



ISSN: 0975-833X

RESEARCH ARTICLE

EFFECTS OF WALKING AND RELAXATION EXERCISES ON CONTROLLING HYPERTENSION

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ARTICLE INFO

Article History:

Received 30th May, 2015
Received in revised form
05th June, 2015
Accepted 25th July, 2015
Published online 31st August, 2015

Key words:

Hypertension, Relaxation exercise,
Walking, Systolic blood pressure and
Diastolic blood pressure.

ABSTRACT

Hypertension is the most important risk factor for cardiovascular disease. Which can lead to renal, cardiac and vascular disease, stroke and death. The study was to correlate the effect of walking and relaxation exercise on controlling hypertension. 60 hypertensive patients both males and females aged 30-65years participated in the study and secondary hypertension was excluded. Anti-hypertensive medication history, height, weight, BMI, systolic blood pressure & diastolic blood pressure examinations were taken. Subjects were divided into two groups, control and study group. Subjects in study group were taught relaxation exercises and asked to do regular walking for 6-7 days in a week and in control group no intervention was assigned. Walking & relaxation exercises produced a significant decrease in SBP, DBP with a P value of <0.01. No significant changes were observed in the control group. We concluded that walking and relaxation exercises are effective for decreasing the blood pressure in essential hypertension.

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Citation: Meena Mirdha and Mishra, A. K. 2015. "Effects of walking and relaxation exercises on controlling hypertension", *International Journal of Current Research*, 7, (8), 19595-19598.

INTRODUCTION

Hypertension is the most important risk factor for cardiovascular disease. Moreover hypertension can lead to renal, cardiac & vascular disease, loss of vision, permanent disability, stroke and death (Balci Alparslan *et al.*, 2010). Essential hypertension tends to be familial and is likely to be the consequence of an interaction between environmental and genetic factors. The prevalence of essential hypertension increases with age and individuals with relatively high blood pressures at younger ages are at increased risk of subsequent development of hypertension. It is likely that, essential hypertension represents a spectrum of disorders with different underlying pathophysiologies. In the majority of patients with established hypertension, peripheral resistance is increased and cardiac output is normal or decreased; however, in younger patients with mild or labile hypertension, cardiac output may be increased and peripheral resistance may be normal. (Harrison 18th edition)

In modern era, human beings are facing many diseases which are directly related to our way of life which is full of stress and strain. For attainment of optimum physical and mental health, people are adopting various relaxation techniques, e.g. yoga, meditation etc.

The role of yoga in promoting health and prevention and cure of diseases like hypertension and bronchial asthma (Datey *et al.*, 1969) has been established by scientific studies. Yogic techniques produce consistent physiological changes and have sound scientific basis (Madanmohan *et al.*, 1983). Lifestyle changes consist of non-pharmacological methods that can lengthen the life span of hypertensive and normotensive individuals. Particularly walking and relaxation exercises have direct and rapid effect on an individual's metabolism.

The study was conducted with the aim to witness the influence of walking and relaxation exercises on subjects with essential hypertension who are on standard therapy when compared to those on only standard therapy.

MATERIALS AND METHODS

This study was conducted at Department of Physiology and Department of Medicine in VSS Medical College, Burla. The study was conducted after receiving approval from the Institutional Ethics Committee of VSSMC, Sambalpur University, Burla. The study was a randomized control trial consisting of two different groups. Participants included essential hypertensive subjects who have met the inclusion and exclusion criteria of the study. These patients were then allocated into two groups, study group that included those who

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practiced walking and relaxation exercises along with standard pharmacological treatment and the Control GROUP who received only standard pharmacological treatment.

Inclusion criteria

Age-30-65years, Patients with essential hypertension, Patients who had been treated with hypertensive medication for at least 1 month, Patients were not going to change their medication, BMI-20-30.

Exclusion criteria

Severe cardiovascular, renal, cerebral, mental dysfunction and critically ill patients, Secondary hypertension, chronic smoker, chronic alcoholic.

60 subjects with essential hypertension attending the OPD of medicine, vss medical college, Burla were taken. They were allotted in to two groups, study group 30 subjects and control group 30 subjects with no significant difference in mean age and BMI.

Blood Pressure was measured in sitting posture after 5 minutes of rest. Hypertension was defined as having a systolic blood pressure of 140 mm Hg or more and diastolic blood pressure of 90 mm Hg or more, history of anti-hypertensive medication. Body weight was measured in light clothing and recorded to the nearest Kg. Height was measured to the nearest centimetre without shoes. Body mass index (BMI) was calculated as weight (Kg) divided by (height in meter)².

Study group

Patients in this group were taught Pranayama and Asana by the yoga instructor. Brisk Walking (Regular aerobic activity) for 30 minutes daily for, 6-7 days a week.

1. Ujjayi Pranayama-10 min

2. Shavasana-10 min

After allocating them to their respective intervention group, they were trained in Yoga by a Yoga Instructor and end assessment was done at 4 months.

Procedure

Ujjayi Pranayama – The subjects were asked to sit in a comfortable posture, keeping the back erect, with eyes closed. They were instructed to do slow deep inspiration, followed by slow deep expiration, with breath holding in between, by observing the mulabandha (contraction of the pubococcygeal muscle of the perineum during retention after inhalation). This cycle was repeated for 5 to 10 minutes.

Shavasana. *Shavis* a Sanskrit word meaning a dead body. At the end of performing the pranayama, the patients were instructed to lie on the back, keeping both the legs straight and apart by atleast a foot. Both arms should be on the floor a bit away from the torso and palm should face upwards. Body should be at ease and loose and mind fully relaxed. The entire attention should be on breathing. Inhalation and exhalation should be from nostrils in a rhythmic manner. *Shavasana* helps to get rid of physical and mental stress and fatigue. Patients were instructed to carry out the relaxation technique for at least 5 to 10 minutes.

Control group

The patients in this group were informed of the assessments to be done at the end of the 4 months follow up. They were asked to continue with the medications, which were given at baseline

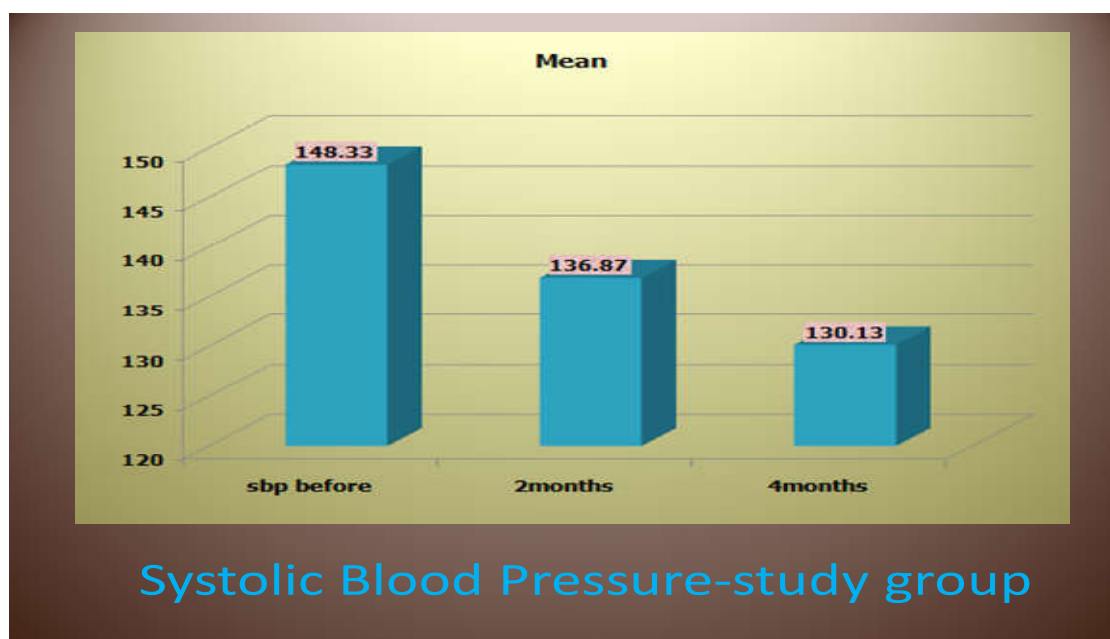


Fig. 1. Changes of mean systolic blood pressure of study groups between baseline and after 4 months



Fig. 2. Changes of mean systolic blood pressure of control groups between baseline and after 4months

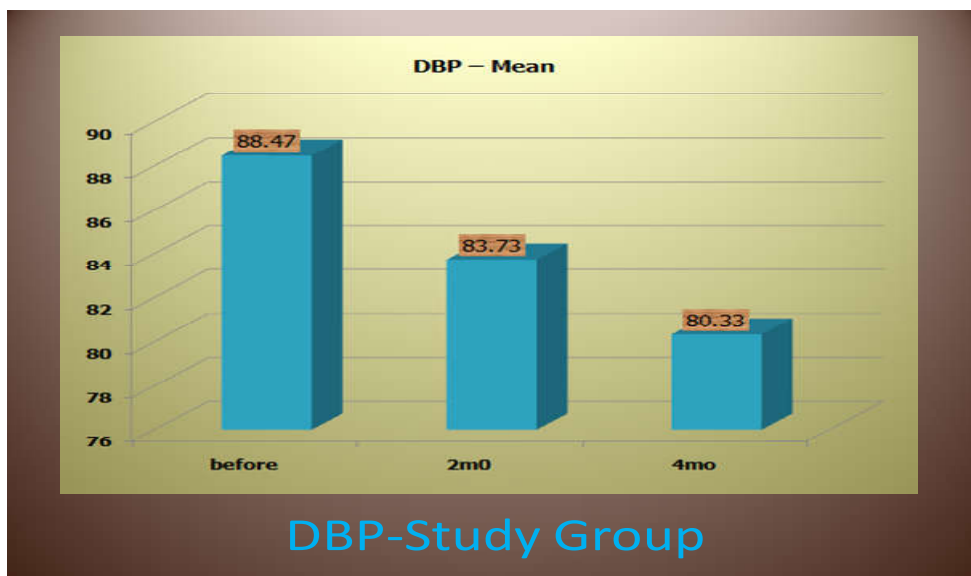


Fig. 3. Changes of mean diastolic blood pressure of study groups between baseline and after 4months

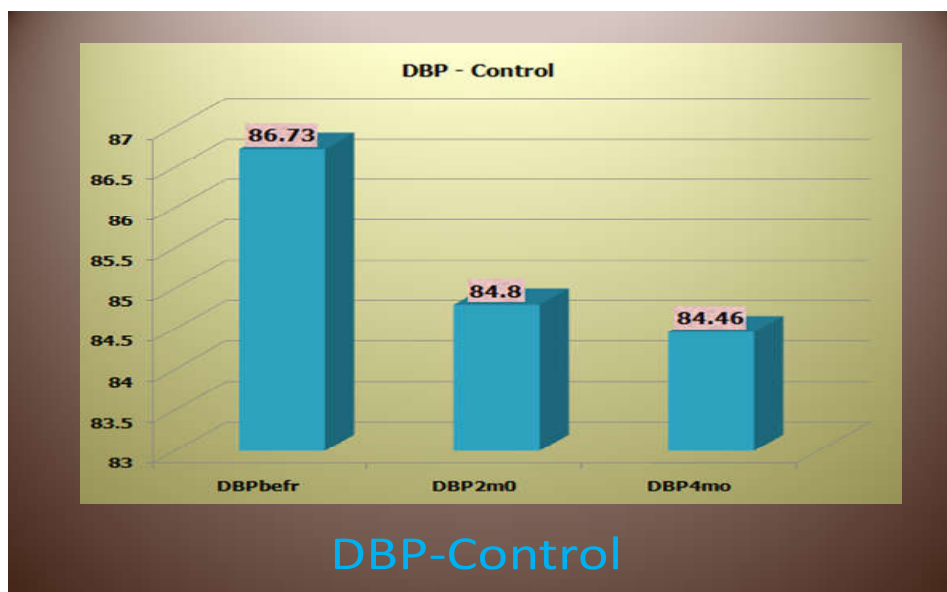


Fig. 4. Changes of mean diastolic blood pressure of control group between baseline and after 4months

Table 1. The findings of the two groups at baseline and after 4 months of treatment

	Parameter	Baseline	Post Intervention	Mean Difference	t	P
Study Group	SBP	148.33	130.13	18.2	9.79	<0.001
Control Group	DBP	88.47	80.33	8.14	6.99	<0.001
Study Group	SBP	147.06	144.6	2.46	2.00	<0.001
Control Group	DBP	86.73	84.47	2.26	4.196	<0.001

RESULTS

The findings of the two groups at baseline and after 4 months of treatment have been shown in the table and the comparison was shown in the graph. Statistical analysis was done by using Paired t- Test and Independent sample t-Test of Independent variables for all the quantitative data between the two groups. A P value < 0.05 was taken as statistically significant. The statistical analysis was done by the help of SPSS 16.0 software.

DISCUSSION

Sympathetic dominance gradually diminishes with relaxation practices, resulting in better balance between sympathetic and parasympathetic activities leads to decreased sympathetic tone & decreased peripheral resistance in blood vessels & fall in BP. In shavasana, the person relaxes with slow rhythmic movements of the respiratory muscles and other parts of the body. This influences the hypothalamus through a continuous feedback of the slow rhythmic proprioceptive and exteroceptive impulses to reset blood pressure at a lower level, thus reducing the blood pressure (Datey *et al.*, 1969).

SBP decreased by 18.2mmHg in study group in comparison to control group 8.14mm Hg and DBP decreased by 2.46mmHg in study group in comparison to control group 2.26mmHg. My study matched with the study of Balci Alparslan *et al.* (2010), Paul yung *et al.* (2001), Kaushik *et al.* (2006), Patel *et al.* (1975) and study by Irvine and Logan (1991) and similar to study conducted by Amigo, Gonzalez and Herrera (1997) and study by Forghieri *et al.* (2006).

Conclusion

The study showed that 4months of walking and relaxation exercises helps in decreasing the SBP and DBP.

Acknowledgement

Conflict of interest: None

Source of funding: Nil

Ethical clearance: Institution ethical clearance obtained.

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