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Effect of yogic practices and brisk walking on anxiety among hypertensive men

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Abstract
The purpose of the study was to find the effect of yogic practices and brisk walking on anxiety among hypertensive men. The selected samples were equally divided into three groups (n=30). Group I underwent yogic practices, Group II underwent brisk walking and Group III acted as control (inactive rest). The study was formulated by the random design, consisting of a pre test and posttest. Pretest were conducted for all the 90 subjects on anxiety. The experimental groups participated in their respective yogic practices and brisk walking exercises for a period of twelve weeks. The post tests were conducted for all the subjects again on the selected psychological variable – anxiety after experimentation of yogic practices and brisk walking exercises. The data obtained were analyzed by Analysis of Covariance to assess the significant difference among the groups. It is concluded that yogic practices and brisk walking reduced anxiety effectively.

Keywords: Yoga, brisk walking, anxiety, hypertension.

1. Introduction

The word "Yoga" is derived from the Sanskrit root Yuj. The meaning is to bind, join, attach and yoke, to direct and concentrate one's attention on, to use and apply. It also means union or communion. It means the disciplining of the mind, intellect, the emotions, the will, which yoga presupposes, it means a poise of the soul which enables one to look at life in all its aspects evenly [1]. It also works effectively as a therapy in three ways including preventive, curative and rehabilitative. The yogic practices have proved its excellence in psychological disorders like hypertension [2]. The psychological benefits are yoga are improving mood, concentration, memory, attention and learning efficiency and increasing subjective wellbeing, self-actualization, social skills and well-being; decreasing anxiety and depression, hostility [3].

Anxiety disorders are characterized by long term worry, tension, nervousness, fidgeting and symptoms of autonomic system hyperactivity [4, 5]. Meditation is an age old self-regulatory strategy which is gaining more interest in mental health and psychiatry. Meditation can reduce arousal state and may ameliorate anxiety symptoms in various anxiety conditions [4]. Transcendental meditation is comparable with other kinds of relaxation therapies in reducing anxiety where some studies highlighted yoga did not show significant effectiveness in treating obsessive-compulsive disorders compared with relaxation/ meditation [5] that objective was taken to disprove.

Dropout rates appear to be high and adverse effects of meditation have not been reported [6]. Meditation is the consciously willed practice of two actions - attending and abstaining, that all people spontaneously perform to a greater or lesser degree. Psychological health may correlate in part with the degree to which the performances naturally leads to action [7].

Human walking is accomplished with a strategy called the double pendulum. During forward motion, the leg that leaves the ground swings forward from the hip is called first pendulum. Then the leg strikes the ground with the heel and rolls through to the toe in a motion described as an inverted pendulum [8]. In today's fast paced life, people are leading a very unhealthy lifestyle. The increasing rates of health diseases, stress levels, lack or inadequate sleep are caused due to the fast paced life style. People get so engrossed in coming up in life that people forget their health. There is a popular saying "If wealth is lost, something is lost, but if health is lost, everything is lost". It is the apt time that people start concentrating on their health and well-being [9].

The major benefits of the walking are helping overcome depression, sleepless nights, increasing body activity, toning the body and burning body fat, fight against stress and aids in relaxation and providing flexibility. The main purpose of this investigation was to find out the effect of yogic practices and brisk walking on selected psychological variable - anxiety among hypertensive men.

2. Materials and Methods

A battery of 90 hypertensive middle aged men was selected as random samples from a tertiary care teaching hospital and from four private hospitals of Tiruchirapalli district, India. The selected samples were equally divided into three groups (each group comprised of 30 men). The age groups of the test groups were from 35 to 45 years. Group I underwent yogic practices, Group II underwent brisk walking and Group III act as control. However all the three groups were advised to continue the medicines as per the recommendations of their physicians? The subject of the control group was considered as inactive rest. Further, the study was formulated by the random design, consisting of a pretest and post test. Pretest were conducted for all the 90 subjects on selected psychological variable – anxiety (standard questionnaire). The experimental groups were requested to participate in their respective yogic practices and brisk walking exercises for a period of twelve weeks. The post

test was conducted for all the subjects after successful experimentation of yogic practices and brisk walking exercises. The data obtained were analyzed by Analysis of Covariance (ANCOVA) to assess the significant differences among the groups on post test for psychological variable to find out the effects of yogic practices and brisk walking among hypertensive men especially to anxiety.

2.1. Training Programme

2.1.1. Yogic training

The experimental group I was given yogic practices between 5.45am to 6.45am and experimental group II was given brisk walking practices between 7.00 am to 8.00am for duration of approximately one hour (5 days a week) for 12 weeks and group III was not given any training (control). Yogic programs and brisk walking for selected groups were depicted in table 1.

Table 1: Training programme for experimental groups

Groups	Training programmes
Experimental Group - I	Loosening Exercises, Surya Namaskar, Asanas, Pranayama, and Meditation
Experimental Group - II	Brisk Walking
Control Group	No training but inactive rest

The detailed description of the yogic training, its duration and rest given between practices among the subjected included were interpreted in table 2. The details of repetitions were also determined thereby 2 repetitions were given in the first four weeks, 3 repetitions in the second found weeks and 4 repetitions in the third four weeks.

Table 2: Details of yogic training

S.No	Yogic Training	Duration	Rest between practices
Loosening Exercises			
1	Sitilikarana Vyayama	5 minutes	-
Surya Namaskar			
2	Surya Namaskar	4 minutes	1 minute
Aasanaas			
3	Padmasana	30 seconds	45 seconds
4	Sasangasana	30 seconds	45 seconds
5	Padahastasana	30 seconds	45 seconds
6	Bhujangasana	30 seconds	45 seconds
7	Chandra badhana Pranayama	1 minute	45 seconds
8	Nadishodana Pranayama	1 minute	45 seconds
9	Bhramari Pranayam	1 minute	45 seconds
10	Japa Meditation	5 minutes	45 seconds
11	Savasana	5 minutes	-

2.1.2. Brisk walking training

The experimental groups for brisk walking were required to undergo brisk walk for 45 minutes continuously without any rest. They underwent this training from Monday to Friday every week and the experimental period was extended upto 12 weeks. Proper warm up and warm down procedures were strictly followed to the subjects during the experimental period. The brisk walking program was scheduled in the morning between 7.00 to 8.00 for 45 minutes and warm up and cool down practices were also given. For every 4 weeks the intensity and duration of the training program was gradually increased by repetitions. The detailed brisk walk training and its duration were tabulated (Table 3).

Table 3: Brisk walk training modules and descriptions

Module(s)	Description	
General information		
Duration	12 weeks	
Mode of exercise	Walking on flat surface	
Frequency	Five days per week	
Duration	45 minutes	
Intensity	Mild (50-55%)	
Walking details		
Warm up	5 minutes	
Brisk walking	45 minutes	
Warm down	10 minutes	
Load dynamics		
Week(s)	**Intensity**	**Duration**
1st to 4th Week	40 – 45%	45 minutes
5th to 8th Week	45 – 50%	50 minutes
8th to 12 Week	50 – 55%	55 minutes

3. Results and Discussion

The psychological variable - anxiety was measured through Questionnaire. The results on the effect of yogic practices and brisk walking among hypertensive men are presented in table 4. The detailed description in the table suggested that the pretest mean scores of anxiety of Experimental group I of yogic practices was 30. Experimental group II of brisk walking was 30.57 and control group was 28.23. The post test means showed differences due to twelve weeks of yogic practices and brisk walking and mean values recorded were 20.667, 21.90 and 27.97 respectively.

Table 4: Computation of mean and analysis of covariance of anxiety of experimental and control group (scores in marks)

Test	Experimental Group – I (Varied Yogic Practices)	Experimental Group – II (Brisk Walking)	Control group	Source of variance	df	Sum of square	Mean square	F
Pre-test mean	30	30.57	28.23	Between	2	88.87	44.433	0.65
				Within	87	5984.73	68.79	
Post-test mean	20.66667	21.90	27.97	Between	2	916.16	458.08	5.18
				Within	87	7696.33	88.46	*
Adjusted mean	20.32	21.07	29.14	Between	2	1414.12	707.06	18.4
				Within	86	3300.82	38.38	2*
Mean Gain	9.333333	8.67	0.27					

*Significant at 0.05 level of confidence. (Table F- ratio at 0.05 level of confidence. For 2 and 87 (df) = 3.1, 2 and 86 (df) = 3.103)

The obtained F value on pretest scores 0.65 was lesser than the required F value of 3.1 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal. The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 5.18 was greater than the required F value at 3.1. This proved that the differences between the post test mean at the subjects were significant.

Taking this data into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 18.42 was greater than the required F value at 3.1. This proved that there were significant differences among the means due to twelve weeks of yogic practices and brisk walking on anxiety. The results were subjected to post hoc analysis using Scheffe`s Confidence Interval test. The results were presented in figure 1. Further the data described in figure 1 showed that there was significant difference between yogic practices and control group and brisk walking group and control group and yogic practices and brisk walking group.

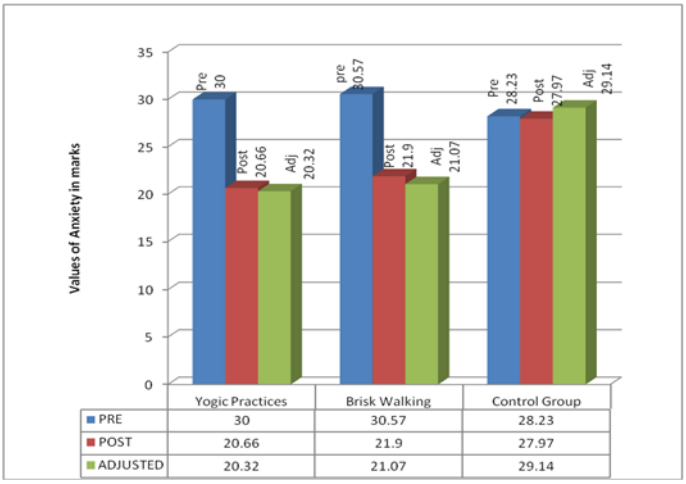

Fig 1: Pre, post and adjusted post-test values of control group, two experimental groups on anxiety

The results presented in table showed that the obtained adjusted means on anxiety among group involved in yogic practices was 20.32 followed by brisk walking group with the mean value of 21.07 and control group mean value of 29.17. The difference among pretest scores post test scores and adjusted mean scores of the subjects were statistically treated using ANCOVA and F values obtained were 0.65, 5.18 and 18.42 respectively. It was found that obtained F value on pretest score was not significant at 0.05 level of confidence as the obtained value was lesser than the required value and post test scores was significant at 0.05 level of confidence as the value was greater than the required table F value of 3.1. The post hoc analysis through Scheffe`s confidence test proved that due to Twelve weeks treatment the yogic practices group and Brisk Walking group there was significant improvement (reduced) in anxiety than control group and the differences were significant at 0.05 level. The post hoc analysis between the experimental group namely yogic practices group and brisk walking proved that there was significant difference.

The comparativeness of yoga and relaxation as treatment modalities at 10 – 16 weeks form study baseline was analyzed to reduce the stress, anxiety, blood pressure and improving the quality life [2]. The major psychological anxiety disorders are among the most common and meditative therapies are frequently sought by patients with anxiety as a complementary therapy [5]. Although multiple reviews exist on the general health benefits of meditation, no successful previous reports have focused on the efficacy of meditation for anxiety specifically.

Anxiety disorders are characterized by long term worry, tension, nervousness, fidgeting and symptoms of autonomic system hyperactivity. Meditation is an age-old self-regulatory strategy which is gaining more interest in mental health and psychiatry. Meditation can reduce arousal state and may ameliorate anxiety symptoms in various anxiety conditions [6]. Some studies highlighted that the hypertensive people showed better walking intervention as effective in increasing their exercise self-efficacy and reducing systolic blood pressure [3]. Further the organized brisk walking improved and established offering counseling and follow up of health behavior change for a period of 12 weeks [10].

Although the benefits of supervised walking therapy in various cardiac related issues have been documented, these findings have limited generalizability. First, almost all trials of exercise therapy for patients have been efficacy studies of one type of walking intervention: supervised, hospital-based, treadmill exercise therapy. Walking sessions of up to 55 min are supervised by an exercise technician three times per week for 3 to 6 months. This involves high patient burden (scheduling, transportation) and substantial resources [8]. The same data supported our study for further interventions.

This study was concluded with the following recommendations

1. It is found that yogic practices and brisk walking have made significant positive differences on the selected psychological variable reduced anxiety among hypertensive middle aged men; further it was useful in applying the men who are in risk with hypertension.
2. It is found that yogic practices are slightly effective than brisk walking on the selected reduced anxiety among hypertensive middle aged men, so it may be widely applicable to all industries, institutions and factories to encourage the workers to participate in the post working hours to maintain the employees healthy.

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