



## Influence of Brisk Walking and Jogging Exercise on Selected Health Related Physical Fitness Variables among Middle Aged Men

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### Abstract

*The purpose of the study was to find out the influence of brisk walking and jogging exercise on selected health related physical fitness variables among middle aged men. To facilitate the study, 45 middle aged men were selected from Bharath Walking Club, Nehru Stadium, Coimbatore, Tamilnadu, India. The age of the participants ranged between 40 and 50 years. The selected participants were divided into two experimental groups and a control group with fifteen participants (n=15) in each group. Experimental Group I (BWG=15) underwent brisk walking training, Group II (JG=15) underwent jogging training and Group III acted as control group (CG=15). All the subjects were tested prior to and immediately after the 12 weeks treatment in progression health related physical fitness variables such as cardio respiratory endurance, muscular strength, and muscular endurance. The data collected from the three groups before and after the experimental period were statistically examined to find out the significant improvement using the 't' test and analysis of covariance (ANCOVA). Whenever the 'F' ratio was found to be significant, Scheffe's test was used as post-hoc test to determine which of the paired means differed significantly. In all cases the criterion for statistical significance was set at 0.05 level of confidence. The result reveals that the both experimental groups showed significant improvement on selected health related physical fitness variables.*

**Keywords:** Brisk Walking, Jogging, Health Related Physical Fitness.

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### Introduction

Walking is the most commonly reported activity in our country. It requires no special skills or facilities and is achievable by virtually all groups with little injury risk. The favorable effects of walking on both physiological and psychological well being are firmly established. As walking is a lifestyle activity it may more easily circumvent frequently cited barriers to exercise, such as lack of time and the belief that one is not the sporty type, than other forms of exercise. Indeed, walking has been described as the nearest activity to perfect exercise.

Fitness is a broad term denoting dynamic qualities that allow you to satisfy your needs regarding mental and emotional stability, social consciousness and adaptability, spiritual and moral fiber, and physical health consistent with your hereditary. Physical fitness means that the various systems of the body are healthy and function efficiently so as to enable the fit person to engage in activities of daily living, as well as recreational pursuits and leisure activities, without unreasonable fatigue. Beyond physical development, muscular

strength, and stamina, physical fitness implies efficient performance in exercise or work and a reasonable measure of motor skill in the performance of selected physical activities.

Jogging is easy running and an elementary, economical and personally geared exercise programme to develop general physical fitness. Though jogging gross muscle groups and ankle and knee joints can be exercised. However, its major contribution is towards the, development of cardio-respiratory fitness. Group jogging programmes are becoming increasingly popular all over the world as they also provide fun and enjoyment to the individual. There are varying degrees of physical fitness. Practically anyone can improve his or her fitness status, and physical activity is essential to achieving physical fitness. There are no shortcuts. Physical fitness cannot be stored up; it requires daily attention. The person who plays tennis all summer and then gives up all physical activity when autumn starts will not remain physically fit. The sprinter who fails to run after the track season ends will backslide in respect to his or her physical fitness level (William Prentice, 1994).

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### Methodology

The purpose of the study was to find out the influence of brisk walking and jogging exercise on

selected health related physical fitness variables among middle aged men. To facilitate the study, 45 middle aged men were selected from Bharath Walking Club, Nehru Stadium, Coimbatore, Tamilnadu, India. The age of the participants ranged between 40 and 50 years. The selected participants were divided into two experimental groups and a control group with fifteen participants (n=15) in each group. Experimental Group I (BWG=15) underwent brisk walking training, Group II (JG=15) underwent jogging training and Group III acted as control group (CG=15). All the subjects were tested prior to and immediately after the 12 weeks treatment in progression of health related physical fitness variables such as cardio respiratory endurance, muscular strength, and muscular endurance. The data were collected from

each subjects prior and after experimentation on selected variables were statistically analyzed by using dependent 't' test and analysis of covariance (ANCOVA). In all the cases to test the significance 0.05 level of confidence was used. The investigator reviewed the available scientific literature from books, Journals, periodicals, research, papers and magazines and also taking into consideration the feasibility criteria of availability of instrument, the following variables are relevant to the present study. As per the available literatures the following standardized test were used to collect relevant data on the selected health related physical fitness variables among middle aged men and they were presented in table I.

**Table I.** Variables and Test Items

Variables	Test	Unit of measurement
Cardio respiratory Endurance	600-yards run	In Seconds
Muscular Endurance	Bent-knee Sit ups	In Numbers
Muscular Strength	Chin-Up Test	In Numbers

#### Training Schedule

The training schedule of brisk walking group is given in the table II. The difficulty level in brisk walking is based on the maximum time taken for covering the

distance in 1 kilometer and the training schedule of jogging group is also given in the table II. The difficulty level in jogging is based on the maximum heart Rate.

**Table II.** Training Programme for Brisk Walking Group and Jogging During the Training Period

NUMBER OF WEEKS AND INTENSITY			DAYS	DURATION OF EXERCISES
1 <sup>st</sup> to 4 <sup>th</sup> WEEKS	5 <sup>th</sup> to 8 <sup>th</sup> WEEKS	9 <sup>th</sup> and 12 <sup>th</sup> WEEKS		
55%	60%	65%	Weekly 5 days (Monday, Tuesday, Wednesday, Thursday, Friday)	30 Minutes continuous brisk walking in 400 meters track (6.30 am to 7.00am) and
				30 Minutes continuous jogging in 400 meters track (6.30 am to 7.00am)

#### Statistical Analysis

The data pertaining to the variables in this study were examined by using dependent 't' test to find out the significant improvement and analysis of covariance for each variables separately in order to determine the

difference and tested 0.05 level of significance. The analysis of dependent 't' test on data obtained for selected health related physical fitness variables of the pre test and post test means of middle aged men.

## Results

**Table III.** Summary of Means and Dependent 't' Test for the Pre and Post Test on Criterion Variable of Brisk Walking Group (BWG) Jogging Group (JG) and Control Group (CG)

Criterion Variables	Mean and 't' test	Brisk Walking Group (BWG)	Jogging Group (JG)	Control Group (CG)
Cardio respiratory Endurance	Pre test	226.80	228.33	224.00
	Post test	291.93	304.4	228.67
	't' test	12.2*	16.53*	1.16
Muscular Endurance	Pre test	13.00	12.67	12.33
	Post test	16.87	17.00	12.73
	't' test	7.37*	7.89*	0.85
Muscular Strength	Pre test	2.86	3.00	2.86
	Post test	4.2	5.67	3.00
	't' test	3.84*	7.39*	0.49

\*significant at 0.05 level of confidence, the table value required for significance at 0.05 level with df 2 and 41 is 3.23)

From table III, it is seen that the dependent 't' test values of Cardio respiratory Endurance, Muscular Endurance and Muscular Strength between the pre and posttests means of brisk walking group of middle aged men are 226.80, 291.93, 13.00, 16.87, 2.86, and 4.2, respectively. Since the obtained 't' test value (12.2, 7.37 and 3.84) of brisk walking group of middle aged men were greater than the table value of 3.23 at 0.05 level of confidence, it is concluded that the brisk walking group of middle aged men had significant improvement in Cardio respiratory Endurance, Muscular Endurance and Muscular Strength due to the effect of brisk walking exercises. From table III, it is seen that the dependent 't' test values of Cardio respiratory Endurance, Muscular Endurance and Muscular Strength between the pre and posttests means of jogging group of middle aged men are 228.33, 304.4, 12.67, 17.00, 3.00 and 5.67 respectively. Since the obtained 't' test value (16.53, 7.89 and 7.39) of jogging group of middle aged men were greater than the table value of 3.23 at 0.05 level of

confidence, it is concluded that the jogging group of middle aged men had significant improvement in Cardio respiratory Endurance, Muscular Endurance and Muscular Strength due to the effect of jogging exercises.

From table III, it is seen that the dependent 't' test values of Cardio respiratory Endurance, Muscular Endurance and Muscular Strength between the pre and posttests means of control group of middle aged men are 224.00, 228.67, 12.33, 12.73, 2.86 and 3.00 respectively. Since the obtained 't' test value (1.16, 0.85 and 0.49) of control group of middle aged men were lesser than the table value of 3.23 at 0.05 level of confidence, it is concluded that the control group of middle aged men had insignificant improvement in Cardio respiratory Endurance, Muscular Endurance and Muscular Strength. Hence, it is proved that experimental group had significantly improved the cardio respiratory endurance than the control group. The adjusted post test means were determined and analysis of covariance was computed and presented in Table IV.

**Table IV.** Computation of Analysis of Covariance on Cardio-respiratory Endurance Muscular Endurance and Muscular Strength

Variable	Adjusted post test means			Sources of Variance	Sum of squares	df	Mean Squares	F ratio
	BWG	JG	CG					
Cardio Respiratory Endurance	291.19	305.61	227.19	Between	49877.82	2	24938.91	135.69*
				Within	7535.73	41	183.80	
Muscular Endurance	16.80	17	12.80	Between	163.07	2	81.53	33.4*
				Within	100.08	41	2.44	
Muscular Strength	4.21	5.67	3.00	Between	51.27	2	25.85	26.8*
				Within	40.03	41	0.98	

**BWG-Brisk Walking Group, JG- Jogging Group, and CG-Control Group**

\*significant at 0.05 level of confidence

(The table value required for significance at 0.05 level with df 2 and 41 is 3.23)

Table IV shows the adjusted post test means of brisk walking group (BWG) and jogging group (JG) and control group (CG) are (291.19, 305.61 and 227.19), (16.80, 17 and 12.80) and (4.21, 5.67 and 3.00) values 3.23 with df 2 and 41 required for significance. The result of the study indicates that there are significant mean differences on Cardio respiratory endurance, Muscular Endurance and Muscular Strength among the adjusted post test means of brisk walking group (BWG) and jogging group (JG) and control group (CG) at 0.05

level. Hence it is clear that the training package significantly improved the Cardio respiratory endurance Muscular Endurance and Muscular Strength of the subjects. Since significant improvements were recorded among the adjusted post test means, the results were further subjected to post hoc analysis using Scheffe's confidence interval test to find out which of the three paired means had a significant difference. The results are presented in Table V.

**Table V.** Scheffe's Post Hoc Test on Cardio-respiratory Endurance Muscular Endurance and Muscular Strength

Variable	Adjusted post test mean				
Cardio Respiratory Endurance	BWG	JG	CG	Mean difference	Confidence interval
	291.19		227.19	64.00*	12.58
	291.19	305.61		14.42*	
Muscular Endurance		305.61	227.19	78.42*	
	16.80		12.80	4.00*	1.45
	16.80	17		1.80*	
Muscular Strength		17	12.80	5.80*	
	4.21		3.00	1.21*	0.91
	4.21	5.67		1.46*	
		5.67	3.00	2.67*	

**BWG-Brisk Walking Group, JG- Jogging Group, and CG-Control Group**

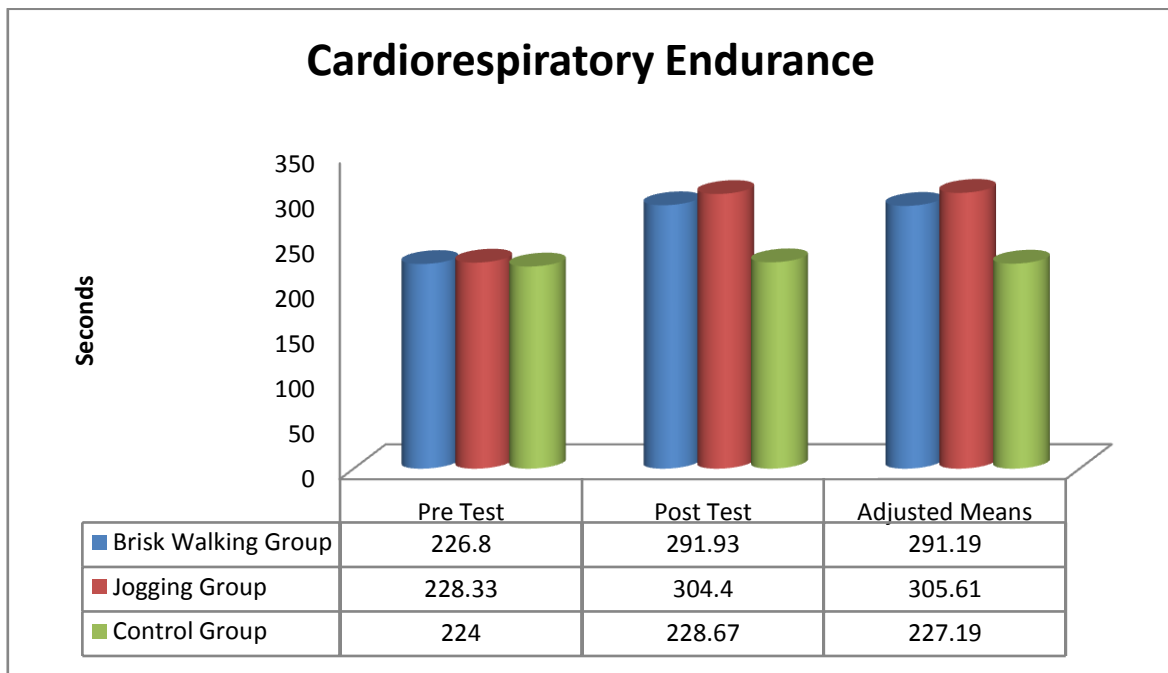
\*significant at 0.05 level of confidence

Table V, shows that the adjusted post-test mean difference in Cardio respiratory endurance between brisk walking group (BWG) and control group (CG) and between jogging group (JG) control group (CG) are 64.00 and 78.42, respectively which were statistically significant at 0.05 level of confidence. The adjusted post-test mean difference in cardio respiratory endurance between brisk walking group (BWG) and jogging group (JG) was 14.42, which was higher than the confidence interval value at 0.05 level. The ordered pre-test, post-test and adjusted post test mean values of brisk walking group (BWG) and jogging group (JG) and control group (CG) on cardio respiratory endurance are graphically illustrated through bar diagram for better understanding in Figure I. Table V, shows that the adjusted post-test mean difference in muscular endurance between brisk walking group (BWG) and control group (CG) and between jogging group (JG) control group (CG) are 4.00 and 5.80, respectively which were statistically significant at 0.05 level of confidence. The adjusted post-test mean difference in muscular endurance between brisk walking

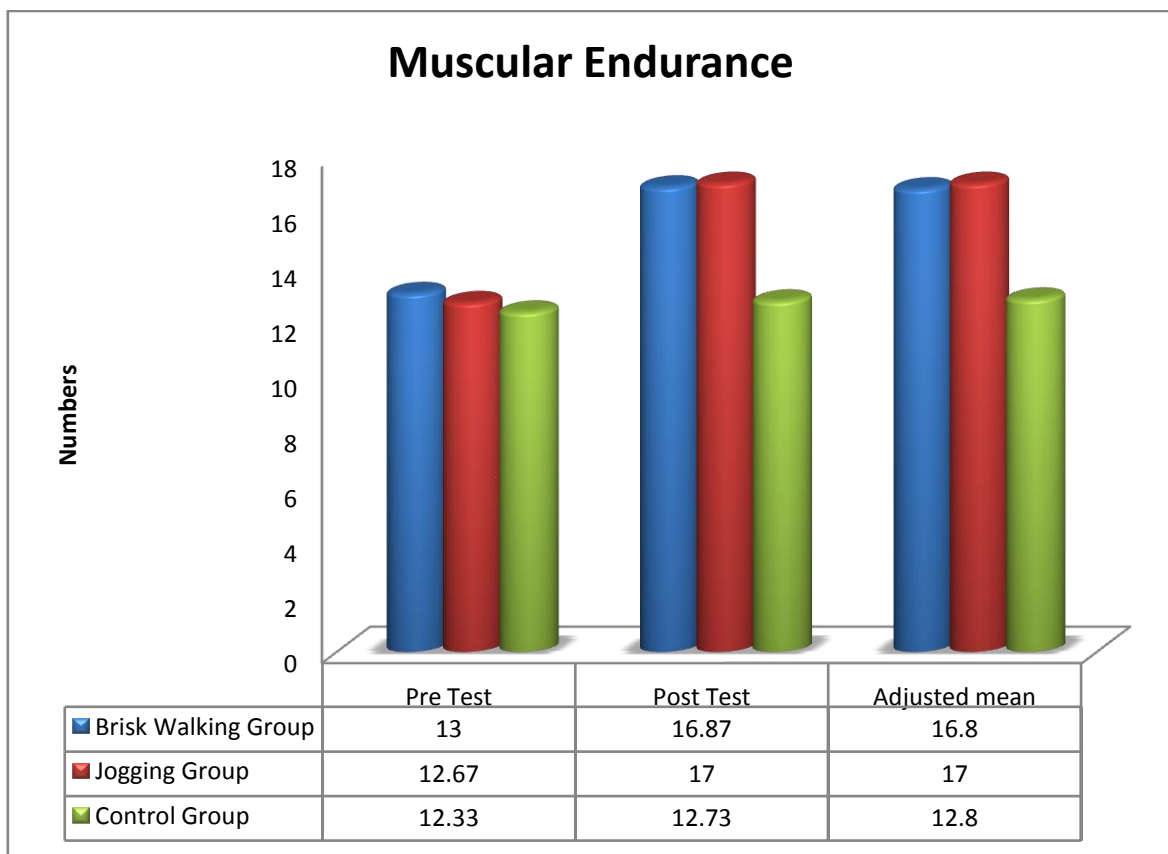
group (BWG) and jogging group (JG) was 1.80, which was higher than the confidence interval value at 0.05 level. The ordered pre-test, post-test and adjusted post test mean values of brisk walking group (BWG) and jogging group (JG) and control group (CG) on muscular endurance are graphically illustrated through bar diagram for better understanding in Figure II.

Table V, shows that the adjusted post-test mean difference in muscular strength between brisk walking group (BWG) and control group (CG) and between jogging group (JG) control group (CG) are 1.21 and 2.67, respectively which were statistically significant at 0.05 level of confidence. The adjusted post-test mean difference in muscular strength between brisk walking group (BWG) and jogging group (JG) was 1.46, which was higher than the confidence interval value at 0.05 level. The ordered pre-test, post-test and adjusted post test mean values of brisk walking group (BWG) and jogging group (JG) and control group (CG) on muscular strength are graphically illustrated through bar diagram for better understanding in Figure III.

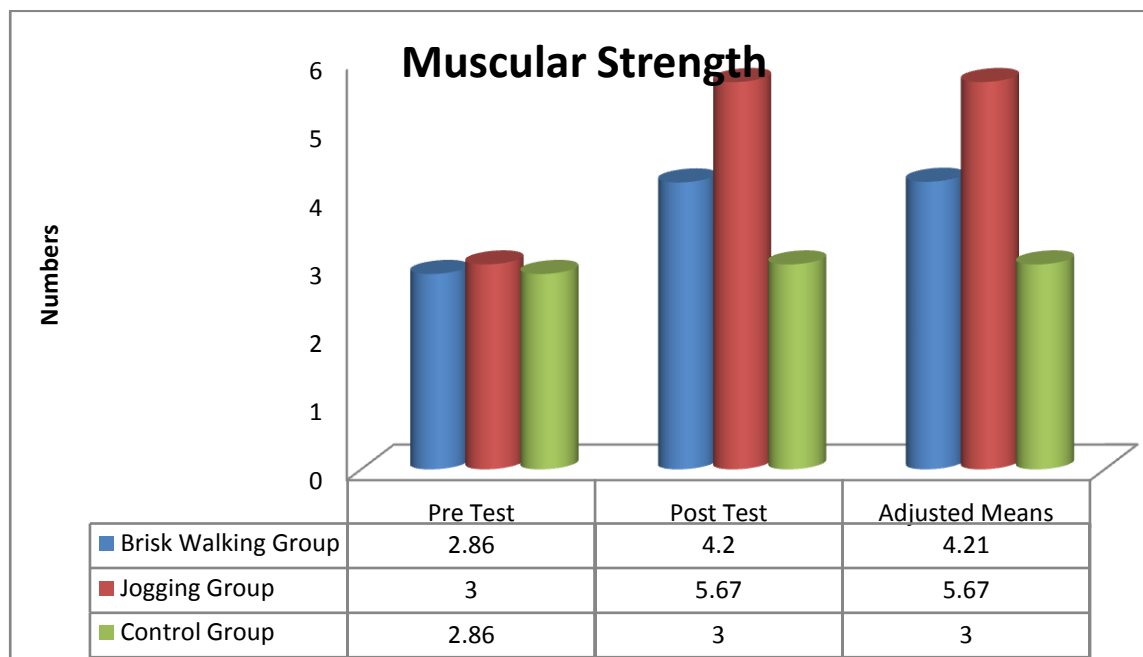
**Figure I.** Mean Values and Adjusted Post Mean Values of Cardio Respiratory Endurance on Brisk Walking Group (BWG), Jogging Group (JG) and Control Group (CG)



**Figure II.** Mean Values and Adjusted Post Mean Values of Muscular Endurance on Brisk Walking Group (BWG), Jogging Group (JG) and Control Group (CG)



**Figure III.** Mean Values and Adjusted Post Mean Values Muscular Strength on Brisk Walking Group (BWG), Jogging Group (JG) and Control Group (CG)



### Discussion on Findings

The result of the study on cardio respiratory endurance indicates that all the experimental groups namely brisk walking group (BWG) and jogging group (JG) brought about significant improvement after the training. Based on the mean value, the jogging group (JG) was found to be better in increasing on cardio respiratory endurance than the brisk walking group (BWG). Systematic training improve the cardio respiratory endurance. The result of this study on cardio respiratory endurance has in line with the study conducted by Ehlen K A et al., (2011).

The result of the study on muscular endurance indicates that all the experimental groups' namely brisk walking group (BWG) and jogging group (JG) brought about significant improvement after the training. Based on the mean value, the jogging group (JG) was found to be better in increasing on muscular endurance than the brisk walking group (BWG). Systematic training improves the muscular endurance. The result of this study on muscular endurance has in line with the study conducted by Roh KH and Park HA (2013).

The result of the study on muscular strength indicates that all the experimental groups namely brisk walking group (BWG) and jogging group (JG) brought about significant improvement after the training. Based on the mean value, the jogging group (JG) was found to be better in increasing on muscular strength than the brisk walking group (BWG). Systematic training improves the muscular strength. The result of this study on muscular strength has in line with the study conducted by Virag A et al., (2014).

### Discussion on Hypotheses

It was hypothesized that there would be significant improvement on health related physical fitness variables due to the influence of brisk walking and jogging in middle aged men. The result of the study indicated that the both training programme improved the health related physical fitness variables significantly by undergoing respective training programme for twelve weeks. At the end of the training period, the brisk walking group groups (BWG) as well as the jogging group (JG) showed significant improvement in health related physical fitness variables when compared to the control group (CG). Hence Null Hypothesis accepted at 0.05 levels confidence.

It was hypothesized that there would be no significant difference on selected variables due to the influence of brisk walking and jogging, Second hypothesis is partially accepted at 0.05 level of confidence. As far as brisk walking and jogging groups are concerned, the second hypothesis is partially accepted with respect to the variables namely cardiovascular endurance, muscular strength and muscular endurance showed some significant difference. Hence null hypothesis accepted partially at 0.05 levels confidence.

### Conclusions

Within the limitations and delimitations set for the present study and considering the results obtained, the following conclusions were drawn:

1. Two different training programme (brisk walking group (BWG) and jogging group (JG) helped to improve the health related physical fitness variables

namely cardio respiratory endurance, muscular strength and muscular endurance.

2. Systematic 12 weeks of jogging group (JG) exercises improves the health related physical fitness variables namely cardio respiratory endurance, muscular strength and muscular endurance more than the brisk walking group (BWG) exercises.
3. There was a little improvement difference between the jogging group (JG) and brisk walking group (BWG) on the cardio respiratory endurance, muscular strength and muscular endurance but not at the significant level.
4. Jogging group (JG) exercises was a suitable training system to improve the health related physical fitness variables namely cardio respiratory endurance, muscular strength and muscular endurance among the middle aged men.

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