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A JemimaResearch Scholar, YMCA College
of Physical Education Chennai,
Tamil Nadu, India**Dr. K Jothi**Associate Professor, YMCA
College of Physical Education,
Chennai, Tamil Nadu, India

Influence of brisk walking, aerobics and Yogasanas on strength and static balance among geriatric men

A Jemima and Dr. K Jothi

Abstract

This study was to compare the influence of brisk walking, aerobics exercises and Yogasanas on strength and static balance among geriatric men. Based on a survey on treatments, place of residence, interest and ability to participate in the study 60 geriatric men in the age group between 60 and 70 years were assigned into four groups of which first group served as brisk walking group (BWG), second group served as aerobic exercises (AEG) group, third group served as Yogasana group (YG) and the fourth group was control group (CG). They were measured of their strength using sit and stand test and static balance which formed pre test scores. The subjects were involved in their respective experimental protocols and post test scores were collected immediately after the completion of the experimental period of 12 weeks. The results on strength and balance due to brisk walking, aerobic exercise and yogic practices among geriatric men showed significant improvement as the obtained F values of 31.42 and 11.20 were significant and the Scheffe's post hoc analysis results showed compared to control group, brisk walking group, aerobic exercise group and yogic practices significantly improved strength and balance. The comparisons among treatment groups proved that yogic practice was significantly better than brisk walking and aerobic exercise in improving strength and there was no significant difference among experimental groups on balance of geriatric men. It was concluded that geriatric men who were unable to do yogic practices may undergo walking practices to maintain their strength and balance.

Keywords: Influence, brisk walking, strength and static

Introduction

The ageing process is of course a biological reality which has its own dynamic, largely beyond human control. The chronological milestones which mark life stages in the developed world, old age in many developing countries is seen to begin at the point when active contribution is no longer possible." (Gorman, 2000) [5] When one grows older, bones can become brittle and the muscles shorten. An elderly person can lose the balance and coordination that they had their entire lives. Staying active helps keep the body flexible. Stretching routines will lengthen muscle tissue and help prevent wasting and shortening. Exercise can reduce incidents of arthritis and osteoporosis by increasing bone density and joint range of motion. If one is currently being treated for any chronic illness, the doctor can advise for safe exercises that will improve the health. Thus, physical activity helps for mobility during old age. There is no down side to regular exercise as one grow older. Even if traditional programmes will not work because of physical constraints, one can still be active. Many problems associated with growing older will improve if one stay active, as long as the doctor accepts. (Darla Ferrara (2011) [3].

Walking helps to overcome some of the physical problems associated with getting older by (a) improving balance, co-ordination and joint flexibility. (b) reducing the risk of falls (c) preventing the development of osteoarthritis and osteoporosis by strengthening bones and joints – hip fractures in over 45s could be reduced by up to 50% with regular walking.(d) improving muscle strength, increasing confidence, stamina and energy levels. (e) reducing the risk of developing Alzheimer's, dementia and confusion.(f) improving social life. Walking is a great way of getting out and about and if one do it with friends or join a walking group, it can be a great way to socialise. Thus, it is recommended for effective geriatric care all adults should do at least 30 minutes moderate exercise per day, but only around 15% of people aged over 65 are currently achieving this.

Correspondence**A Jemima**Research Scholar, YMCA College
of Physical Education Chennai,
Tamil Nadu, India

Hwang AC *et al.* (2016) [6] explored the impact of aging and daily physical activities (PA) on muscle mass and muscle strength and found older age may attenuate the protective effects of higher daily PA on preventing muscle loss, but higher daily PA continues to preserve muscle strength at different age groups, even after the age of 75. The prognostic role of daily PA may be mediated by muscle strength instead of muscle mass among people aged 75 years and older. Danks KA *et al.* (2016) [2] examined the relationship between walking capacities and walking activity and found walking capacity and self-efficacy significantly contributed to "real-world" walking activity, balance self-efficacy moderated the relationship between walking capacity and walking activity. Improving balance self-efficacy may augment walking capacity and translate to improved walking activity. Aerobics is a form of physical activity that combines rhythmic aerobic exercise with stretching and strength training routines with the goal of improving all elements of fitness, flexibility, muscular strength, and cardiovascular fitness. With the goal of preventing illness and promoting physical fitness practitioners perform various routines comprising a number of different exercise. Aerobics is a vigorous physical activity that can provide an inexpensive and practical workout for most people. Aerobic fitness helps to promote the cardio- respiratory system from disease and it promotes physical, mental, emotional and spiritual development. Aerobic programme can be started at any age and the intensity of the programme can also be suited to meet the larger needs of the individual. Nanduri AP *et al.* (2016) [7] implemented peer-led exercise and education program for older adults at risk of osteoporosis. Participants improved their strength, balance, posture, and flexibility, resulting in a reduced risk of falls and fractures. In addition, their knowledge of bone health, nutrition, and fall prevention increased. Offering low-cost disease-specific programs helps minimize the complications of osteoporosis and improve the overall health of participants

Yoga aims at bringing the different body functions into perfect co-ordination so that they work for the God of the whole body. Yoga has a complete massage for humanity. It is a massage for the human body, human mind and human body, human mind and human soul. (Swami Kavalayananda, 1977) [9] Through constant practice of yoga, one can overcome all difficulties and eradicate all weakness. (Ananda, 1982) [1]. Ni M *et al.* (2016) [8] compared the effects of power training (PWT) and a high-speed yoga program on physical performances in older people. Both the specially designed yoga program and PWT programs can significantly

improve physical performance in older persons. The theoretical findings based on previous researches proved that there was further necessity to explore whether brisk walking or aerobic exercises or yogic practices specifically contribute to geriatric men strength and their static balance as such findings could help them to involve increased physical activity suitable for them.

Methodology

Based on a survey on treatments, place of residence, interest and ability to participate in the study 60 geriatric men from Chennai city were selected. The selected subjects were in the age group between 60 and 70 years. They were assigned into four groups of which first group served as brisk walking group (BWG), second group served as aerobic exercises (AEG) group, third group served as yogasana group (YG) and the fourth group was control group (CG) which did not underwent any special treatment except of their routine. All the subjects were measured of their strength using sit and stand test and static balance which formed pre test scores. The subjects were involved in their respective experimental protocols and post test scores were collected immediately after the completion of the experimental period of 12 weeks. The obtained data were subjected to statistical treatment using ANCOVA and Scheffe’s post hoc tests.

Results

Table 1: Descriptive statistics on effect of brisk walking, aerobic training, yogic practices and control groups of geriatric men on strength and balance

Groups	Test	Strength		Balance	
		M	σ	M	σ
Brisk walking	Initial	13.33	2.09	31.07	4.68
	Final	15.27	1.94	36.87	5.54
	Adjusted	15.46		35.50	
Aerobic training	Initial	13.67	1.54	29.60	3.89
	Final	16.00	1.60	34.47	4.70
	Adjusted	15.94		34.47	
Yogic practices	Initial	14.07	1.49	28.53	4.47
	Final	17.27	1.28	34.53	5.91
	Adjusted	16.90		35.02	
Control Group	Initial	13.27	1.67	29.20	3.19
	Final	13.53	1.36	29.40	3.11
	Adjusted	13.77		29.77	

The initial and final scores of strength and balance showed improvements and to test statistical significance ANCOVA was employed and the results presented in Table 2.

Table 2: Computation of ANCOVA due to brisk walking, aerobic training and yogic practices and control group among geriatric men

	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Strength					
Pre-Test	Between	6.05	3	2.02	0.69
	Within	164.53	56	2.94	
Post Test	Between	109.38	3	36.46	14.84*
	Within	137.60	56	2.46	
Adjusted Post Test	Between	74.98	3	24.99	31.42*
	Within	43.75	55	0.80	
Balance					
Pre-Test	Between	51.73	3	17.24	1.03
	Within	940.67	56	16.80	
Post Test	Between	446.18	3	148.73	6.10*
	Within	1364.80	56	24.37	
Adjusted Post Test	Between	337.02	3	112.34	11.20*
	Within	551.87	55	10.03	

Required $F_{(0.05, (df 3,75))} = 2.77$

* Significant at 0.05 level of confidence

The results on strength proved significant with F value of 14.84 on post test and 31.42 on adjusted means. Similarly on balance obtained F values were 6.10 and 11.20 which were

found to be significant at 0.05 level. The post hoc analysis results are presented in Table 3 to compare paired means of differences.

Table 3: Multiple Paired Adjusted Means Comparisons between varied physical exercises among geriatric men on Balance

Brisk walking Group	Aerobic training Group	Yogic practices Group	Control Group	MEAN DIFF	C.I
Strength					
15.46	15.94			0.48	0.94
15.46		16.90		1.45*	0.94
15.46			13.77	1.68*	0.94
	15.94	16.90		0.96*	0.94
	15.94		13.77	2.16*	0.94
		16.90	13.77	3.13*	0.94
Balance					
35.50	34.47			1.04	3.33
35.50		35.52		0.02	3.33
35.50			29.77	5.73*	3.33
	34.47	35.52		1.06	3.33
	34.47		29.77	4.69*	3.33
		35.52	29.77	5.75*	3.33

* Significant at 0.05 level.

Discussions

The results on strength and balance due to the effect of varied physical exercises, namely, brisk walking, aerobic exercise and yogic practices among geriatric men were presented showed significant improvement as the obtained F values of 31.42 and 11.20 were significant and the Scheffe's post hoc analysis results showed compared to control group, brisk walking group, aerobic exercise group and yogic practices significantly improved strength. The comparisons among varied physical exercises on effect of strength proved that yogic practices was significantly better than brisk walking and aerobic exercise in improving strength among geriatric men. The post hoc analysis results proved that there was no significant difference among experimental groups on balance of geriatric men due to varied physical activities, namely, brisk walking, aerobic exercises and yogic practices.

Danks KA *et al.* (2016) [2] examined the relationship between walking capacity and walking activity and found improving balance self-efficacy may augment walking capacity and translate to improved walking activity. Duchesne C *et al.* (2016) [4] documented that Aerobic exercise training (AET) has been shown to provide general health benefits, and to improve motor behaviours. Ni M *et al.* (2016) [8] compared the effects of power training (PWT) and a high-speed yoga program on physical performances in older people. Both the specially designed yoga program and PWT programs can significantly improve physical performance in older persons. The findings of this study proved that physical fitness variables, strength and balance were significantly improved due to varied physical exercises, namely, brisk walking, aerobic exercise and yogic practices and the findings of this study were in agreement with the above previous researches.

Conclusions

It was concluded geriatric men who were unable to do yogic practices may undergo walking practices to maintain their strength and balance.

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