



## Isolated and Combined Effect Of Brisk Walking and Aerobic Exercise on Muscular Strength and Endurance and Cardio Vascular Endurance Among Middle Aged Men

**R.BalaSubramani**

Physical Director, Raga Gopal Polytechnique College, gudiathamveller District

**Dr. P. K. Subramaniam.**

Professor, Department of Physical Education and Sports, Pondicherry University.

### ABSTRACT

*The main purpose of this study was to find out the isolated and combined effect of brisk walking and aerobic exercise on muscular strength and endurance and cardiovascular endurance among middle aged men For this study sixty middle aged men selected from Gudiathamveller District. The age of the subjects ranged from 35 to 45 years. The selected*

*Sixty subjects were divided into four equal groups(n-15), Experimental Group A named as Briskwalking group, experimental groups B named as Aerobic exercise group, experimental group C named combined (brisk walking and aerobic exercise) group and Group D acted as control group. Pre-test was conducted on muscular strength and endurance and Cardio vascular Endurance for all groups. The measurements were carefully regarded in their respective unit as pre-test score. After pre-test Experimental Group A was treated with briskwalking, Experimental Group B was treated with Aerobic exercise and Experimental group C treated with combined group exercise for five days per a week for the period of twelve weeks. Whereas Group D not treated with any specific training, they kept as control group. After twelve weeks of training post-test was conducted on muscular strength and endurance and cardiovascular endurance measured and carefully recorded as post-test score. The collected pre and post-test data from the three groups were statistically analyzed by analysis of covariance. Whenever the F ratio was found to be significant for adjusted post-test mean, Scheffe's test was followed as a post hoc test to determine the level of significant difference between the paired means. The level of significance was fixed at 0.05 level of confidence.*

**KEYWORDS :** Aerobic exercise, brisk walking, Cardio vascular endurance and muscular strength and endurance.

### INTRODUCTION

Physical activity is associated with decreased risk of multiple serious health problems including cardiovascular disease. According to a report from the Surgeon general of the United States, engaging in moderate amounts of physical activity can substantially improve health and quality of life (**US Department of health and human Services, 1996**).

Participation in moderate physical activity on most days of the week is recommended for overall health benefits by the Centers for Disease Control and Prevention as well as the American College of Sports Medicine (Pate et al., 1995). Physical activity seems especially important for those in their young adulthood, as relationships have been found between respiratory fitness in young adulthood and the subsequent development of cardiovascular disease risk factors (Carnethon et al., 2003). Therefore, it is crucial importance to increase leisure time physical activity and to improve cardio respiratory fitness of the least active and the least fit. Walking differs from a running gait in a number of ways. The most obvious is that during walking one leg always stays on the ground while the other is swinging. In running there is typically a ballistic phase where the runner is airborne with both feet in the air (for bipedal). Walking is a mode of Lifestyle Physical Activity and provides a viable alternative for meeting the current recommendations for Walking can be planned or unplanned, accumulated and/or continuous, and therefore easily integrated into everyday life (Ziegel, Brackbill & Health, 1995). Aerobic training exercises are any activity which increases the heart rate via working or the body muscle. Aerobic exercise strengthens the heart and lungs, (cardio vascular) system. An aerobically fit individual can work longer, more vigorously and achieve a quicker recovery. Cardio respiratory endurance is the ability to do moderately strenuous activity over a period of time. It reflects how well your heart and lungs work together to supply oxygen

to your body during exertion and exercise. It also called aerobic fitness. Cardio respiratory endurance is considered the most important component of health-related fitness because the functioning of the heart and lungs is so essential to overall wellness.

### METHODOLOGY

The main purpose of this study was to find out the isolated and combined effect of brisk walking and aerobic exercise on cardio cardiovascular endurance and muscular strength and endurance among middle aged men for these study sixty middle aged men selected from in and around Villupuram municipal area. The age of the subjects ranged from 35 to 45 years. The selected Sixty subjects were divided into four equal groups(n-15), Experimental Group A named as Brisk walking group, experimental groups B named as Aerobic exercise group, experimental group C named as combined (brisk walking and aerobic exercise) group and Group D acted as control group. Pre-test was conducted on muscular strength and endurance and Cardio cardiovascular endurance and for all groups. The trainings were given for a period of five days per week for twelve weeks in addition to the regular schedule and duration of the training is one hour to one and half one hour. The data were collected before (pre test) and after the training periods (post test) by using standardized test for cardio vascular endurance – Coopers 12 minutes run and walk test and muscular strength and endurance – bend knee sit ups by AAPHER. To make adjustments for significance difference in the initial means and test the adjusted post test means for significant differences, the analysis of covariance (ANCOVA) was used. Whenever the F ratio was found to be significant for adjusted post-test mean, Scheffe's test was followed as a post hoc test to determine the level of significance. The level of significance was fixed at 0.05 level of confidence.

### ANALYSIS OF DATA AND RESULT OF THE STUDY

**Table- I**

**Analysis of Covariance among Brisk Walking Aerobic Exercise combined group and control groups on Muscular strength and endurance**

	BWG	AEG	CTG	CG	Sources of variance	Sum of square	df	Mean Square	'F' ratio
Pre -test	20.00	20.33	20.27	20.27	B	0.983	3	0.328	0.046
Mean	2.33	2.49	3.03	2.76	W	399.20	56	7.129	
SD									

Post- test Mean SD	24.07 2.43	24.07 2.23	24.67 3.03	19.47 2.61	B W	282.00 377.60	3 56	94.00 6.743	13.94*
Adjusted post-test Mean	24.26	24.49	24.62	19.42	B W	286.63 37.50	3 55	95.54 0.682	140.12*

\*Significant at 0.05 level of confidence

(The table value required for significant at 0.05 level with df 3 and 56 & 3 and 55 are 2.77 and 2.77 respectively)

The above table I shows that there is no significant difference among the group on Muscular strength and endurance in pre test ( $F=0.046 < 2.77$ ) at 0.05 level of confidence. Whereas in the case of post test as well as adjusted post test ( $F= 13.94 > 2.77$ ) and ( $F=140.12 > 2.77$ ) respectively significant at 0.05 level of confidence. The result of the study showed that there was significant differences among Brisk Walking group, Aerobic Exercise group, combined training group and control group on Muscular strength and endurance

Further to determine which of the paired means had a significant difference, the Scheffe's test was used as a post hoc test and the results are presented in the table- II

**Table- II Scheffe's post hoc test for the differences between paired adjusted post test means of Muscular strength and endurance**

BWG	AEG	CTG	CG	MD	CI
24.26	24.49	-	-	0.23	0.87
24.26	-	24.62	-	0.36	
24.26	-	-	19.42	4.84*	
-	24.49	24.62	-	0.13	
-	24.49	-	19.42	5.07*	
-	-	24.62	19.42	5.20*	

\*Significant at 0.05 level of confidence

Table II shows that adjusted post test means values differences between Brisk Walking and control group, Aerobic Exercise and control groups and combined training and Control groups are 4.84, 5.07 and 5.20 respectively which are greater than the confidence interval value of 0.87 at 0.05 level of confidence are found to be significant and the mean differences between Brisk Walking and Aerobic Exercise, Brisk Walking and combined trainings and Aerobic Exercise and Control groups were 0.23, 0.36 and 0.13 respectively which are lesser than the confidence interval value of 0.87 at 0.05 level of confidence are found to be insignificant.

The pre-test, post-test and adjusted post-test mean values of Brisk Walking group, Aerobic Exercise group, combined training group and control group on co-ordination graphically presented in figure-1

**Figure 1:** Bar diagram showing the pre, post and adjusted post test mean values of Brisk Walking group, Aerobic Exercise group, combined training group and control group

**Table - III Analysis of Covariance among Brisk Walking Aerobic Exercise combined group and control groups on cardiovascular endurance**

	BWG	AEG	CTG	CG	Sources of variance	Sum of square	df	Mean Square	'F' ratio
Pre -test Mean SD	1763 95.36	1723 72.86	1706 82.08	1770 94.11	B W	42458.33 420000.0	3 56	14152.7 7500.00	1.88
Post- test Mean SD	2116 134.5	2050 109.3	2060 82.80	1720 97.83	B W	1467458.33 650666.66	3 56	489152.77 11619.04	42.09*
Adjusted post-test Mean	2092	2073	2098	1688	B W	1733499.06 144664.28	3 55	577833.02 2630.26	219.68*

\*Significant at 0.05 level of confidence

(The table value required for significant at 0.05 level with df 3 and 56 & 3 and 55 are 2.77 and 2.77 respectively)

The above table I shows that there is no significant difference among the group on Muscular strength and endurance in pre test ( $F=1.88 < 2.77$ ) at 0.05 level of confidence. Whereas in the case of post test as well as adjusted post test ( $F= 42.09 > 2.77$ ) and ( $F=219.68 > 2.77$ ) respectively significant at 0.05 level of confidence.

The result of the study showed that there were significant differences among Brisk Walking group, Aerobic Exercise group, combined training group and control group on cardiovascular endurance

Further to determine which of the paired means had a significant difference, the Scheffe's test was used as a post hoc test and the results are presented in the table- IV

**Table- IV Scheffe's post hoc test for the differences between paired adjusted post test means of Cardiovascular endurance**

BWG	AEG	CTG	CG	MD	CI
2092	2073	-	-	19.00	53.93
2092	-	2098	-	6.00	
2092	-	-	1688	404.00*	
-	2073	2098	-	25.00	
-	2073	-	1688	385.00*	
-	-	2098	1688	410.00*	

\*Significant at 0.05 level of confidence

Table II shows that adjusted post test means values differences between Brisk Walking and control group, Aerobic Exercise and control groups and combined training and Control groups are 404.00, 385.00 and 410.00 respectively which are greater than the confidence interval value of 0.87 at 0.05 level of confidence are found to be significant and the mean differences between Brisk Walking and Aerobic Exercise, Brisk Walking and combined trainings and Aerobic Exercise and Control groups were 19.00, 6.00 and 25.00 respectively which are lesser than the confidence interval value of 53.93 at 0.05 level of confidence are found to be insignificant.

The pre-test, post-test and adjusted post-test mean values of Brisk Walking group, Aerobic Exercise group, combined training group and control group on co-ordination graphically presented in figure - 2

**Figure 2:** Bar diagram showing the pre, post and adjusted post test mean values of Brisk Walking group, Aerobic Exercise group, combined training group and control group on Cardiovascular endurance.

## Conclusions

- Among four groups combined training group produced a significant improvement on muscular strength and endurance and cardiovascular endurance than the other three groups
- Further all the experimental groups showed significant development on muscular strength and endurance and cardiovascular endurance

duration when compared control group by brisk walking training and aerobic training.

## REFERENCES

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