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Comparison of Functional Fitness of Senior Citizens of West Delhi

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Abstract – The purpose of the study was to compare the functional fitness level of senior citizens in west Delhi. For the purpose of the study fifty male senior citizens of West Delhi were selected as the subjects. The age of the subjects ranged from 60-74 years. The necessary data was collected by administering Rikli & Jones Senior Citizen Fitness Test. The necessary work was done before the start of the test. All the tests were administered and explained to the subjects by the researcher. The obtained data was analysed by using statistical software (SPSS 20 version). To find out the difference between different age groups analysis of variance (ANOVA) was employed for testing the hypothesis at a level of significance 0.05. The main findings from the study indicate that functional fitness reduces as the age increases. The three age groups with gap of five years: 60 to 64 years, 65 to 69 years and 70 to 74 years were analysed and the results clearly shows the reduction in functional fitness in the age group of 65 to 69 years followed by 70 to 74 years compared to 60 to 64 years.

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INTRODUCTION

Functional Fitness has been around for ages. In its simplest form, Functional Fitness is exercising and training for real life. Just like athletes train for specific sports, Functional Fitness trains your body to make everyday living easier and more enjoyable. Conceptually, functional fitness represents the physical capacity that is needed to undertake normal everyday activities, independently and without the early onset of fatigue. However the aging process tends to reduce physical fitness (strength, endurance, agility, and flexibility), and results in difficulties in daily life activities and normal functioning of the elderly (Riebe, 2009 and Tuna, 2009). The level of daily activities of elderly persons decreases with aging, although it is well known that PA is important for independent living (Goldspink, 2005) prevention of chronic health problems, and quality of life (Brill, 2004). Physical activity has a significant role in maintaining functional fitness. If elderly individuals do not take part in physically active lifestyles, they expose themselves to the risk of their muscle mass and joint motion reducing by 40% and 10%–40%, depending on body part, respectively, while loss of muscle strength (~30%) is related to a decrease in muscle mass (Kostić, 2011).

To be able to perform functional movements a person has to rely on sufficient physiological reserves (i.e. flexibility, strength, endurance, balance) (Rikli & Jones, 2002). Functional fitness is defined as having the physiological capability to perform normal everyday tasks safely and independently without any undue fatigue (Rikli & Jones, 1999). Rikli and Jones (1999) developed a functional fitness test that presumes that you require certain functional movements (e.g. climbing stairs, carrying objects, bend forward) to perform your everyday activities. Functional fitness components include upper and lower body strength, upper and lower body flexibility, motor balance and agility and aerobic endurance

Most of us would agree that quality of life in later years depends to a large degree on being able to do the things we want to do, without pain, for as long as possible. As we are living longer, it is become increasingly important to pay attention to our physical condition. Ironically, the numerous technological advances in recent years have had mixed benefits for people relative to quantity and quality of life. Whereas medical technology has contributing to a longer life expectancy, computer/automation technology is resulting in increasingly sedentary lifestyle and an increased risk of chronic health and mobility problems (Rikli & Jones, 2001). The surgeon general‟s 1996 report on physical activity and health provides an excellent overview of the relationship between sedentary lifestyle and the onset of a number of chronic conditions that can lead to frailty and disability in later years (U.S. Department of Health and Human Services, 1996).

Physical fitness has traditionally been associated with the more active young through to the middle-aged population. As average life expectancy is increasing, it's become important to live a quality and Independent lifestyle into the later years which will depends at a large degree on how well we maintain our personal fitness level. Whereas health promotion and the avoidance of lifestyle disease (heart disease, obesity, diabetes, etc.) are the major goals of most youth fitness tests, for older adults whose chronic health status generally has already been established, the focus tends to shift from disease prevention to functional mobility- the ability to continue to do things one wants and needs to do to stay strong, active and independent (Rikli and Jones, 2001). However, functional fitness is most critical for those in their senior years. It is important for older adults to have adequate strength, flexibility, and endurance to accomplish everyday tasks. Assessing these components of fitness can detect weaknesses which can be treated before causing serious functional limitations.

Older adults are the most physically inactive group of any population (Zajko, et al., 2009). While every person has a biological clock, the health benefits of a physically active lifestyle for seniors clearly indicate that many age-related illnesses and diseases can be impressively slowed down. Personal trainers and exercise professionals are exemplary role models to advocate, inspire and promote physical activity and exercise in this special population.

METHODOLOGY

Selection of Subjects

For the purpose of this study, 50 male senior citizens of each age group (60-64 years, 65-69 years, and 70-74 years) of West Delhi region were selected.

Administration of the Test

The data was collected for functional fitness administering Rikli & Jones Functional Fitness Test. The tests were administered at different locations of West Delhi i.e. Vikaspuri, Janakpuri, Paschim Vihar, and Dwarka. To ensure that the data collected was reliable, each subject was given sufficient number of trials to perform the respective test for each variable. The tests used were explained to the subjects prior to their administration. The subjects were given chance to practice the tests and made them familiar with.

RESULTS

In order to analyze the data, the one way analysis of variance (ANOVA) test was used to compare the means of different groups. The level of significance was set at 0.05.

The data for Functional Fitness was examined by applying One-way Analysis of Variances in order to have a comparison among the different age groups. When the results of One-way Analysis of Variances indicated significant difference, the least significant difference (LSD) Post-hoc test was applied. The level of significance to test the hypothesis and obtained F values was set at 0.05.

Table 1

ANOVA for Lower Body strength among Different Age Group of Senior Citizens

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	314.647	2	157.323	7.428	.001
Within Groups	6290.350	147	21.180		
Total	6604.997	149			

Table 1 reveals that, Analysis of Variance was found significant in relation to Lower Body strength as the F-value (7.428) is significant as the p-value (0.001) is less than 0.05.

Since the one way analysis of variance was found significant in relation to Lower Body strength, the least significant difference (LSD) test was applied to find out the significant relationship among the means of the different age group which were statistically significant.

Table 1.1

Multiple Comparisons				
		Mean Difference	Std. Error	Sig.
60-64 Years	65-69 Years	.360	.65084	.581
	70-74 Years	2.33*	.65084	.000
65-69 Years	60-64 Years	-.360	.65084	.581
	70-74 Years	1.97000*	.65084	.003
70-74 Years	60-64 Years	-2.33000*	.65084	.000
	65-69 Years	-1.97000*	.65084	.003

It is evident from Table 1.1 that mean score of age group 60-64 years and 65-69 years was higher than the 70-74 years age group, whereas there was no significant difference among the means of 60-64 years age group and 65-69 years age group in relation to Lower Body strength.

Table 2

ANOVA for Upper Body strength among Different Age Group of Senior Citizens

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	285.840	2	142.920	7.055	.001
Within Groups	6016.730	147	20.258		
Total	6302.570	149			

Table 2 reveals that, Analysis of Variance was found significant in relation to Upper Body strength as the F-value (7.055) is significant as the p-value (0.001) is less than 0.05.

Since the one way analysis of variance was found significant in relation to Upper Body strength, the least significant difference (LSD) test was applied to find out the significant relationship among the means of the different age group which were statistically significant.

Table 2.1

Post - hoc test (LSD) for Upper Body strength

Multiple Comparisons				
		Mean Difference	Std. Error	Sig.
60-64 Years	65-69 Years	-.06000	.63653	.925
	70-74 Years	2.04000*	.63653	.001
65-69 Years	60-64 Years	.06000	.63653	.925
	70-74 Years	2.10000*	.63653	.001
70-74 Years	60-64 Years	-2.04000*	.63653	.001
	65-69 Years	-2.10000*	.63653	.001

It is evident from Table 2.1 that mean score of age group 60-64 years and 65-69 years was significantly higher than the 70-74 years age group, whereas there was no significant difference among the means of 60-64 years age group and 65-69 years age group in relation to Upper Body strength.

Table 3

ANOVA for Lower Body Flexibility (in Inches)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	87.122	2	43.561	1.520	.220
Within Groups	8510.328	147	28.654		
Total	8597.449	149			

Table 3 reveals that, Analysis of Variance was found to be not significant in relation to Lower Body Flexibility since the F-value (1.520) which is not significant, as the p-value (0.220) is more than 0.05.

Table 4

ANOVA for upper Body Flexibility (in Inches)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	425.007	2	212.503	8.142	.000
Within Groups	7751.690	147	26.100		
Total	8176.697	149			

Table 4 reveals that, Analysis of Variance was found significant in relation to Upper Body Flexibility as the F-value (8.142) is significant as the p-value (0.00) is less than 0.05.

Since the one way analysis of variance was found significant in relation to Upper Body Flexibility, the least significant difference (LSD) test was applied to find out the significant relationship among the means of the different age group which were statistically significant.

Table 4.1

Post - hoc test (LSD) for upper Body Flexibility (in Inches)

Multiple Comparisons				
		Mean Difference	Std. Error	Sig.
60-64 Years	65-69 Years	1.19000	.72250	.101
	70-74 Years	2.90000*	.72250	.000
65-69 Years	60-64 Years	-1.19000	.72250	.101
	70-74 Years	1.71000*	.72250	.019
70-74 Years	60-64 Years	-2.90000*	.72250	.000
	65-69 Years	-1.71000*	.72250	.019

It is evident from Table 4.1 that mean score of age group 60-64 years and 65-69 years was significantly higher than the 70-74 years age group, whereas there was no significant difference among the means of 60-64 years age group and 65-69 years age group in relation to Upper Body Flexibility.

Table 5

ANOVA for Agility (in Sec.)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	77.757	2	38.878	11.238	.000
Within Groups	1027.461	147	3.459		
Total	1105.217	149			

Table 5 reveals that, Analysis of Variance was found significant in relation to Agilityas the F-value (11.238) is significant as the p-value (0.00) is less than 0.05.

Since the one way analysis of variance was found significant in relation to Agility, the least significant difference (LSD) test was applied to find out the significant relationship among the means of

the different age group which were statistically significant.

Table 5.1

Post - hoc test (LSD) for Agility (in sec.)

Multiple Comparisons				
		Mean Difference	Std. Error	Sig.
60-64 Years	65-69 Years	1.17200*	.26304	.000
	70-74 Years	.95500*	.26304	.000
65-69 Years	60-64 Years	-1.17200*	.26304	.000
	70-74 Years	-.21700	.26304	.410
70-74 Years	60-64 Years	-.95500*	.26304	.000
	65-69 Years	.21700	.26304	.410

It is evident from Table 5.1 that mean score of age group 60-64 years was significantly higher than 65-69 years and 70-74 years age group, whereas there was no significant difference among the means of 65-69 years age group and 70-74 years age group in relation to Agility.

Table 6

ANOVA for Aerobic Fitness (in Meters)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	240892.167	2	120446.083	10.233	.000
Within Groups	3495766.500	147	11770.258		
Total	3736658.667	149			

Table 6 reveals that, Analysis of Variance was found significant in relation to Aerobic Fitness as the F-value (10.233) is significant as the p-value (0.00) is less than 0.05.

Since the one way analysis of variance was found significant in relation to Aerobic Fitness, the least significant difference (LSD) test was applied to find out the significant relationship among the means of the different age group which were statistically significant.

Table 6.1

Post - hoc test (LSD) for Aerobic Fitness (in Meters)

Multiple Comparisons				
		Mean Difference	Std. Error	Sig.
60-64 Years	65-69 Years	-7.60000	15.34292	.621
	70-74 Years	55.95000*	15.34292	.000
65-69 Years	60-64 Years	7.60000	15.34292	.621
	70-74 Years	63.55000*	15.34292	.000
70-74 Years	60-64 Years	-55.95000*	15.34292	.000
	65-69 Years	-63.55000*	15.34292	.000

It is evident from Table 6.1 that mean score of age group 60-64 years and 65-69 years was higher than the 70-74 years age group, whereas there was no significant difference among the means of 60-64 years age group and 65-69 years age group in relation to 6 Min. Walk test.

DISCUSSION OF FINDING

The main findings from the study indicate that functional fitness reduces as the age increases. The three age groups with gap of five years: 60 to 64 years, 65 to 69 years and 70 to 74 years were analyzed and the results clearly shows the reduction in functional fitness in the age group of 65 to 69 years followed by 70 to 74 years compared to 60 to 64 years. The findings of the present study are similar with the findings of the previously published researches on advancing age and decline in functional fitness performance (Stathokostas et al.,2013; Milanovic et al., 2013; Gouveia, et al., 2013; Li-An Ho et al., 2013; Schaap et al., 2013; Confortin et al., 2013; Marques et al., 2013; Gregory & Hicks 2012; Manty et al., 2012; Thomas et al., 2012; Rikli & Jones 1999; ACSM 1998; Shephard 1997).

Lower Body Strength was higher in the age group of 60 to 64 years followed by 65 to 69 years and at last 70 to 74 years, respectively. Upper body strength was found similar in the age group of 60 to 64 years and 65 to 69 years and less upper body strength was found in the age group of 70 to 74 years. The reason might be due to the less use of upper body compare to the lower body at the older age. Lower body flexibility and upper body flexibility was found more in the age group of 60 to 64 years followed by 65 to 69 years and lowest in 70 to 74 years.. The findings of the present study are also similar with the findings of Milanović et al., (2013) . This is probably due to the reduction of muscle strength in both upper and lower limbs and changes in body-fat percentage. Agility and aerobic fitness was also found more in the age of 60 to 64 years and 65 to 69 years and lowest in 70 to 74 years. Good Agility and aerobic fitness requires good and frequent movements. The people with the age of 70 to 74 years movement reduces rapidly due to which lung capacity and volume reduces simultaneously RBC counts reduces and ultimately the agility and aerobic fitness deteriorates significantly.

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