Experimental

Assessment of Functional Fitness of Aged Men-A status Study

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A R T I C L E  I N F O

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A B S T R A C T

Physical activity involves systematic movement of body parts energizing and activating the overall health of an individual. With the help of fitness programs men engage in physical activities with a view towards development of strength vigor of the body. Though the concept of physical activity and fitness is popular among the youth the practice is not so much prevalent among aged people. Aged people due to some hindrances like social economic and other issues does not feel comfortable to take part in regular fitness programs. According to research findings aged persons can equally take part in regular physical activity and fitness programs and get strengthened with respect to functional fitness. In this era of passiveness inactivity and ill health, participation of old age people along with youth in fitness workout is very essential for healthy aging. The fitness activities like walking jogging cycling swimming can play a significant role in sustainable good health of the old age people. Functional fitness is a classification of training that prepares the body for real-life movements and activities. Functional fitness is a crucial state of fitness with respect to wellbeing of people. Functional fitness training is strength training that readies your body for daily activities, like bending, twisting, lifting, pushing, pulling, and squatting.

Introduction

Aged men are precious part of the human society. They are the predecessors of the younger generation. They usually show path to the youth and the youth follow the path shown by them. In our country India we believe on spiritualism to a great extent and henceforth the adult persons get a good position in the entire society with some exceptions obviously. With the advancement of science and technology and the gaining momentum of the life style somehow the position of the adult persons is getting affected. Apart from all socio-cultural beliefs and practices aged persons still bear a prestigious position as a whole.

The aged people take part in all cultural feats. They act as a crucial part in their family and peer group. But it is a matter of concern that they very rarely take part in physical activity and fitness programs leading them towards ill health and poor functional fitness. The cultural structure, some misconceptions and misbeliefs usually keep them away form gymnasium, swimming pool, fitness centres and all.

At this juncture motivating the aged people and bringing them towards the regimen of physical culture is supposed to be a big challenge for the professionals of Physical Education. Keeping in consideration the above fact the scholar premeditated to conduct research on the topic Assessment of Functional Fitness of Aged Men-A status Study.

Purpose of Study

The purposes of the study are as follows:
To assess the endurance of the aged men

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To assess the strength of the aged men
To assess the flexibility of the aged men
To assess the agility of the aged men

**Significance**

The scholar is of the view that such type of status study will help to ascertain the basic status of functional fitness of the aged men. The findings of the study will help to locate the shortfalls of the aged men with respect to functional fitness.

**Some literature**

Mobility-related fatigue is associated with slower walking speed in older adults. Poor muscle strength is one of the underlying factors explaining this association (Manty et al., 2012).

The strength in the lower extremities is important to perform physical activities of daily life. Aging affects all lower extremity compartments, but femoral muscle mass is the major compartment associated with physical function in older adults (Buford et al., 2012).

Aging is a multifactorial process leading to changes in skeletal muscle quantity and quality, which cause muscle weakness and disability in the aging population (Seene and Kaasik, 2012). The aging process and the physical inactivity alter functional fitness indicators. Physical activity to a great extent is the cause of the changes in functional abilities during the aging process (Nadel & Di Pietro, 1995).

The cardiorespiratory system is susceptible to changes and indicates a significant decrease in the aerobic capacity after the age of 40, so that by the age of 65 it is approximately 30% less. This is related to the decrease in the indicators of maximum heart frequency, heart rate, and arteriovenous difference (Fleg, O’Connor, & Gerstenblith, 1995).

**Methodology**

Basically, the study is a part of a broad-based research work of the scholar in which he included the initial part i.e. the pre-test results and with those composed this article to show the preliminary functional fitness status of his subjects.

As subjects of his study the scholar randomly selected 50 men within the age group 60 to 65 years from the Kalyani town and adjoining areas. First of all, personal data like age height and body weight of the persons were measured and thereafter Fullerton functional fitness test battery was used to assess the status.

**Chair stand test**

Purpose: This test assesses leg strength and endurance.

Equipment required: a straight back or folding chair without arm rests (seat 17 inches/44 cm high), stopwatch.

Pre-test: the scholar explained the test procedures to the subjects. Performed screening of health risks and obtain informed consent. Prepare forms and record basic information such as age, height, body weight, gender, test conditions. See more details of pre-test procedures.

Procedure: Place the chair against a wall, or otherwise stabilize it for safety. The subject sits in the middle of the seat, with their feet shoulder width apart, flat on the floor. The arms are to be crossed at the wrists and held close to the chest. From the sitting position, the subject stands completely up, then completely back down, and this is repeated for 30 seconds. Count the total number of complete chair stands (up and down equals one stand). If the subject has completed a full stand from the sitting position when the time is elapsed, the final stand is counted in the total.

Scoring: the score is the number of completed chair stands in 30 seconds.

**Arm curl test**

Purpose: This test measures upper body strength and endurance.

Equipment required: 4 pound dumbbell weight (women, AAHPERD), 5 pound weight (women, SFT), 8 pound weight (for men). A chair without armrests, stopwatch.

Pre-test: The scholar explained the test procedures to the subject. He performed screening of health risks and obtain informed consent. Prepare forms and record basic information such as age, height, body weight, gender, test conditions. Ensure that the participants are adequately warmed-up. See more details of pre-test procedures.
**Arm Curl Test**

**Procedure:** The aim of this test is to do as many arm curls as possible in 30 seconds. This test is conducted on the dominant arm side (or stronger side). The subject sits on the chair, holding the weight in the hand using a suitcase grip (palm facing towards the body) with the arm in a vertically down position beside the chair. Brace the upper arm against the body so that only the lower arm is moving (tester may assist to hold the upper arm steady). Curl the arm up through a full range of motion, gradually turning the palm up (flexion with supination). As the arm is lowered through the full range of motion, gradually return to the starting position. The arm must be fully bent and then fully straightened at the elbow. The protocol for the AAHPERD test describes the administrator’s hand being placed on the biceps, and the lower arm must touch the tester’s hand for a full bicep curl to be counted. Repeat this action as many times as possible within 30 seconds.

**Scoring:** The score is the total number of controlled arm curls performed in 30 seconds. Below is a table showing some recommended ranges for this test based on age groups (from Jones & Rikli, 2002).

**Chair Sit and Reach Test** for assessment of lower body flexibility test

**Purpose:** This test measures lower body flexibility.

**Equipment required:** ruler, straight back or folding chair, (about 17 inches/44 cm high)

**Pre-test:** The scholar explained the test procedures to the subject. He performed screening of health risks and obtain informed consent. Prepare forms and record basic information such as age, height, body weight, gender, test conditions. Perform an appropriate warm-up. See more details of pre-test procedures.

**Procedure:** The subject sits on the edge a chair (placed against a wall for safety). One foot must remain flat on the floor. The other leg is extended forward with the knee straight, heel on the floor, and ankle bent at 90°. Place one hand on top of the other with tips of the middle fingers even. Instruct the subject to inhale, and then as they exhale, reach forward toward the toes by bending at the hip. Keep the back straight and head up. Avoid bouncing or quick movements, and never stretch to the point of pain. Keep the knee straight, and hold the reach for 2 seconds. The distance is measured between the tip of the fingertips and the toes. If the fingertips touch the toes then the score is zero. If they do not touch, measure the distance between the fingers and the toes (a negative score), if they overlap, measure by how much (a positive score). Perform two trials. See also video demonstrations of the Sit and Reach Test.

**Scoring:** The score is recorded to the nearest 1/2 inch or 1 cm as the distance reached, either a negative or positive score. Record which leg was used for measurement. Below is a table showing the recommended ranges (in inches) for this test based on age groups (from Jones & Rikli, 2002).

**Back Scratch Test**

**Purpose:** This test measures general shoulder range of motion

**Equipment required:** ruler or a yardstick

**Pre-test:** The scholar explained the test procedures to the subject. He performed screening of health risks and obtain informed consent. Prepare forms and record basic information such as age, height, body weight, gender, test conditions. Perform an appropriate warm-up.

**Procedure:** This test is done in the standing position. Place one hand behind the head and back over the shoulder, and reach as far as possible down the middle of your back, your palm touching your body and the fingers directed downwards. Place the other arm behind your back, palm facing outward and fingers upward and reach up as far as possible attempting to touch or overlap the middle fingers of both hands. An assistant is required to direct the subject so that the fingers are aligned, and to measure the distance between the tips of the middle fingers. If the fingertips touch then the score is zero. If they do not touch, measure the distance between the fingers (a negative score), if they overlap, measure by how much (a positive score). Practice two times, and then test two times. Stop the test if the subject experiences pain.

**Scoring:** Record the best score to the nearest centimeter or 1/2 inch. The higher the score the better the result. Below is a table showing the recommended ranges (in inches) for this test based on age groups (from Jones & Rikli, 2002).
8 foot up and go test for assessment of agility
Purpose: This test measures speed, agility and balance while moving.
Equipment required: stopwatch, straight back or folding chair (about 17 inches/44 cm high), cone marker, measuring tape, area clear of obstacles.
Pre-test: The scholar explained the test procedures to the subject. Perform screening of health risks and obtain informed consent. Prepare forms and record basic information such as age, height, body weight, gender, test conditions. Measure and mark out test area. Perform an appropriate warm-up. See more details of pre-test procedures.
Procedure: Place the chair next to a wall (for safety) and the marker 8 feet in front of the chair. Clear the path between the chair and the marker. The subject starts fully seated, hands resting on the knees and feet flat on the ground. On the command, “Go,” timing is started and the subject stands and walks (no running) as quickly as possible (and safely) to and around the cone, returning to the chair to sit down. Timing stops as they sit down. Perform two trials.
Scoring: Take the best time of the two trails to the nearest 1/10th second. Below is a table showing the recommended ranges in seconds for this test based on age groups (from Jones & Rikli, 2002).

6 min. walk test for assessment of aerobic fitness
Purpose: This test measures aerobic fitness
Equipment required: measuring tape to mark out the track distances, stopwatch, chairs positioned for resting.
Pre-test: The scholar explained the test procedures to the subject. He performed screening of health risks and obtain informed consent. Prepare forms and record basic information such as age, height, body weight, gender, test conditions. Measure and mark out the test area. Perform an appropriate warm-up. Walking around a track walking around a track procedure: The walking course is laid out in a 50 yard (45.72m) rectangular area (dimensions 45 x 5 yards), with cones placed at regular intervals to indicate distance walked. The aim of this test is to walk as quickly as possible for six minutes to cover as much ground as possible. Participants are set their own pace (a preliminary trail is useful to practice pacing), and are able to stop for a rest if they desire.
Scoring: measure the distance walked in 6 minutes to the nearest meter. The following regression equations were determined by Jenkins et al. (2009). Were used to determine the functional fitness of the adult people. Prior to involving the adult persons in physical activities, the scholar conducted a basic health checkup to ascertain the fundamental health status of the subjects. He also collected their consent with the help of filling up of a form mentioning their voluntary participation in the project.

Result and discussion
In this part of the presentation data have been presented in tabular form and discussion were made based on interpretation.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>50</td>
<td>60</td>
<td>65</td>
<td>62.86</td>
<td>1.738</td>
</tr>
<tr>
<td>Height(cms)</td>
<td>50</td>
<td>152</td>
<td>177</td>
<td>163.58</td>
<td>5.425</td>
</tr>
<tr>
<td>Weight(kg)</td>
<td>50</td>
<td>48</td>
<td>85</td>
<td>66.34</td>
<td>8.113</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In Table No. 1 Descriptive statistics of personal data of the subjects have been presented followed by column chart in Figure no. 1.

Table No. 2
Showing mean SD and range of the functional test results of the subjects

<table>
<thead>
<tr>
<th>Test Description</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair stand test (No)</td>
<td>50</td>
<td>8</td>
<td>20</td>
<td>15.22</td>
<td>2.597</td>
</tr>
<tr>
<td>Arm curl test (No)</td>
<td>50</td>
<td>9</td>
<td>19</td>
<td>12.52</td>
<td>2.112</td>
</tr>
<tr>
<td>Chair sit and reach test (c.m)</td>
<td>50</td>
<td>-18</td>
<td>-5</td>
<td>-12.08</td>
<td>3.392</td>
</tr>
<tr>
<td>Back scratch test (c.m)</td>
<td>50</td>
<td>5</td>
<td>20</td>
<td>-12.50</td>
<td>3.448</td>
</tr>
<tr>
<td>8-foot up and go test (secs)</td>
<td>50</td>
<td>4</td>
<td>7</td>
<td>5.86</td>
<td>.670</td>
</tr>
<tr>
<td>6 min walk test mt.</td>
<td>50</td>
<td>360</td>
<td>550</td>
<td>457.10</td>
<td>43.025</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table No. 3
Showing the mean SD and range of the functional fitness test results

<table>
<thead>
<tr>
<th>Fitness tests</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair stand test (No)</td>
<td>50</td>
<td>11</td>
<td>26</td>
<td>20.82</td>
<td>3.173</td>
</tr>
<tr>
<td>Arm curl test (No)</td>
<td>50</td>
<td>14</td>
<td>22</td>
<td>17.24</td>
<td>2.209</td>
</tr>
<tr>
<td>Chair sit and reach test (c.m)</td>
<td>50</td>
<td>0</td>
<td>6</td>
<td>1.08</td>
<td>1.510</td>
</tr>
<tr>
<td>Back scratch test (c.m)</td>
<td>50</td>
<td>0</td>
<td>4</td>
<td>.34</td>
<td>.772</td>
</tr>
<tr>
<td>8-foot up and go test (sec)</td>
<td>50</td>
<td>3.12</td>
<td>5.72</td>
<td>4.2004</td>
<td>.64375</td>
</tr>
<tr>
<td>6 min walk test mt.</td>
<td>50</td>
<td>410</td>
<td>670</td>
<td>561.40</td>
<td>46.763</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In table No. 2 The mean SD and range of the results of Chair stand test, Arm curl test, Chair sit and reach test, Back scratch test, 8-foot up and go test and 6 min walk test have been presented.
Column chart showing the vertical spread of the above test results have been individually presented in the following figures.

FIG NO. 2 MEAN AND SD OF CHAIR STAND TEST

[Bar chart showing mean and SD for Chair stand test]
In the above figure the mean and SD of the chair stand test have been presented.

<table>
<thead>
<tr>
<th>Age</th>
<th>Below average</th>
<th>Average</th>
<th>Above average</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-64</td>
<td>&lt; 14</td>
<td>14 to 19</td>
<td>&gt; 19</td>
</tr>
</tbody>
</table>

The standard norms for the age group taken into consideration is given above. According to the data derived from descriptive statistical analysis the mean value is 15.22 so according to the norms the subject bears an average standard with respect to 30 sec chair stand test revealing their leg strength and endurance.

The standard norms for the age group taken into consideration is given above. According to the data derived from descriptive statistical analysis the mean value is 12.52 so according to the norms the subject bears a below average standard with respect to 30 sec arm curl test revealing their upper body strength and endurance.
The standard norms for the age group taken into consideration is given above. According to the data derived from descriptive statistical analysis the mean value is -12.05 so according to the norms the subject bears a below average standard with respect to chair sit and reach test revealing their lower body flexibility.

<table>
<thead>
<tr>
<th>Age</th>
<th>Below average</th>
<th>Average</th>
<th>Above average</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-64</td>
<td>&lt; -2.5</td>
<td>-2.5 to 4.0</td>
<td>&gt; 4.0</td>
</tr>
</tbody>
</table>

The standard norms for the age group taken into consideration is given above. According to the data derived from descriptive statistical analysis the mean value is -12.05 so according to the norms the subject bears a below average standard with respect to chair sit and reach test revealing their lower body flexibility.
The standard norms for the age group taken into consideration is given above. According to the data derived from descriptive statistical analysis the mean value is -12.5 so according to the norms the subject bears a below average standard with respect to back scratch test revealing their upper body flexibility.

<table>
<thead>
<tr>
<th>Age</th>
<th>Below average</th>
<th>Average</th>
<th>Above average</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-64</td>
<td>&lt; -6.5</td>
<td>-6.5 to 0</td>
<td>&gt; 0</td>
</tr>
</tbody>
</table>

The standard norms for the age group taken into consideration is given above. According to the data derived from descriptive statistical analysis the mean value is 5.86 so according to the norms the subject bears a below average standard with respect to 8 ft up and go test revealing their agility.

<table>
<thead>
<tr>
<th>Age</th>
<th>Below average</th>
<th>Average</th>
<th>Above average</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-64</td>
<td>&gt; 5.6</td>
<td>5.6 to 3.8</td>
<td>&lt; 3.8</td>
</tr>
</tbody>
</table>
Optimal reference equations from healthy population-based samples using standardized 6MWT methods are not yet available. In one study, the median 6MWD was approximately 580 m for 117 healthy men and 500 m for 173 healthy women. A mean 6MWD of 630 m was reported by another study of 51 healthy older adults. Differences in the population sampled, type and frequency of encouragement, corridor length, and number of practice tests may account for reported differences in mean 6MWD in healthy persons. Age, height, weight, and sex independently affect the 6MWD in healthy adults; therefore, these factors should be taken into consideration when interpreting the results of single measurements made to determine functional status. We encourage investigators to publish reference equations for healthy persons using the previously mentioned standardized procedures.

According to the data analysis the mean of 6 min walk test is 457.1, there is no such defined norms available according to the above literature it is somehow clear that the performance of the subjects is below average.

Findings

The subject bears an average standard with respect to 30 sec chair stand tests revealing their leg strength and endurance. It is somehow clear that the adult men took part in the study bears an average standard of leg strength and endurance.

The subject bears a below average standard with respect to 30 sec arm curl tests revealing their upper body strength and endurance.

The subject bears a below average standard with respect to chair sit and reach test revealing their lower body flexibility.

The subject bears a below average standard with respect to 8 ft up and go test revealing their agility.

The performance of the subjects is in 6 min walk test revealing their aerobic fitness is also below average.

From the data analysis it is somehow clear that the aged males do not bear a good status with respect to functional fitness. So far their mean values are concerned they mostly resembles below average level. It is really a matter of great concern especially for we the professionals in the field of Physical Education. Findings of notable research given above also are of the view that the fitness levels of the aged people weaken with the degeneration of the bodily organs and systems. We should be very proactive in this aspect; nourishing and enriching the functional fitness status of the aged men. We should conduct several research studies directed towards assessment of their fitness levels as well as involving them in systematic and scientifically designed fitness programs for development of functional status of the old age persons.
Conclusion
As a whole from the results of the study it is evident that the functional fitness level of adult men within the age group 60-65 is not at all satisfactory. In most of the cases they possess fitness levels below average. It is really a matter of concern for the professionals in the field of Physical Education and Sports Science. The researchers should focus much more towards the health and fitness of the aged people conduct more and more research studies directed towards enrichment of the fitness status of the aged people.

References