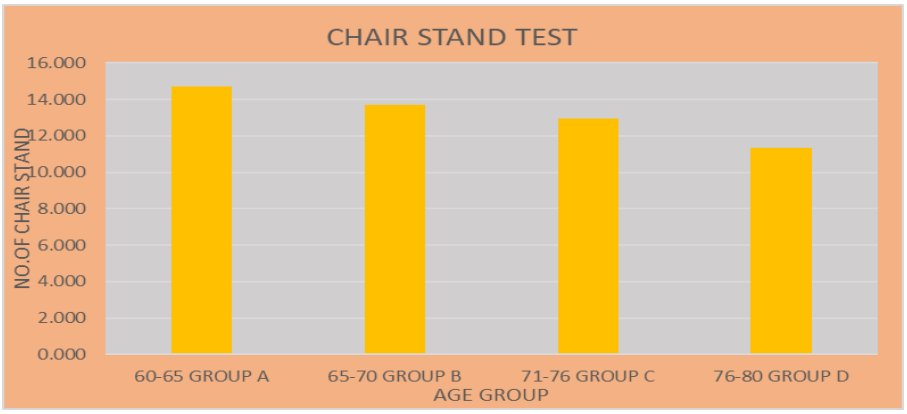
INTERPRETATION: Number of participants were 100 in which 51% were female participants and 49% were male participants. Female participants are 1% more than male participants.

SENIOR FITNESS TEST
CHAIR STAND TEST

TABLE 4: CHAIR STAND TEST

AGE	CHAIR STAND TEST
60-65 GROUP A	14.718±2.127
65-70 GROUP B	13.7±2.473
71-76 GROUP C	12.955±1.759
76-80 GROUP D	11.316±1.974

GRAPH:3 CHAIR STAND TEST IN FOUR GROUPS



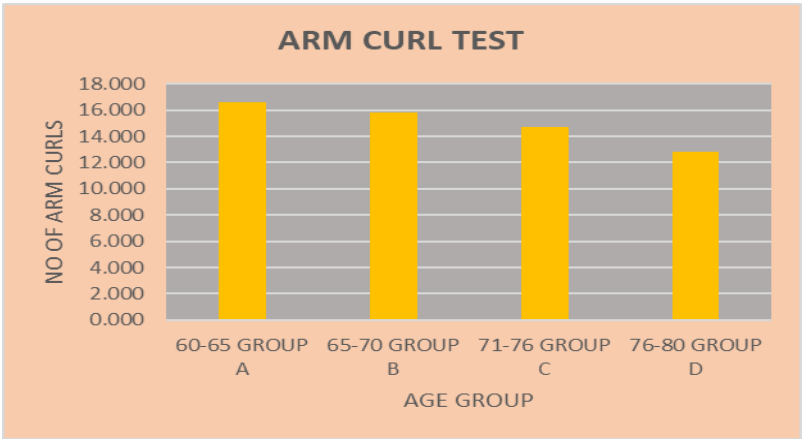
INTERPRETATION: The mean of the chair stand test for each of the four age groups is displayed in Graph No. 3: Group A's mean is 14.718±2.127,66-70; Group B's mean is 13.7±2.473; Group C's mean is 12.955±1.759; and Group D's mean is 11.316±1.974. A comparison of the four groups' values reveals that lower limb strength decreases with age.

ARM CURL TEST

TABLE 4: ARM CURL TEST

AGE	ARM CURL TEST
60-65 GROUP A	**16.615±2.520**
65-70 GROUP B	15.800±1.956
71-76 GROUP C	14.682±3.586
76-80 GROUP D	12.789±4.732

GRAPH 4: ARM CURL TEST IN FOUR GROUPS



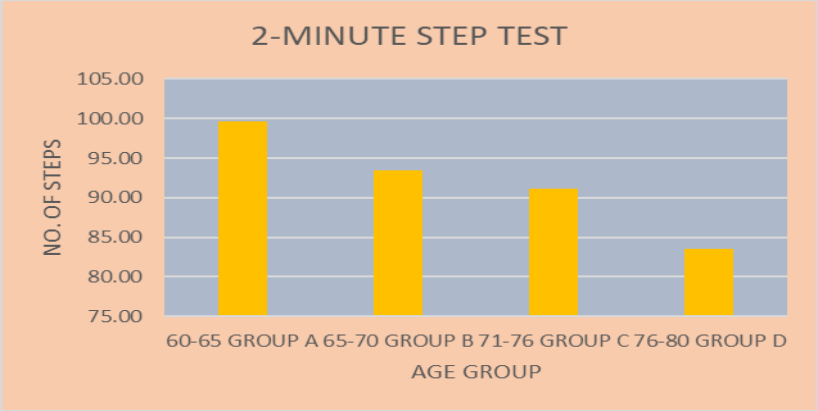
INTERPRETATION: Graph No. 4 shows the average of the arm curl test for each of the four age groups. Group A has a mean of 16.615±2.520, Group B's mean is 15.800±1.956, Group C's mean is 14.682±3.586, and Group D's mean is 12.789±4.732. A comparison of the data from the four groups demonstrates that arm strength diminishes with age.

2 MIN STEP TEST

TABLE 5 :2 MIN STEP TEST

AGE	2-MINUTE STEP TEST
60-65 GROUP A	99.64 ± 8.966
65-70 GROUP B	93.50±9.644
71-76 GROUP C	91.14±7.140
76-80 GROUP D	83.474±8.329

GRAPH 5: 2 MIN STEP TEST



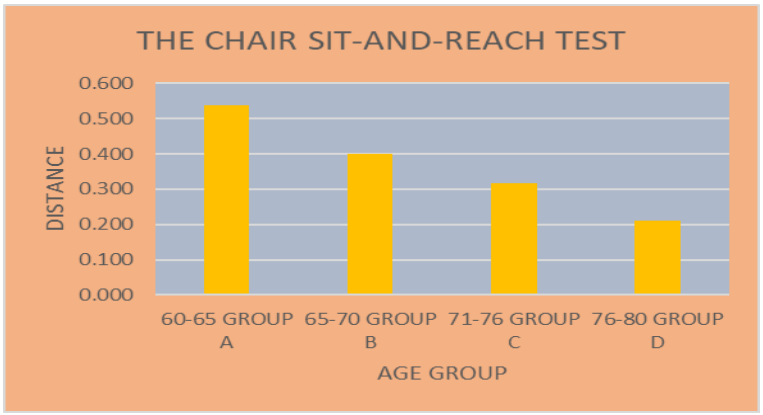
INTERPRETATION: Graph 5 depicts the results of a 2-minute step test for aerobic endurance. The test was administered to four age groups, and the means of each group were compared to determine the result. The mean values for Group A were 99.64 ± 8.966, Group B was 93.50 ± 9.644, Group C was 91.14 ± 7.140, and Group D was 83.474 ± 8.329. When the mean of all ages was compared, it was shown that aerobic endurance decreases as age increases.

THE CHAIR SIT-AND-REACH TEST

TABLE 6: THE CHAIR SIT-AND-REACH TEST

AGE	THE CHAIR SIT-AND-REACH TEST
60-65 GROUP A	0.538±0.6
65-70 GROUP B	0.400±0.503
71-76 GROUP C	0.318±0.477
76-80 GROUP D	0.211±0.631

GRAPH 6: THE CHAIR SIT-AND-REACH TEST



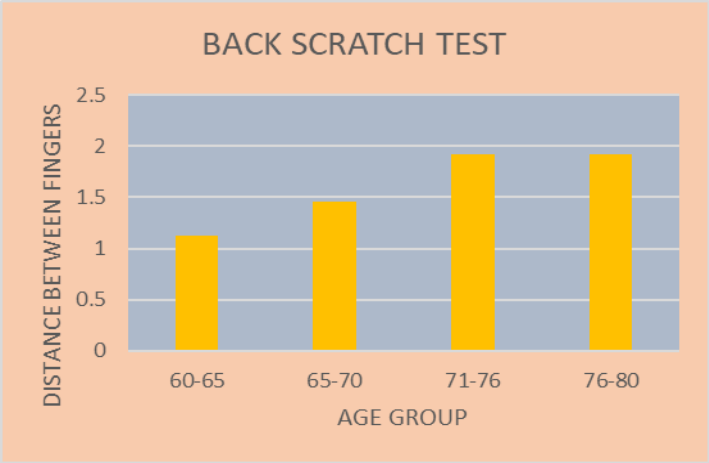
INTERPRETATION: Graph 6 depicts the results of the chair sit and reach test. The test was administered to four age groups, and the means of each group were compared to determine the result. The mean values for Group A were 0.538±0.6, Group B was 0.400±0.503, Group C was 0.318±0.477, and Group D was 0.211±0.631. When the mean of all ages was compared, it was shown that flexibility in lower limb decreases as age increases.

BACK SCRATCH TEST

Table 7: BACK SCRATCH TEST

AGE	BACK SCRATCH TEST
60-65 GROUP A	1.126±1.1256
65-70 GROUP B	1.460±1.2679
71-76 GROUP C	1.922±1.5865
76-80 GROUP D	2.179±2.0073

GRAPH 7: BACK SCRATCH TEST



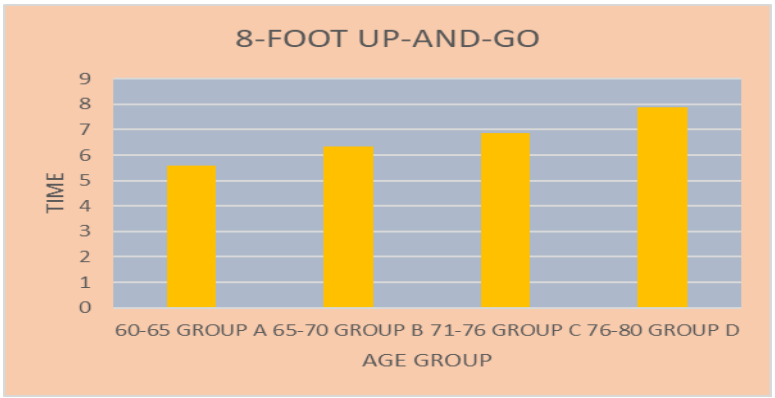
INTERPRETATION: GRAPH 7 shows the result of back scratch test. Group A mean is 1.126±1.1256, Group B mean is 1.460±1.2679, Group C mean value; is 1.922±1.5865, Group D mean is 2.179±2.0073. when the mean of four groups is compared the it shows that Group A has high score than compare to other groups and Group D has less score.

8-FOOT UP-AND-GO

TABLE 8: 8-FOOT UP-AND-GO TEST

AGE	8-FOOT UP-AND-GO
60-65 GROUP A	5.57±0.961
65-70 GROUP B	6.34±1.1454
71-76 GROUP C	6.87±0.8714
76-80 GROUP D	7.90±0.681

GRAPH 8: 8-FOOT UP-AND-GO TEST



INTERPRETATION: This graph displays the average value for each group that was determined by administering the test. Group A's mean is 5.57±0.961, Group B's is 6.34±1.1454; Group C's is 6.87±0.8714; Group D's is 7.90±0.681. The findings indicate that participants' agility and dynamic balance decline with age.

DISCUSSION

This study was conducted at community department of Dr. APJ Abdul Kalam College of Physiotherapy, Loni; In which 100 participants were recruited according to inclusion criteria with the ranges varying from 60 to 80 years old and all were geriatric. The chair stand test, which was done in four groups, revealed that as age grows, physical fitness and lower limb strength decrease. Group D had the lowest strength compared to the other groups. A comparison of the four groups' values reveals that lower limb strength decreases with age. similar study was conducted by Yanan Zhao et al 2021[(12)] Sex disparities were discovered in the individuals' overall fitness levels, but not in each fitness test item. Except for participants aged 65-69, there were no significant variations in performance between different genders in chair stand tests for any age group. One major aspect of ageing is sarcopenia, which is the involuntary loss of muscle mass, strength, and function. After 30, muscle mass declines by 3-8% every decade, and after 60, it increases even more, increasing the risk of falls, injuries, functional reliance, and disability. Alongside this decrease, there are changes in body composition, an increase in fat mass, and a higher risk of insulin resistance in the elderly. Type 2 diabetes, obesity, heart disease, and osteoporosis may be impacted by the decline in bone density, rise in joint stiffness, and loss in height. [(15)] Thus, lower limb strength declines with ageing in the arm curl test, group D score is lower than the other groups, and group A score is the highest. We can observe that as age grows, upper limb strength decreases.. similar study was conducted by Zoran Milanović et al 2013[(3)] Overall, this study's findings align with earlier studies. Research indicates that both men and women experience a reduction in upper-limb strength with age. As age increases, there are physiological changes in upper limb strength. These changes can lead to a decline in upper limb function, including muscle strength, movement and dexterity, position sense, skin sensation, bimanual coordination, and arm stability [(16).] The decline in upper limb function is more pronounced in older individuals and can contribute to upper limb functional impairment [(17)]. Additionally, age-related muscle stiffening can impair reaching performance in the upper limb [(18).]

In 2-minute step test for aerobic endurance. When the test was compared between all the groups, it was shown that aerobic endurance decreases as age increases. similar study was conducted by Yanan Zhao1 et al 2021 [(12)] Overall, the results of this study support the hypothesis that as age grows, aerobic endurance diminishes. They observed a little difference in the age group of 60–69 but a significant difference between 60 and 90. Aging is associated with decline in aerobic endurance performance, primarily due to physiological changes. Peak endurance performance is maintained until around 35 years of age, followed by modest decreases until 50-60 years of age, with progressively steeper declines thereafter [(19).] These declines in performance are attributed to reductions in maximal oxygen consumption (VO2max), lactate threshold, and exercise economy [(20).] Decreases in maximal stroke volume, heart rate, and arterio-venous O2 difference also contribute to the age-related reductions in VO2max [(21).] Additionally, aging is associated with a reduced number of myocardial cells, increased interstitial collagen fibers, and impaired left ventricular diastolic function, which further impact aerobic capacity [(22)]. We found that there were differences in all groups in the back scratch test and the chair sit and reach test, indicating that as people age, their upper and lower body flexibility declines. similar study was done by Ana Carbonell Baeza et al 2009[(1)] This study concludes that Flexibility gradually but nonlinearly decreases with age, and the impact varies depending on the joint and its movement. As age increases, body flexibility tends to decrease. Several studies have shown that aging is associated with a reduction in joint range of motion and flexibility [(23).]

However, the impact of aging on flexibility can vary depending on factors such as physical status and muscular power [(24)]. In active older women, physical status, including larger muscular power and energy expenditure, appears to play a key role in the preservation of metabolic health and flexibility with aging [(25)]. Additionally, flexibility has been found to be associated with arterial stiffness, independent of muscular strength and cardiorespiratory fitness [(26)] Furthermore, flexibility remains stable throughout childhood and adolescence, while body weight and height increase with age [(27)]. These findings suggest that flexibility is influenced by various factors and can change differently across different age groups and population Agility and dynamic balance of participants are assessed in the 8-foot up-and go test. When the results from every age group were compared, it was found that agility and dynamic balance decreased with age. similar study was conducted by Zoran Milanović et al in 2013[(3)] the study shows that A statistically significant difference (P, 0.05) was seen in eight-foot up and go between young elderly (60–69 years old) and old elderly males (70–80 years old). As age increases, there are physiological changes in agility and dynamic balance test performance. Studies have shown that dynamic body balance function, as evaluated by the Body Tracking Test (BTT), deteriorates with aging [(28)]. Age-related changes in dynamic position sense have also been observed, with a decline in position sense associated with decreased balance and impaired physical function [(29).] Saccadic eye movement (SEM) speed, which is related to balance ability, decreases with age, particularly in response to rapid external stimuli [(30).] Additionally, agility and dynamic balance are affected by somatotype and the presence of metabolic syndrome (SM) in older adults, with those without SM demonstrating better agility and dynamic balance [(31).] Another study found that postural stability, as measured by the stabilometer-based index of postural stability (IPS), decreases with age, indicating a decline in dynamic balance ability [(32).] These findings suggest that agility and dynamic balance test performance decline with age, potentially impacting overall physical function and balance in older adults. The senior fitness test utilised in this study to measure physical fitness in older individuals was similar to the study done by Prasanta Kumar Bhattacharya et al in 2015 [(4)] This study repeatedly showed that Reduction in physical activity and functional fitness is equal for both men and women due to aging process. Aging results in increase in body fat and reduction of muscle strength. Aging also leads to lower levels of flexibility, agility, and endurance. Adequate level of physical activity can slow down loss of functional and physical abilities in elderly people. After evaluating all age groups, the results showed that they were similar to the research conducted by Zoran Milanović et al in 2013 [(3)] A study involving 1288 participants found significant differences in physical activity and functional fitness between young and old elderly people, with similar results for women. The study also revealed aging-related reductions in muscle strength, body-fat percentage, flexibility, agility, and endurance.

CONCLUSION

The study concluded that ageing produces equivalent declines in physical activity and functional fitness for both men and women, with disparities between young and older people related to muscular strength loss, changes in body fat percentage, flexibility, agility, and endurance.

Limitations Of This Study

- The sample size of 100 is insufficient to generalize the findings to a larger population of elderly individuals.
- There are few researches on physical fitness among the elderly.

Future Scope of The Study

- To conduct the study on a large sample size.
- one of the future scopes of the study is that a holistic approach including all other outcome measures can be measured to study the prevalence of physical fitness in geriatric population

Declaration by Authors
Ethical Approval: Approved
Acknowledgement: None
Source of Funding: None
Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Baeza AC, García-Molina VA, Fernández MD. Decreasing physical fitness due to age. Apunts: Medicina de l'esport. 2009 Jul 31:98-103.
2. Frangos E, Graf C, Samaras N. Functional Aging: Integrating Functionality to a Multidimensional Assessment of Healthy Aging. Current Gerontology and Geriatrics Research. 2023 Jan 28;2023.
3. 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 May 21:549-56.
4. Bhattacharya PK, Deka K, Roy A. Assessment of inter-rater variability of the Senior Fitness Test in the geriatric population: A community-based study. International Journal of Biomedical and Advance Research. 2016;7(5):208-12.
5. Naushin Q, Shweta M, Annamma V. Physical fitness in community dwelling elderly and institutionalized elderly using Senior Fitness Test (SFT). International Journal of Physiotherapy. 2017 Jun 8:152-9.
6. Leilani, B., Mercado-Asis., Ma, Lourdes, Domingo-Maglinao. Geriatric Medicine in the Medical Curriculum: A MUST in the Globally Aging World. Journal of Medicine, University of Santo Tomas, (2022). doi: 10.35460/2546-1621.2022- 0061
7. Mirko, Petrovic. Geriatrics: According to professional and educational standards. (2018). doi: 10.7251/BII1801112P
8. Darshana, Deka. Geriatrics; typical presentation of health problems and management: a review. Journal of Biological and Scientific Opinion, (2017). doi: 10.7897/2321-6328.05464
9. Geriatrics. (2023). doi: 10.1093/med/9780197584521.003.0346
10. Roy TC, Springer BA, McNulty V, Butler NL. Physical fitness. Military medicine. 2010 Aug 1;175(suppl_8):14-20.
11. Lee SB, Oh JH, Park JH, Choi SP, Wee JH. Differences in youngest-old, middle old, and oldest-old patients who visit the emergency department. Clinical and experimental emergency medicine. 2018 Dec;5(4):249.
12. Zhao Y, Wang Z, Chung PK, Wang S. Functional fitness norms and trends of community-dwelling older adults in urban China. Scientific reports. 2021 Sep 7;11(1):17745.
13. Kubica JL. Falls and physical fitness of elderly people in the Senior Fitness Test evaluation. Medical Rehabilitation. 2014; 18:21-8.
14. Adamo DE, Talley SA, Goldberg A. Age and task differences in functional fitness in older women: comparisons with senior fitness test normative and criterion referenced data. Journal of aging and physical activity. 2015 Jan 1;23(1):47-54.
15. Volpi E, Nazemi R, Fujita S. Muscle tissue changes with aging. Current opinion in clinical nutrition and metabolic care. 2004 Jul;7(4):405.
16. Tanaka H, Seals DR. Endurance exercise performance in Masters athletes: age-associated changes and underlying physiological mechanisms. The Journal of physiology. 2008 Jan 1;586(1):55-63.
17. Musculoskeletal physiological changes in aging. (2023). doi: 10.1016/b978-0- 323-98804-9.00020-7
18. Lewis, A., Ingram., Lewis, A., Ingram., Annie, A., Butler., Annie, A., Butler., Lee, D., Walsh., Matthew, A., Brodie., Matthew, A., Brodie., Stephen, R., Lord., Stephen, R., Lord., Simon, C., Gandevia., Simon, C., Gandevia. The upper limb Physiological Profile Assessment: Description, reliability, normative values and criterion validity. PLOS ONE, (2019). doi: 10.1371/JOURNAL.PONE.0218553
19. Vigorito C, Giallauria F. Effects of exercise on cardiovascular performance in the

elderly. Frontiers in physiology. 2014 Feb 20; 5:51.
20. Laura, Banks., T., A., Buchan., V., Dizonno. Aerobic exercise attenuates ageing of the athletic heart. The Journal of Physiology, (2016).;594(12):3183-3184. doi: 10.1113/JP272099
21. David, J., Moore., David, N., Proctor. Found in 'transition': shifting mechanisms of aerobic exercise adaptation in ageing women.. The Journal of Physiology, (2017). doi: 10.1113/JP274163
22. Douglas, R., Seals., Kevin, D., Monahan., Christopher, Bell., Hirofumi, Tanaka., Pamela, P., Jones. The Aging Cardiovascular System: Changes in Autonomic Function at Rest and in Response to Exercise. International Journal of Sport Nutrition and Exercise Metabolism, (2001). doi: 10.1123/IJSNEM.11.S1.S189
23. J., Monferrer-Marín., Ainoa, Roldán., Pablo, Monteagudo., Iván, Chulvi-Medrano., Cristina, Blasco-Lafarga. Impact of Ageing on Female Metabolic Flexibility: A Cross-Sectional Pilot Study in over-60 Active Women. Sports Medicine - Open, (2022). doi: 10.1186/s40798-022-00487-y
24. Siran, He., Ngoc-Anh, Le., Manuel, Ramirez-Zea., Reynaldo, Martorell., K.M., Venkat, Narayan., Aryeh, D., Stein. Metabolic flexibility differs by body composition in adults. Clinical nutrition ESPEN, (2021). doi: 10.1016/J.CLNESP.2021.09.730
25. Kenta, Yamamoto., Yuko, Gando. Can Body Flexibility Predict Arterial Stiffening. Journal of Osteoporosis and Physical Activity, (2018). doi: 10.4172/2329-9509.1000216
26. Giseli, Minatto., Roberto, Régis, Ribeiro., Abdallah, Achour, Junior., Keila, Donassolo, Santos. Influence of age, sexual maturation, anthropometric variables and body composition on flexibility. Revista Brasileira de Cineantropometria e Desempenho Humano, (2010). doi: 10.5007/1980-0037.2010V12N3P151
27. Hugo, Baptista, de, Oliveira, Medeiros., Denise, Sardinha, Mendes, Soares, de, Araújo., Claudio, Gil, Soares, de, Araújo. Age-related mobility loss is joint specific: an analysis from 6,000 Flexitest results. Age, (2013). doi: 10.1007/S11357-013-9525-Z
28. Tomoe, Yoshida., Masahiko, Yamamoto., Hiromi, Orihara., Takanori, Miyake., Hirotaka, Osafune., Makoto, Oda. [Age-dependent changes in dynamic body balance as evaluated by the Body Tracking Test (BTT)].. Nippon Jibiinkoka Gakkai Kaiho, (1997). doi: 10.3950/JIBIINKOKA.102.27
29. Sangeetha, Madhavan., Richard, K., Shields. Influence of age on dynamic position sense: Evidence using a sequential movement task. Experimental Brain Research, (2005). doi: 10.1007/S00221-004-2208-3
30. Young, Sook, Bae. Decreased Saccadic Eye Movement Speed Correlates with Dynamic Balance in Older Adults. International Journal of Environmental Research and Public Health, (2022). doi: 10.3390/ijerph19137842
31. Paulina, Yesica, Ochoa, Martínez., Paulina, Yesica, Ochoa, Martínez., Javier, Arturo, Hall, López., Javier, Arturo, Hall, López., Edgar, Ismael, Alarcón, Meza., Edgar, Ismael, Alarcón, Meza., Iván, Rentería., Ana, Maria, Teixeira., Humberto, Lara, Zazueta., Estélio, Henrique, Martin, Dantas. Comparison of Agility and Dynamic Balance in Elderly Women with Endomorphic Mesomorph Somatotype with Presence or Absence of Metabolic Syndrome. International Journal of Morphology, (2012). doi: 10.4067/S0717-95022012000200046
32. Yasuhiro, Suzuki., Shigeru, Yatoh., Hiroaki, Suzuki., Yuuki, Tanabe., Yukiyo, Shimizu., Yasushi, Hada., Hitoshi, Shimano. Age-dependent changes in dynamic standing-balance ability evaluated quantitatively using a stabilometer. Journal of Physical Therapy Science, (2018). doi: 10.1589/JPTS.30.86

How to cite this article: Akshaya Sitaram Hembade, Aashirwad Mahajan. Assessment of physical fitness in geriatric individuals in Loni: a descriptive study. *International Journal of Research and Review*. 2024; 11(6): 87-99. DOI: *https://doi.org/10.52403/ijrr.20240611*

******