FUNCTIONAL FITNESS OF ACTIVE AND SEDENTARY OLDER PEOPLE: A COMPARATIVE STUDY

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ABSTRACT

The purpose of the study was to assess and compare functional fitness among physically active and sedentary male senior citizens. For the purpose of the study one seventy-five male senior citizens (N=175) were selected from Delhi-NCR region. The age of the subjects ranged from 60- to 64-year-old. The selected subjects were divided into two groups active (n=100) and sedentary (n=75). Functional fitness test developed by Rikli and Jones were administered on the selected subjects. The data was analysed by employing descriptive statistics and Independent 't' test. The results showed that there was a significant difference in lower body strength, upper body strength, lower body flexibility, upper body flexibility, agility/dynamic balance and aerobic endurance between physically active and sedentary male senior citizens.

***Keywords**: lower body strength, upper body strength, lower body flexibility, upper body flexibility, agility/dynamic balance & aerobic endurance.*

I NTRODUCTION:

Physical activity is broadly defined as "any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level" and involves detailed parameters such as intensity, type, and duration (**World Health Organization, 2004).** Although the term PA and exercise are often used interchangeably, exercise is a subcategory of PA that is

"planned, structured, and repetitive and has as a final or an intermediate objective the improvement or maintenance of physical fitness" (**Caspersen, Powell, & Christenson, 1985**). Participation in regular PA has been demonstrated to have substantial health benefits for older adults and these benefits continue to occur throughout their lives (**Chodzko-Zajko et al., 2009**). Findings from empirical studies and systematic reviews suggest that regular PA can help older adults maintain cardiovascular health (**Huang, Gibson, Tran, & Osness, 2005**), improve 8 sleep quality (**Yang, Ho, Chen, & Chien, 2012**), reduce the risk of falls (**Sherrington, Tiedemann, Fairhall, Close, & Lord, 2011**), and prevent type 2 diabetes, heart disease (**Batty, 2002**), osteoporosis, osteoarthritis, and many other chronic conditions. Regular PA helps older adults gain benefits in cognitive and brain functions, such as reducing the risk of dementia and improving the memory and executive function (**Angevaren, Aufdemkampe, Verhaar, Aleman, & Vanhees, 2008; Colcombe& Kramer, 2003**). Compared with sedentary older adults, physically active older adults have a lower rate of all-cause mortality in both men and women (**Andersen, Schnohr, Schroll, & Hein, 2000**).

METHODOLOGY& RESULTS:

The purpose of the study was to assess and compare functional fitness among physically active and sedentary male senior citizens. For the purpose of the study one seventy-five male senior citizens (N=175) were selected from Delhi-NCR region. The age of the subjects ranged from 60- to 64-year-old. The selected subjects were divided into two groups active (n=100) and sedentary (n=75). Functional fitness test battery developed by Rikli and Jones were administered on the

selected subjects. The data was analysed by employing descriptive statistics and Independent‘t’ test. The results showed that there was a significant difference in lower body strength, upper body strength, lower body flexibility, upper body flexibility, agility/dynamic balance and aerobic endurance were measured by Chair stand (no. of stands), Arm Curl (no. of reps), Chair Sit-&-Reach (inches +/-), Back Scratch (inches +/-) & 8-Ft Up-&-Go (seconds) & 6-Min Walk (no. of yds) respectively.

RESULT:

The results of the study after employing the statistics are displayed in table 1.

Table 1: Group Statistics & Independent ‘t’ test of functional fitness among 60- to 64-year-old physically active and sedentary male senior citizens.

Variables	Group	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Lower Body Strength	Active	100	16.96	4.618	0.46186			
	Sedentary	75	15.68	3.781	0.43668	1.95	173	0.05
Upper Body Strength	Active	100	19.17	5.111	0.5111			
	Sedentary	75	17.72	4.527	0.52283	1.94	173	0.05
Lower Body Flexibility	Active	100	2.442	3.150	0.31508			
	Sedentary	75	0.38	3.396	0.39225	4.14	173	0.05

Upper Body Flexibility	Active	100	0.225	3.317	0.33177	4.15	173	0.01
	Sedentary	75	2.153	4.263	0.49228			
Agility/ Dynamic Balance	Active	100	5.01	1.32	0.13204	2.54	173	0.01
	Sedentary	75	5.51	1.27	0.1478			
Aerobic Endurance	Active	100	596.66	121.81	12.1814	5.55	173	0.01
	Sedentary	75	501.26	98.29	11.3499			

The result indicated that there is a significance difference in lower body strength between 60- to 64-year-old physically active and sedentary male senior citizens, t (173) =1.95, P=0.05, which is less than 0.05. That is the average score of active (M=16.96, SD=4.61) was statistically different from that of sedentary (M=15.68, SD=3.78). Thus, it is concluded that there is a significance difference in lower body strength between 60- to 64-year-old physically active and sedentary male senior citizens.

The result indicated that there is a significance difference in upper body strength between 60- to 64-year-old physically active and sedentary male senior citizens, t (173) =1.94, P=0.05, which is less than 0.05. That is the average score of active (M=19.17, SD=5.11) was statistically different from that of sedentary (M=17.72, SD=4.52). Thus, it is concluded that there is a significance difference in upper body strength between 60- to 64-year-old physically active and sedentary male senior citizens.

The result indicated that there is a significance difference in lower body flexibility between 60- to 64-year-old physically active and sedentary male senior citizens, t (173) =4.14, P=0.05, which is less than 0.05. That is the average score of active (M=2.44, SD=3.15) was statistically different from that of sedentary (M=0.38, SD=3.39). Thus, it is concluded that there is a significance difference in lower body flexibility between 60- to 64-year-old physically active and sedentary male senior citizens.

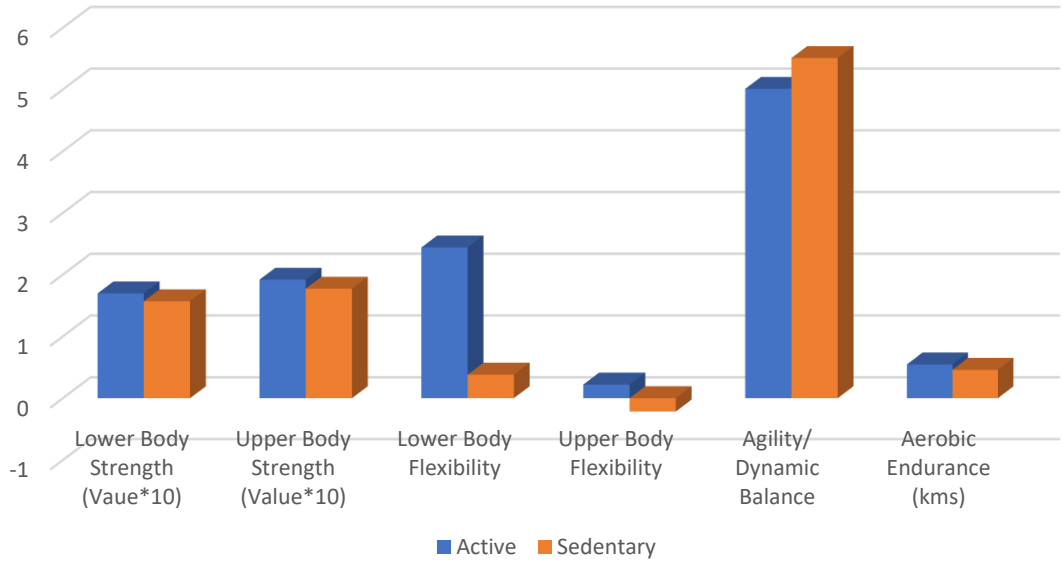
The result indicated that there is a significance difference in upper body flexibility between 60- to 64-year-old physically active and sedentary male senior citizens, t (173) =4.15, P=0.01, which is less than 0.05. That is the average score of active (M=0.22, SD=3.31) was statistically different from that of sedentary (M=-2.15, SD=4.26). Thus, it is concluded that there is a significance difference in upper body flexibility between 60- to 64-year-old physically active and sedentary male senior citizens.

The result indicated that there is a significance difference in agility/dynamic balance between 60- to 64-year-old physically active and sedentary male senior citizens, t (173) =2.54, P=0.01, which is less than 0.05. That is the average score of active (M=5.01, SD=1.32) was statistically different from that of sedentary (M=5.51, SD=1.27). Thus, it is concluded that there is a significance difference in agility/dynamic balance between 60- to 64-year-old physically active and sedentary male senior citizens.

The result indicated that there is a significance difference in aerobic endurance between 60- to 64-year-old physically active and sedentary male senior citizens, t (173) =5.55, P=0.01, which is

less than 0.05. That is the average score of active (M=596.66, SD=121.81) was statistically different from that of sedentary (M=501.26, SD=98.29). Thus, it is concluded that there is a significance difference in aerobic endurance between 60- to 64-year-old physically active and sedentary male senior citizens.

Fig. 4.2: Graphical representation of measure of functional fitness among 60- to 64-year-old physically active and sedentary male senior citizens.



FINDINGS & DISCUSSION:

The result indicated that there is a significance difference in lower body strength between 60- to 64-year-old physically active and sedentary male senior citizens, t (173) =1.95, P=0.05, which is less than 0.05. That is the average score of active (M=16.96, SD=4.61) was statistically different from that of sedentary (M=15.68, SD=3.78).

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Deteriorations in physical function may not be directly apparent as older adults rarely perform exercises that tax their maximal functional capacity. However, as time passes, the margins between the maximal capacity and the capacity needed to perform normal everyday tasks, i.e. the critical threshold necessary for maintained physical function, are narrowed. As a result, with increased age and diminished physical function, everyday activities such as climbing stairs or getting up on a stool become increasingly difficult or even impossible to perform (**Young, 1997**). The annual loss in physical function has been reported to be 1–3% in adults aged 60–85 years and these declines seem to accelerate with increased age (**Alcock, O'Brien, & Vanicek, 2015**). The relationship between loss of skeletal muscle strength and physical function (e.g. walking speed) seems to be curvilinear (**Buchner, Larson, Wagner, Koepsell, & de Lateur, 1996).** This supports the idea of a functional threshold that acts as a lower limit, after which further decreases result in significant impairments in physical function and consequently a reduced ability to carry out everyday tasks (**Byrne, Faure, Keene, & Lamb, 2016**).

Previous studies (**Akune et al., 2014; Leino-Arjas et al., 2004; Stenholm et al., 2016)** have indicated positive associations between physical function at old age and engagement in physical activity during adulthood. However, in common with other previous work, these studies did not assess present physical activity levels. Hence, confounding influences of habitual physical activity level on physical function during old age cannot be ruled out. Therefore, the present study reveals a novel finding as it shows that engagement in exercise-related activities during adulthood has a positive impact on physical function at old age, even in women with a sedentary lifestyle at present. This was evident when considering time spent in exercise activities but not

time spent walking, which suggests that physical activity at intensities corresponding to brisk walking pace may be insufficient to elicit physiological adaptations that impact on physical function at older age.

CONCLUSIONS:

The following conclusion are drawn from the study:

1. There is a significance difference in lower body strength between physically active and sedentary male senior citizens. Thus, we conclude that lower body strength is significantly higher in active male citizens than sedentary male senior citizens.
2. There is a significance difference in upper body strength between physically active and sedentary male senior citizens. Thus, we conclude that upper body strength is significantly higher in active male citizens than sedentary male senior citizens.
3. There is a significance difference in lower body flexibility between physically active and sedentary male senior citizens. Thus, we conclude that lower body flexibility is significantly higher in active male citizens than sedentary male senior citizens.
4. There is a significance difference in upper body flexibility between physically active and sedentary male senior citizens. Thus, we conclude that upper body flexibility is significantly higher in active male citizens than sedentary male senior citizens.
5. There is a significance difference in agility/dynamic balance between physically active and sedentary male senior citizens. Thus, we conclude that agility/dynamic balance is significantly higher in active male citizens than sedentary male senior citizens.

6. There is a significance difference aerobic endurance in between physically active and sedentary male senior citizens. Thus, we conclude that and aerobic endurance is significantly higher in active male citizens than sedentary male senior citizens.

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