



Effect of Yogic Practices on Stiff Accumulation Catalog of Diverse Age Group Middle Aged Men and Women

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Received 1st October 2014, Accepted 29th November 2014

Abstract

The purpose of this study is to examine the effect of six weeks of yogic practices on stiff accumulation catalog of diverse age men and women. To achieve the purpose of this study eighty middle aged people were selected, in which 40 subjects were men and remaining 40 subjects were women. They were further categorized into four sub-groups of 20 subjects each. The first one is 40-44 age groups of men and women separately and another one is 45-49 age groups of men and women separately. The selected participants were the inhabitants of Nagercoil, a small town in the State of Tamil Nadu, India, and they were in the age group of 40 to 49 years. The training regimen lasted for six weeks. Prior to and after six weeks of yogic practices the subjects body mass index was assessed by using the formula Weight in Kilogram divided by Height in Meters². The application of dependent 't' test, to eliminate the influence of pretest, the net mean gains are computed separately. The paired mean gains of groups are tested for significance by applying independent 't' test. Three-way analysis of variance is used to find out the influence of each factor independently and also their combined influence on each of the selected variables. The analysis of the data revealed that six weeks of yogic practices had significant impact on body mass index of middle aged men and women.

Keywords: Yogic practices, Body mass index.

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Introduction

People have become lazy with the advent of modern home appliances. There is no need for hard or even moderate physical work. This is a serious threat to the normal function of our body and is the cause of modern day illness like heart attack, obesity and diabetics. These diseases that were formerly found only among elderly person are now common in the young and middle aged people. The people of this age are striving hard to make their life easier. There is an increase in the mental stress and strain as never before. People are mentally unhealthy and are unequipped to cope with present day problems. Middle age is the stage of life when physical decline has started but a person cannot be called old. Various attempts have been made to define this age, which is around the third quarter of the average life span of human beings.

Almost all researchers agree that prevention could be the key strategy for controlling the current epidemic of obesity. Prevention may include primary prevention of overweight or obesity, secondary prevention or prevention of weight regains following weight loss, and avoidance of more weight increase in obese persons unable to lose weight. Until now, most

approaches have focused on changing the behaviour of individuals in diet and exercise. It seems, however, that these strategies have had little impact on the growing increase of the obesity epidemic. There are 50% of the adults are overweight and obese in many countries, it is difficult to reduce excessive weight once it becomes established. Prevention may be achieved through a variety of interventions targeting built environment, physical activity, and diet. All in all, there is an urgent need to initiate prevention and treatment of obesity.

Though Yogic exercises develop most of the components of fitness, it is expected that it will have an effect on body mass index of middle age people. Some modern texts seem to indicate that yogic exercises will strength all organs and all physiological functions of the body. Research work on the development and maintenance of physical fitness, and physiological functions is an important area which requires a lot of investigation. By considering the above literature, in this study, an attempt has been made to find out the effect of yogic practices on body mass index of middle age men and women.

Methodology

For the purpose of this study, eighty middle aged people were selected, in which 40 subjects were men and remaining 40 subjects were women. They were further categorized into four sub-groups of 20 subjects each. The first one is 40-44 age groups of men and

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women separately and another one is 45-49 age groups of men and women separately. The selected participants were the inhabitants of Nagercoil, a small town in the State of Tamil Nadu, India, and they were in the age group of 40 to 49 years. The selected criterion variable body mass index was assessed by the formula $\text{Weight in Kilogram divided by Height in Meters}^2$. The training programmes were scheduled for one session a day, each session lasted between forty five minutes to one hour approximately including warming up and warming down. During the training period, the experimental groups underwent yoga training six days a week for twelve weeks. The yoga exercises included in this training programme were Sugasana, Vajrasana, Viparitarani, Sarvangasana, Bhujangasana, Matiyasana, Ardhamat-Syendrasana, Trikonasana, Vakrasana, and Savasana. The training programme was

conducted in the evening sessions between 5.00 -6.30 pm. The data was collected from different age category men and women prior and after the completion of the training. The application of dependent 't' test, to eliminate the influence of pretest, the net mean gains are computed separately. The paired mean gains of groups are tested for significance by applying independent 't' test. Three-way analysis of variance is used to find out the influence of each factor independently and also their combined influence on each of the selected variables with the help of SPSS package.

Result

The descriptive analysis of the pre and post test data showing mean and standard deviation and 'T' ratio on body mass index of different age category men and women groups is presented in table-I.

Table II. Comparison of mean gain on body mass index between different age category men and women

Gender	Age Category	Test	Mean	Standard Deviation	Mean Differences	'T' ratio
Men	40-44 years	Pre test	29.75	2.43	3.10	12.94*
		Posttest	26.65	2.60		
	45-49 years	Pre test	30.15	2.01	2.80	11.33*
		Posttest	27.35	2.50		
Women	40-44 years	Pre test	34.65	2.43	3.40	14.53*
		Posttest	31.25	2.49		
	45-49 years	Pre test	35.10	2.47	3.05	10.36*
		Posttest	32.05	2.48		

*Significant at 0.05 level

The table value required for significant for df 19 is 2.09.

Table-I shows that the pre-test and post test mean and standard deviation values on body mass index of 40 to 44 age category of men yoga training group are 29.75 ± 2.43 and 26.65 ± 2.60 respectively. It resulted with a mean difference of 3.10. The obtained 't' ratio is 12.94 and it is higher than the table value of 2.09 required for significance at 0.05 level for df 19. Hence, it is concluded that due to the effect of yoga training the body mass index of 40 to 44 age category of men was significantly decreased. The pre-test and post test mean and standard deviation values on body mass index of 45 to 49 age category of men yoga training group are 30.15 ± 2.01 and 27.35 ± 2.50 respectively. It resulted with a mean difference of 2.80. The obtained 't' ratio is 11.33 and it is higher than the table value of 2.09 required for significance at 0.05 level for df 19. Hence, it is concluded that due to the effect of yoga training the body mass index of 45 to 49 age category of men was significantly decreased. Table-I also shows that the pre-

test and post test mean and standard deviation values on body mass index of 40 to 44 age category of women yoga training group are 34.65 ± 2.43 and 31.25 ± 2.49 respectively. It resulted with a mean difference of 3.40. The obtained 't' ratio is 14.53 and it is higher than the table value of 2.09 required for significance at 0.05 level for df 19. Hence, it is concluded that due to the effect of yoga training the body mass index of 40 to 44 age category of women was significantly decreased. The pre-test and post test mean and standard deviation values on body mass index of 45 to 49 age category of women yoga training group are 35.10 ± 2.47 and 32.05 ± 2.48 respectively. It resulted with a mean difference of 3.05. The obtained 't' ratio is 10.36 and it is higher than the table value of 2.09 required for significance at 0.05 level for df 19. Hence, it is concluded that due to the effect of yoga training the body mass index of 45 to 49 age category of women was significantly decreased.

Table II. Comparison of mean gain on body mass index between different age category men and women

Gender	Age Category	Mean	S.D	SE	t-ratio
Men	40-44 Age	3.10	1.07	0.24	0.87
	45-49 Age	2.80	1.11	0.25	
Women	40-44 Age	3.40	1.05	0.23	0.93
	45-49 Age	3.05	1.32	0.29	
Men	40-44 Age	3.10	1.07	0.24	0.90
Women		3.40	1.05	0.23	
Men	45-49 Age	2.80	1.11	0.25	0.65
Women		3.05	1.32	0.29	

*Significant at 0.05 level

The table value required for significance for df 38 is 2.02

Table-II shows the mean gain for different age category of men groups as a result of yoga training are 3.10 and 2.80 respectively. It resulted with a 't' ratio of 0.87 and it is lesser than the table value of 2.02 required for significant at 0.05 level to the df 38. Hence, it is concluded that no significant differences exists between different age category of men groups in decreasing the body mass index. The mean gain for different age category of women groups as a result of yoga training are 3.40 and 3.05 respectively. It resulted with a 't' ratio of 0.93 and it is lesser than the table value of 2.02 required for significant at 0.05 level to the df 38. Hence, it is concluded that no significant differences exists between different age category of women groups in decreasing the body mass index. Table-II also shows the mean gain for 40 to 44 age category of men and women groups as a result of yoga training are 3.10 and 3.40 respectively. It resulted with a 't' ratio of 0.90 and it

is lesser than the table value of 2.02 required for significant at 0.05 level to the df 38. Hence, it is concluded that no significant differences exists between 40 to 44 age category of men and women groups in decreasing the body mass index.

The mean gain for 45 to 49 age category of men and women groups as a result of yoga training are 2.80 and 3.05 respectively. It resulted with a 't' ratio of 0.65 and it is lesser than the table value of 2.02 required for significant at 0.05 level to the df 38. Hence, it is concluded that no significant differences exists between 45 to 49 age category of men and women groups in decreasing the body mass index. The pre and post test data collected from the different age category of men and women on body mass index was statistically analyzed by three factor factorial analysis and the results are presented in table-III.

Table III. Three way anova on body mass index

Source	Sum of Squares	df	Mean Squares	'F' ratio
Gender	916.806	1	916.806	155.11*
Age	13.806	1	13.806	2.34
Test	381.306	1	381.306	64.51*
Gender & Age	0.056	1	0.056	0.01
Age & Tests	0.756	1	0.756	0.13
Gender & Tests	1.056	1	1.056	0.18
Gender, Age & Tests	0.006	1	0.006	0.001
Error	898.450	152	5.911	

*Significant at .05 level of confidence

(Table values required for significance at .05 level with df 1 and 152 is 3.91)

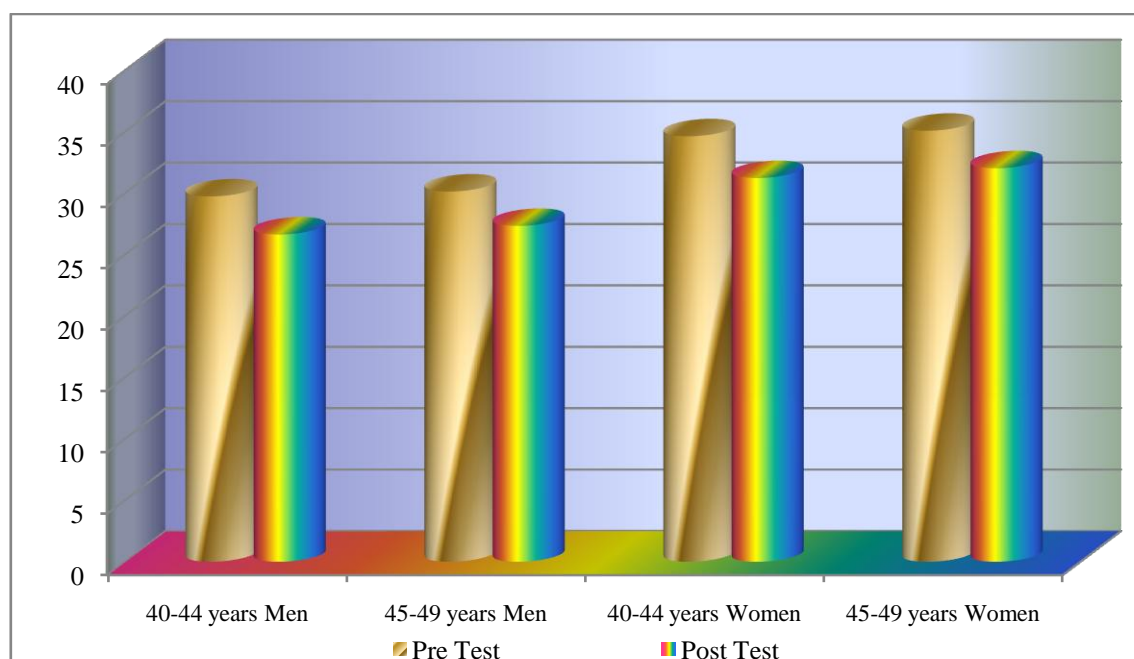
Table-III reveals that men and women differ significantly on body mass index irrespective of age and tests, since the obtained f ratio value of 155.11 is greater than the required table value of 3.91 for the degrees of freedom 1 and 152. It also proved that no significant differences exist between age categories irrespective of gender and tests, since the obtained f ratio value of 2.34 is lesser than the required table value of 3.91 for the degrees of freedom 1 and 152. Further, it reveals that significant differences exist between tests irrespective of gender and age, since the obtained f ratio value of 64.51 is greater than the required table value of 3.91 for the degrees of

freedom 1 and 152. The obtained 'F' ratio value for interaction of gender and age irrespective of testing conditions is 0.01, which is lesser than the table value of 3.91 with df 1 and 152 required for significance at .05 level of confidence. The result of the study shows that no significant difference exists for the interaction of gender at different age categories on body mass index irrespective of testing conditions. The results of the study also shows that the obtained 'F' ratio value for the interaction of age and testing conditions irrespective of gender is 0.13, which is lesser than the table value of 3.91 with df 1 and 152 required for significance at .05

level of confidence. It reveals no significant difference that exists on body mass index among different age categories at pre and post tests irrespective of gender. The obtained 'F' ratio value for interaction of gender and tests irrespective of age categories is 0.18, which is lesser than the table value of 3.91 with df 1 and 152 required for significance at .05 level of confidence. The result of the study shows that no significant difference exists for the interaction of gender at different age categories on body mass index irrespective of testing conditions.

It is observed that the obtained 'F' ratio value for the interaction of gender, age and testing conditions is 0.001, which is lesser than the table value of 3.91 with df 2 and 152 required for significance at .05 level of confidence. It confers the existence of insignificant difference on body mass index among gender in relevance to different age categories during pre and post tests. The pre post test mean values of men and women yoga training and control groups on body mass index was graphically represented in figure-I.

Figure I. Bar diagram showing the mean values on body mass index of men and women of different age groups



Discussion on Findings

Recent studies have suggested that it is possible to prevent obesity in children and adolescents through limited, school-based programs that combine the promotion of healthy dietary habits and physical activity (Flodmark, Marcus & Britton, 2006). In both healthy and diseased populations, yoga may be as effective as or better than exercise at improving a variety of health-related outcome measures (Ross & Thomas, 2010). Regular hatha yoga practice can elicit improvements in the health-related aspects of physical fitness (Tran *et al.*, 2001). Balaji, Varne and SadatAli (2012) observed significant decrease in body mass index due to the effects of yogic practices and transcendental meditation. Chen *et al.*, (2009) observed that after 2 weeks of self-practice at home, yoga exercise continued to improve BMI, flexibility, muscular strength, and cardiopulmonary fitness. Regular yoga practice can benefit individuals who wish to maintain or lose weight (Kristal *et al.*, 2005) and reducing body fat (Pal, Srivastava and Tiwari, 2011). McCaffrey *et al.*, (2005) determined the effectiveness of a yoga program and found significantly decreased body

mass index levels.

Conclusion

Due to the effect of six weeks of yoga practices the body mass index of 40 to 44 and 45 to 49 age category men and women were significantly changed. In altering the body mass index no significant difference exists between 40 to 44 and 45 to 49 age category men and also no significant difference was found between these two age categories of women subjects. It is also concluded that, in decreasing the body mass index no significant difference exists between 40 to 44 age category men and women and also between 45 to 49 age category men and women.

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