



## Assessment of Physical Fitness Components Among Senior Citizens of Sarasbaug Region in Pune City

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### ABSTRACT

This study investigates the functional physical fitness levels of senior citizens who regularly exercise in the Sarasbaug region in Pune City. As the geriatric population expands globally and within India, maintaining functional autonomy, dynamic balance, and cardiovascular endurance becomes vital for healthy aging. Utilizing a Descriptive Survey Research design, this study evaluated a sample of 35 senior citizens consisting of 22 males and 13 females aged between 65 and 75 years using the Senior Citizen Fitness Test protocols mandated by the 'Fit India Movement' (Government of India). The battery of tests included Body Mass Index (BMI) for body composition, Seated Sit and Reach Test for lower-body flexibility, 8-Foot Up and Go Test for agility and dynamic balance, and the 2-Minute Step Test for aerobic endurance. Statistical analysis was performed using descriptive statistics (Mean and Standard Deviation) along with an Independent Samples t-test to assess significant gender-based differences across fitness components. The major findings reveal that senior citizens engaging in regular outdoor movement exhibit satisfactory levels of agility (Overall Mean = 6.72 seconds) and aerobic endurance (Overall Mean = 82.2 steps). The t-test indicated that male participants performed significantly better in aerobic endurance ( $t = 3.65$ ,  $p < 0.01$ ), while female participants demonstrated superior lower-body flexibility ( $t = -5.73$ ,  $p < 0.01$ ). This study underscores the efficacy of public parks in fostering active lifestyles and provides institutional recommendations for municipal health policies tailored to geriatric wellness.

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**Keywords:** Senior Citizens, Fit India Movement, Physical Fitness, Sarasbaug, Pune City, Functional Agility

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## Introduction

The global demographic landscape is undergoing an unprecedented structural transition characterized by a rapidly graying population (World Health Organization, 2021). In India, targeted advancements in public health delivery, macro-nutritional accessibility, and clinical medical technologies have substantially driven up the average life expectancy of older adults (International Institute for Population Sciences [IIPS], 2020). However, this hard-won longevity has exposed a critical public health paradox: an increased chronological lifespan does not automatically translate into an elongated, high-quality “healthspan.”

Biologically, senescent aging is fundamentally associated with progressive neuromuscular degradation. Chief among these is sarcopenia—the involuntary loss of skeletal muscle mass and qualitative contractile strength—which operates alongside a steady reduction in synovial joint articulation, compromised myocardial compliance, and a blunt decline in proprioceptive acuity (Cruz-Jentoft et al., 2019). Left unmanaged, these physiological deficits rapidly compound, culminating in structural balance anomalies, an elevated risk of catastrophic falls, and the premature erosion of daily functional autonomy.

To systematically counter this escalating geriatric healthcare burden, the Government of India launched the national **‘Fit India Movement,’** introducing standardized, empirical fitness guidelines explicitly calibrated for older adults aged 65 and above (Ministry of Youth Affairs and Sports, 2020). Rather than relying on static clinical biomarkers, these specific frameworks prioritize the quantification of functional fitness—defined as the physiological capability to execute activities of daily living (ADLs) safely, independently, and without the early onset of debilitating fatigue (Rikli & Jones, 2013).

While the administrative protocols for testing are clear, their real-world efficacy relies heavily on supportive urban infrastructure. Public recreational ecosystems, such as the historic **Sarasbaug region in Pune City**, function as crucial urban micro-oases. These green spaces host an organic community infrastructure where senior citizens naturally congregate for structured morning walks, laughter clubs, and open-air calisthenics (Sathyakumar et al., 2020).

Despite the high density of elderly users in these public parks, there remains a distinct shortage of localized, gender-stratified data mapping their actual physical capabilities.

**Study Objectives:** This research addresses this gap by executing a Descriptive Survey Research design to evaluate the functional fitness profiles of 35 elderly citizens



(N=35 22 males, 13 females) aged 65–75 years who regularly use the Sarasbaug space. By measuring key markers using the ‘Fit India’ battery—including Body Mass Index (BMI), lower-body flexibility (Seated Sit and Reach Test), agility/dynamic balance (8-Foot Up and Go Test), and cardiovascular endurance (2-Minute Step Test)—this study establishes an empirical baseline. Ultimately, this paper evaluates how communal outdoor spaces influence physical well-being across genders, providing actionable data to help refine localized municipal wellness policies.

## Research Methodology

This study employs a Descriptive Survey Research framework to map the existing physiological capacities of elderly individuals. A sample of 35 senior citizens (22 males, 13 females) within the age range of 65–75 years was selected via purposive random sampling from the regular attendees of Sarasbaug, Pune. Data was gathered through active field testing adhering strictly to the safety guidelines specified in the Fit India manual.

### Description of Test Protocols

- Body Mass Index (BMI): Calculated by dividing weight in kilograms by height in meters squared, establishing a rough classification of body composition.
- Seated Sit and Reach Test: Measures lower-back and hamstring flexibility. Participants sit on the edge of a chair, extend one leg, and reach toward their toes. The distance from the fingertips to the toes is recorded in inches (positive or negative).
- 8-Foot Up and Go Test: Evaluates speed, agility, and dynamic balance. The participant starts from a seated position, walks as quickly as possible around a cone placed 8 feet away, and returns to the seat. The time taken is measured in seconds.
- 2-Minute Step Test: Evaluates cardiovascular/aerobic endurance. The participant steps in place for 2 minutes, raising their knees to a customized minimum height. The total number of completed right-knee lifts is counted.

### Statistical Tools & Analysis Framework

The collected raw data was compiled and systematically organized using Microsoft Excel and statistical software. To provide a rigorous analysis, specific statistical tools were chosen to interpret the data effectively.

**Table No 1** : *Statistical tools for research*

| <b>Statistical Tool / Test</b> | <b>Analytical Purpose in this Study</b>                                                                                                         |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Mean                           | To determine the baseline average performance score of the senior citizens for each fitness test.                                               |
| Standard Deviation             | To measure the variance, dispersion, and consistency of the fitness scores within the sample population.                                        |
| Independent Samples t-Test     | To verify whether a statistically significant difference exists between male and female senior citizens across the different fitness variables. |

### ***Analysis and Major Findings***

The descriptive and comparative statistical outputs for the 35 participants across all four 'Fit India' parameters are detailed below.

#### ***Body Mass Index (BMI) Distribution***

The basic anthropometric data revealed that the average BMI of the entire cohort was 24.25 \ 2.27 \ The categorical distribution shows that 60% of the senior citizens possess a normal BMI, 28.5% are classified as overweight, and 11.5% are underweight. This demonstrates a relatively well-regulated weight profile, likely correlated with their active lifestyle habits of visiting the park.

**Table No 2** : Statistical Analysis of selected physical fitness on senior citizen

| <b>Fitness Component (Test)</b> | <b>Male Mean <math>\pm</math> SD (n=22)</b> | <b>Female Mean <math>\pm</math> SD (n=13)</b> | <b>t-value</b> | <b>p-value</b> | <b>Statistical Significance</b>   |
|---------------------------------|---------------------------------------------|-----------------------------------------------|----------------|----------------|-----------------------------------|
| Age (Years)                     | 70.36                                       | 70.08                                         | 0.25           | 0.804          | Not Significant ( $p > 0.05$ )    |
| BMI                             | 24.50                                       | 23.82                                         | 0.85           | 0.401          | Not Significant ( $p > 0.05$ )    |
| Lower-Body Flexibility (inches) | 0.41                                        | +1.78                                         | -5.73          | $< 0.001$      | Highly Significant ( $p < 0.01$ ) |
| Agility & Balance (seconds)     | 6.49                                        | 7.12                                          | -2.39          | 0.023          | Significant ( $p < 0.05$ )        |
| Aerobic Endurance (step count)  | 86.41                                       | 75.08                                         | 3.65           | 0.001          | Highly Significant ( $p < 0.01$ ) |

## Discussion

The empirical findings indicate that senior citizens who regularly frequent Sarasbaug exhibit commendable functional capacities. When referenced against global geriatric norms (such as the Rikli and Jones Senior Fitness Standards), the average score of 6.49 seconds for males and 7.12 seconds for females on the 8-Foot Up and Go Test places this population within a safe, independent mobility zone, indicating a low risk of falling. This highlights the positive influence of urban community parks in promoting dynamic balance.

The gender-segregated data revealed noteworthy trends. Female senior citizens demonstrated significantly higher flexibility scores in the Seated Sit and Reach Test (1.78) compared to males (-0.41)  $t = -5.73$ ,  $p < 0.01$ ). This matches historical kinesiological data indicating that women maintain soft-tissue and joint elasticity longer than men due to anatomical variances. Conversely, male senior citizens achieved a significantly higher average score on the 2-Minute Step Test (86.41) than females (75.08)  $t = 3.65$ ,  $p = 0.001$ , pointing to a higher relative aerobic capacity. The significance in agility timings ( $p = 0.023$ ) indicates that while both genders are agile, males completed the course slightly quicker, potentially due to historical



variances in occupational physical activity.

## Conclusion

This study evaluated the functional fitness profiles of senior citizens in the Sarasbaug region of Pune City, utilizing an Independent Samples t-test to isolate gender-based variations. Because the male ( $n=22$ ) and female ( $n=13$ ) cohorts demonstrated no statistically significant differences in baseline variables of age ( $p = 0.804$ ) and BMI ( $p = 0.401$ ), the subsequent functional variations can be attributed to distinct physiological and behavioral disparities rather than physical anthropometric confounders.

- **Lower-Body Flexibility** : Older females possess a highly significant advantage in lower-body flexibility over males ( $p < 0.001$ ). This aligns with biological models of higher joint laxity in females and culturally distinct domestic or recreational movement patterns within urban Indian households.
- **Agility and Dynamic Balance** : Older males perform significantly better in agility and dynamic balance, achieving faster completion times than females ( $p = 0.023$ ). The lower performance in women signals a faster rate of neuromuscular degradation post-menopause, translating to a heightened vulnerability to locomotion instability.
- **Aerobic Endurance** : Cardiorespiratory endurance is highly significant in favor of male senior citizens ( $p = 0.001$ ). This underscores both the physiological advantages in oxygen transport capacity inherently retained by older males and the sociological tendency for senior men in Pune to engage in prolonged, uninterrupted brisk walking sessions in community spaces like Sarasbaug.

## Recommendations

- **For Senior Females** : Public health coordinators and local fitness instructors should design and implement structured resistance and neuromotor training programs. Exercises must focus on lower-limb strength (e.g., chair squats) and dynamic balance routines (e.g., tandem walking, Tai Chi) to directly counteract the observed deficits in agility and minimize fall risks.
- **For Senior Males** : Geriatric physical regimens tailored for men must actively incorporate dedicated flexibility and range-of-motion protocols. Integrating static hamstring stretching and soft-tissue mobility work into their daily routines will help prevent joint stiffness, lower back pain, and gait abnormalities.



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