

To Compare the Effect of Alternate Nostril Breathing Exercise and Deep Breathing Exercise on Cardiorespiratory Functions in Prehypertensive Young Adults.

Subtitle: "Alternate Vs Deep Breathing Exercises in Prehypertension Adults"

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Abstract - Prehypertension is viewed as one of the most widely recognized conditions that are influencing individuals everywhere throughout the world. Prehypertension is for the most part connected with a few different difficulties including hypertension. As per the Seventh Report Joint National Committee (JNC-7) arrangement, the circulatory strain among typical hypertension for example SBP 120-139 mmHg or DBP 80-89 mmHg is considered Prehypertension. Alternate nostril breathing & Deep breathing activity increase blood & oxygen stream to the cerebrum to work ordinarily. Breathing is the main capacity of the body that is both willful & uncontrollable. Breathing procedures can affect well-being emphatically. The study sample consists of 60 subjects with prehypertension ages between 18 to 35 years. The subjects who met the inclusion criteria were included in this study. Informal & written consent was taken from the subjects. subjects were divided into 30 into each group by using the chit method. Both the groups received 10 min every day for 4 weeks of treatment. Group A: Alternate nostril breathing exercise Group B: Deep breathing exercise BP, RR & PR also taken as an outcome measure. Outcome measurement was measured using Blood pressure (BP), Pulse rate (PR) & Respiratory rate (RR). Significance was assessed at a 5% level of significance $p < 0.05$ (2-tailed hypothesis test considered). The study has shown that active regular alternate nostril breathing & deep breathing exercise 10 minutes daily has considerably reduced each pulse, & blood pressure from 4 weeks. Thus, both exercises are suitable as a primary preventive strategy to attain blood pressure management in prehypertensive subjects.

Key words: young adult, Prehypertension, Alternate Nostril breathing, Deep breathing Exercise.

INTRODUCTION:

Robinson & Brucer brought the idea of prehypertension (PHTN) in 1939. They were the first to cause to notice the scope of pulse between 120 to 139 mmHg (systolic) & 80 to 89 mmHg (diastolic) as being of an incentive in deciding clinically clear hypertension (HTN). ⁽¹⁾ Almost three decades, a similar circulatory strain extend was given the name "marginal hypertension", at that point the name was changed to "high-ordinary pulse" in 1997. ⁽²⁾ It was named "prehypertension" in 2003. A few creators further classified BP levels between 130-139/85-89 mmHg as "Stage 2" PHTN. ⁽³⁾ The upper portion of the hypertension territory was named "high typical" circulatory strain by the European Society of Hypertension/the European Society of Cardiology. ⁽⁵⁾ In 2003, the Seventh Report of the Joint National Committee (JNC 7) described prehypertension as a systolic heartbeat (BP) of 120-139 mmHg or a diastolic BP of 80-89 mmHg in adults 18 years & older. Such deliberate ID of patients as "prehypertensive" calls attention to require the excess peril related to BP in this range & reminds restorative administration providers to give more thought to expectation. Prehypertension gives off the impression of being a point of fact to be a trailblazer of hypertension, related to various antagonistic outcomes. Vasan & accomplices found that the changing pace of prehypertension to hypertension over 4 years was 30%. Prehypertension is also associated with an extended risk of major cardiovascular-contamination occasions. Additionally, Mullican & accomplices, in the San Antonio Heart Study, showed that a BP of 130-139/85-89 mmHg was connected with diabetes mellitus. The inescapability of prehypertension & its related danger factors has been investigated worldwide since 2003. ⁽⁶⁾

Sound circulatory strain for a grown-up, loose very still, is viewed as a perusing under 120/80 mm Hg. A systolic bp of 120-139 mmHg or -a diastolic bp of 80-89 mmHg is considered "Prehypertension" & ought to be firmly checked. (Hypertension) is viewed as a perusing of 140/90 mm Hg or higher. When the Circulatory strain remains high for an all-inclusive time frame may invite about many medical issues or problems which may include atherosclerosis (solidifying of the supply routes), cardiovascular breakdown & stroke. ⁽¹²⁾

Some factors that can influence a blood pressure reading include ⁽¹²⁾:

- Stress, Smoking, Cold, temperatures, Exercise, Full stomach, Full bladder, Caffeine, alcohol consumption, Certain medicines, Gaining or losing weight, Salt intake ⁽¹²⁾

Heart rates shift from individual to individual. Heartbeat is lower when individual very still & increments in work out (on the grounds that more oxygen-rich blood is required by the body in work out). A typical heartrate for a solid grown-up very still ranges from 60 to 80 pulsates every moment. Ladies will in general have quicker heartbeat rates than men. ⁽¹²⁾

Patients characterized as "prehypertensive" with a heart rate ≥ 80 thumps for every moment were found to have a 50 % expansion taking all things together reason mortality. In summary, raise pulse is related with raised circulatory strain, exp&ed hazard for development of hypertension (& diabetes), & all-cause mortality. ⁽¹³⁾

An individual's respiratory rate is the quantity of breaths you take every moment. The ordinary breath rate for a grown-up very still is 12 to 20 breaths for every moment. A breath rate under 12 or more than 25 breaths for each moment while resting is viewed as

anomalous. Among the conditions that can change a typical respiratory rate are asthma, tension, pneumonia, congestive cardiovascular breakdown, lung infection, utilization of opiates or medication overdose.⁽¹⁴⁾

Profound breathing activity one of the measures will beat these issues in management of Hypertension. Standard acts of Deep breathing activity increase blood & oxygen stream to the cerebrum to work ordinarily.⁽²²⁾

Breathing procedure can affect wellbeing emphatically. Rising pressure can limit connective & solid type chest tissue. This can guarantee that there is a fall in chest divider's scope of movements. Deep way breathing can be settled to forestall the evil impacts of shallow relaxing. Chest breathing needs effectiveness as the most measure of blood flow happens in the lung's lower projections bringing about shallow breaths. Breathing from the midsection is a way to breathe deeply. The benefits chiefly are it builds endurance by the mid-region to extend. This prompts a negative weight inside the chest prompting air inside the lungs. This negative weight likewise prompts improved endurance in unhealthy states & athletic exercises. Profound breathing turns into a method for expending vitality & can be fused into the natural breathing arrangement of the individual. Whenever rehearsed after some time, this breathing activity can build vitality over the day. The body is intended to discharge a dominant part level of its poisonous materials through relaxing. In the event that a breath is not effectively done, you could be taking out poisons from the body. At the point when air is breathed out from the body, carbon dioxide is discharged from the circulation system into the lung. Carbon dioxide is a poison that is discharged from the body. Oxygenating the mind brings down degrees of tension. Notice your relaxing. Take moderate, full breaths & discharge the tension in fixed muscles. Breathing makes lucidity & carries profound bits of knowledge to an individual also. Clear uneasy, negative strain from the body without missing out on muscle quality. Stay away from drug since it can have symptoms. Understand the association between intuition, feeling & encountering life. At the point when you inhale profoundly, while anticipating torment, it turns out to be anything but difficult to defeat the indications. Studies have demonstrated that profound breathing can lower pain. Developments of the stomach during breathing activities rub the inside organs of the body, for example, the heart. At the point when the air is breathed in, the midsection extends. Rubbed organs experience improved dissemination. Controlled breathing is basic for conditioning & fortifying the muscular strength. As the muscles let go of strain, there is dilation of veins & the BP can come back to an ordinary stage. This eliminates hypertension & decreases the chances of creating heart issues later.^(13,14) By considering the referenced advantages of breathing activity on hypertension agents intrigued to look at the adequacy of profound breathing activities on hypertension assn. elective way to deal with treat hypertensive Patients.⁽²¹⁾ If there should be an occurrence of Deep & moderate paced diaphragmatic controlled breathing the outcomes show bringing down of pulse as announced in a few examinations. The investigations recommend that decrease of breath rate lessens the circulatory strain by animating cardiovascular reflexes. One of the antiquated procedures is Breath control which includes moderate & musical relaxing. For keep up ordinary pulse & bringing down hypertension Deep breathing activity is exceptionally compelling. Profound breathing activity is considered as one of the non-pharmacological technique to diminish the hypertension.⁽²³⁾

Alternate nostril breathing alludes to the Nadisuddhi Pranayama. Nadisuddhi means "purification of inconspicuous vitality ways". This pranayama is a moderate kind of pranayama in which inhalation & exhalation are through alternative nostrils for progressive respiratory cycles. At the point when the respiratory pattern of inhalation & exhalation is finished through the right nostril only then it is classified "Surya Anuloma Viloma Pranayama (SAV)" which literally signifies "heat producing breathing particle" When the professionals finish the cycle through the disregarded nostril the practices called "Chandra Anuloma Viloma Pranayama (CAV)" which implies a warmth disseminating or cooling practice. The SAV pranayama is popularly called Right nostril breathing (RNB) exercises & CAV pranayama is called Left nostril breathing (LNB) practices in scientific literatures.⁽¹⁵⁾

The wind current through one nostril is more prominent than next anytime of time which later switches to another. This is called nasal cycle. The nasal cycle goes on for 30 minutes to 2-3 hours.⁽¹⁶⁾ Kayser, prestigious rhinologist characterize nasal cycles a marvel of the substituting congestion, decongestion reaction of erectile tissue of nasal turbinate & septum of two nostrils, which effectively adjusted the one-sided nasal obstruction also, was existent because of prevailing sympathetic or parasympathetic tone.⁽¹⁷⁾

For ordinary youthful people you may watch diverse physiological cardiovascular reactions for various sorts of breathing activity produce in the event of right nostril breathing & substitute nostril breathing, considers state that the pulse of the patient increments, while in the event of left nostril breathing, it is seen that there is a diminishing or no adjustment in pulse. An investigation of interchange nostril relaxing for about a month shows noteworthy diminishing in diastolic circulatory strain, systolic pulse, pulse rate along with critical increment in beat pressure. Increments in pulse, blood pressure, breathing, internal heat level, & muscle strain is seen due to Increase in sympathetic activation just as arrival of stress hormones, including adrenaline.⁽²⁹⁾

The current study is focused on measuring the outcomes of respiratory rate, blood pressure & heart rate for prehypertension patients & check if there is any significant difference.

Now a Days young adult need to be more conscious about increasing risk of cardiorespiratory disease faced by prehypertension. The healthcare & frontline workers should emphasize on taking precautions with regular health & stress test to live longer healthier lives.

Peoples with Prehypertension have many problems related to cardiorespiratory functions. Therefore, there are many researches done on prehypertensive young adults for cardiorespiratory functions. The Purpose of my study is to improve cardiorespiratory functions in prehypertensive young adults. There are many individual studies focused on alternate nostril breathing exercise & deep breathing exercise evaluating their effect on cardiorespiratory function. During the analysis it was found that there is a lack of reviews specially focused up on the comparative study of both exercises.

MATERIALS & METHODS:

- A. **Source of data:** Parul Institute of Physiotherapy
- B. **Study design:** Comparative Study

- C. **Sampling design:** Convenient sampling
- D. **Sample size:** 60 patients
- Group A: 30 patients (Alternate Nostril Breathing Exercise)
 - Group B: 30 patients (Deep Breathing Exercise)
- E. **Intervention Duration:**
- The study was done for duration of 6 months. The protocol for both the group is for everyday in a week for 4 weeks.
 - Evaluation was taken before start of the treatment & then after end of the treatment.
- F. **Inclusion criteria:**
- Both male & female between age 18 – 35 year.
 - Participants who can understand English language.
 - The mean of three readings, recorded 2 min apart, was taken. If these readings differed by more than 5 mm Hg, a further three readings were recorded at 2 min intervals, & the mean of all six readings taken.
 - Pre-hypertensive participants
 - Systolic BP 120 – 139 mmHg
 - Diastolic BP 80 – 89 mmHg
- G. **Exclusion criteria:**
- Those who have cardiopulmonary deficit chronic illness, chronic respiratory disease, chronic kidney disease, neurological problems & congenital deficit, malignant hypertension.
 - Not willing to join
 - Individuals with medical conditions like: - Cardiovascular disorders, Diabetes mellitus, Bronchial asthma, Endocrinal disorders, Depression, Epilepsy, Psychological disorders.
- H. **Material used:**
- Assessment form
 - Consent form
 - Paper
 - Pen
 - Pencil
 - Rubber
 - Chair
 - Plinth
 - Digital Sphygmomanometer
- I. **Outcome measures:**
- Blood pressure (mmHg) by use of Digital Sphygmomanometer
 - Pulse rate (beats/min) by Radial Pulse palpation
 - Respiratory rate (breaths/min) by Observational counting
- J. **Ethical clearance:** In the act of research consists of human subjects, ethical clearance was obtained from ethical committee of Parul University Institutional Ethics Committee for Human Research (PU-IECHR). Also written consent was taken from every subject who associate in study.
- K. **Procedure:**
- The study sample consists of 60 subjects having a prehypertension with age between 18 to 35 years. The subjects who met the inclusion criteria were included in this study. Inform & written consent was taken from the subjects. Initially mean of three readings, recorded 2 min apart, was taken. If these readings differed by more than 5 mm Hg, a further three readings were recorded at 2 min intervals, & the mean of all six readings taken & subjects were divided into 30 into each group by using chit method.
 - Both the groups were received 10 minutes of treatment.
 - Group A:** Alternate nostril breathing exercise for a duration: 10 min everyday
 - Group B:** Deep breathing exercise for a duration: 10 min everyday
- L. **Data analysis:**
In present study 60 people with the age group of 18 to 35 Years were taken. 60 subjects follow the session, 60 subjects were analyzed.
- M. **Statistical analysis:**
Descriptive statistical analysis was accomplished in the present study. Outcome measurement was measured using Blood pressure (BP), Pulse rate (PR) & Respiratory rate (RR). Significance was assessed at 5% level of significance $p < 0.05$ (2 tailed hypothesis test considered).
- N. **Statistical tests:**
- Paired 't' test as a parametric was used for analysis of Blood Pressure, Pulse Rate & Respiratory Rate variables within the group A & group B with calculation of percentage of change.
 - Independent 't' test as a parametric was used to compare the means of Blood Pressure, Pulse Rate & Respiratory Rate variables between the group with calculation of percentage of difference between the means.

O. Statistical software:

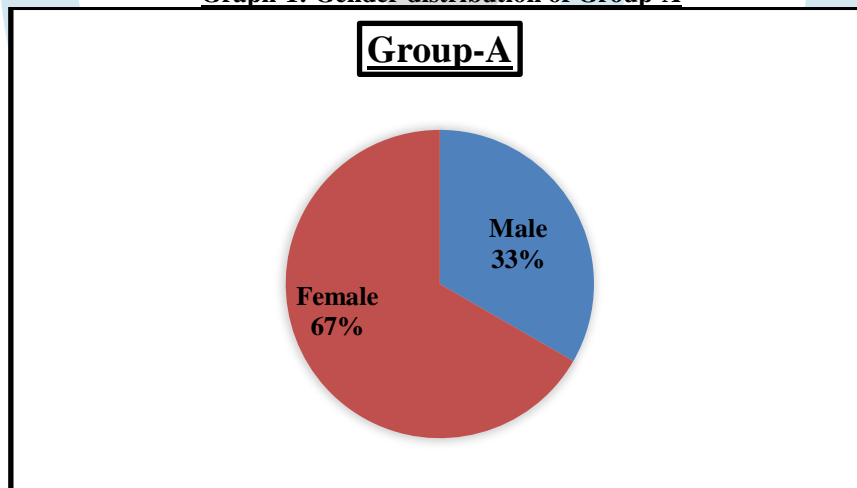
The statistical software namely SPSS 2.1.0.1 was used for the analysis of difference the data, Micro soft Word & Excel will be used to generate graphs, tables etc.

RESULT:**Table 1: Tests Used to Compare Outcome Measures Within & Between Groups**

Outcome Measures	Compare Within Group-A	Compare Within Group-B	Compare Between Group-A & Group-B
Systolic BP	Paired t-test	Paired t-test	Unpaired t-test
Diastolic BP	Paired t-test	Paired t-test	Unpaired t-test
RR	Paired t-test	Paired t-test	Unpaired t-test
PR	Paired t-test	Paired t-test	Unpaired t-test

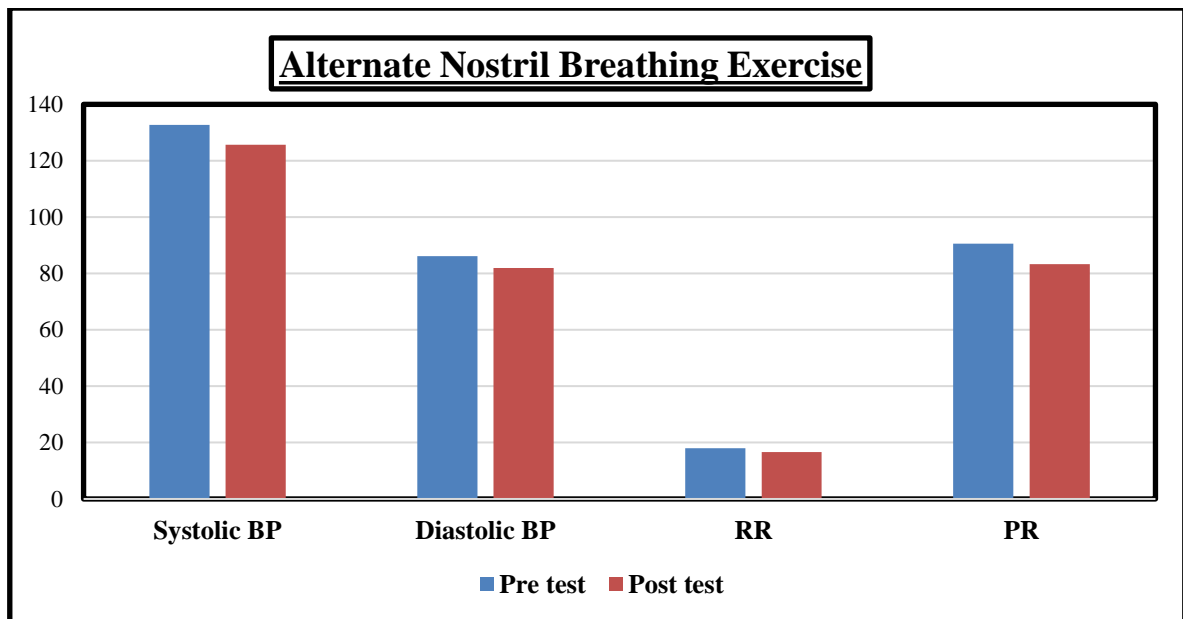
Table 2: Gender Distribution of All Participants

Gender	Group-A	Group-B
Male	10	18
Female	20	12
Total	30	30

Graph-1: Gender distribution of Group-A**Table 3: Within group comparison of Group-A**

Outcome Measures	For Alternate Nostril Breathing exercise				t-value	p-value
	Pre test		Post test			
	Mean	SD	Mean	SD		
Systolic BP	132.76	5.15	125.66	4.01	16.673	0.000
Diastolic BP	86.16	1.94	81.93	2.01	16.390	0.001
RR	17.96	0.92	16.66	0.92	18.111	0.001
PR	90.60	6.49	83.36	4.52	8.375	0.000

Graph-3: Within group comparison of Group-A



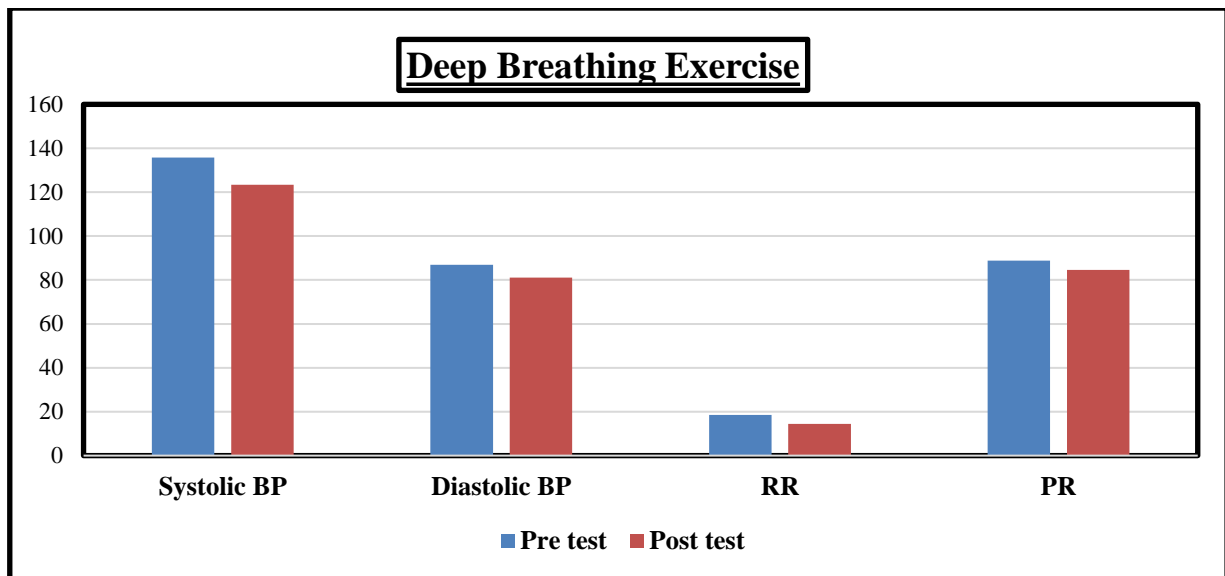
The above graph & table shows the following:

1. Mean Systolic BP pre-test was 132.76 which have decreased to 125.66 & the p-value is 0.000 which is statistically significant, thus the treatment is effective.
2. Mean Diastolic BP pre-test was 86.16 which have decreased to 81.93 & the p-value is 0.001 which is statistically significant, thus the treatment is effective.
3. Mean RR pre-test was 17.96 which have decreased to 16.66 & the p-value is 0.001 which is statistically significant, thus the treatment is effective.
4. Mean PR pre-test was 90.60 which have decreased to 83.36 & the p-value is 0.000 which is statistically significant, thus the treatment is effective.

Table 4: Within group comparison of Group-B

Outcome Measures	For Deep Breathing Exercise				t-value	p-value
	Pre test		Post test			
	Mean	SD	Mean	SD		
Systolic BP	135.76	3.00	123.36	3.09	9.953	0.001
Diastolic BP	86.90	2.27	81.03	1.35	11.727	0.001
RR	18.53	0.77	14.46	0.93	7.208	0.000
PR	88.83	6.063	84.63	6.23	8.989	0.001

Graph-4: Within group comparison of Group-B



The above graph & table shows the following:

1. Mean Systolic BP pre-test was 135.76 which have decreased to 123.36 & the p-value is 0.001 which is statistically significant, thus the treatment is effective.
2. Mean Diastolic BP pre-test was 86.90 which have decreased to 81.03 & the p-value is 0.001 which is statistically significant, thus the treatment is effective.
3. Mean RR pre-test was 18.53 which have decreased to 14.46 & the p-value is 0.000 which is statistically significant, thus the treatment is effective.
4. Mean PR pre-test was 88.83 which have decreased to 84.63 & the p-value is 0.001 which is statistically significant, thus the treatment is effective.

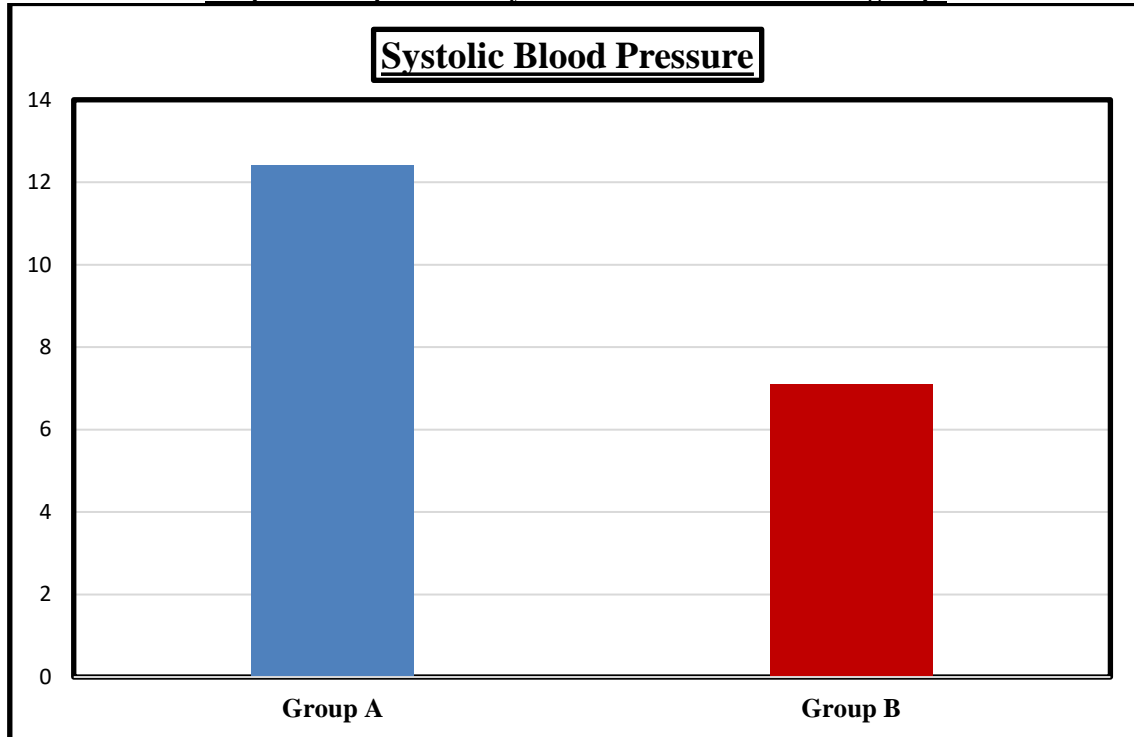
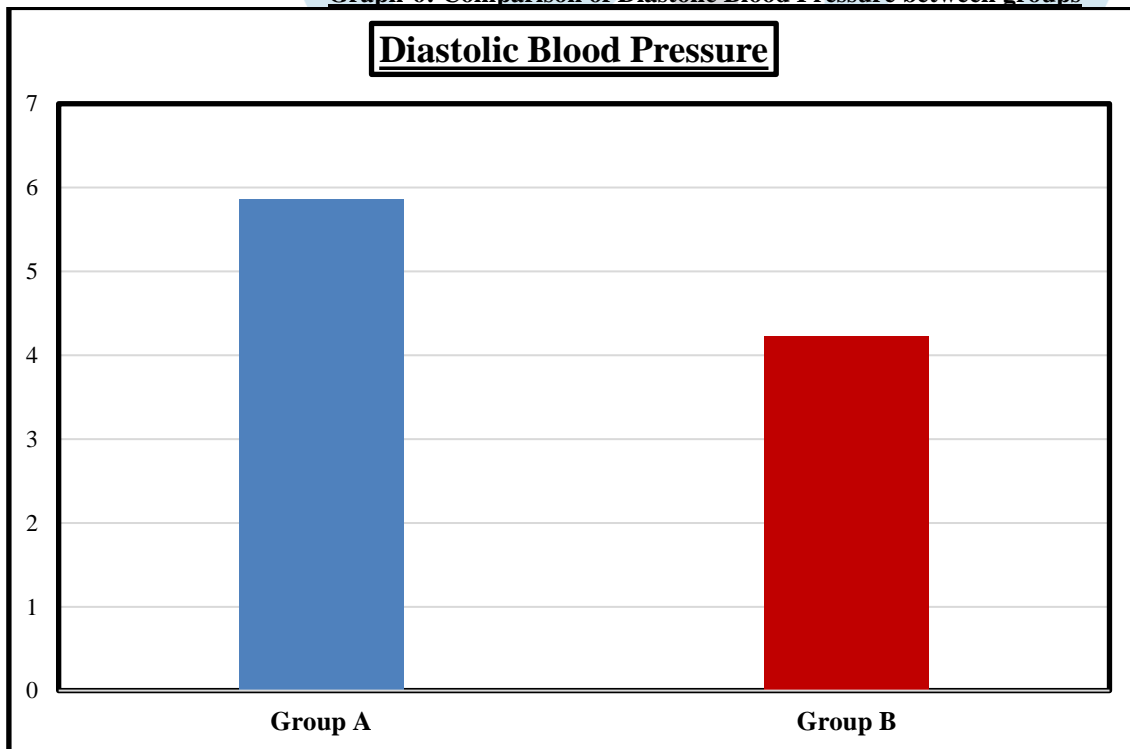
Table 5: Between group comparison of Group-A & Group-B

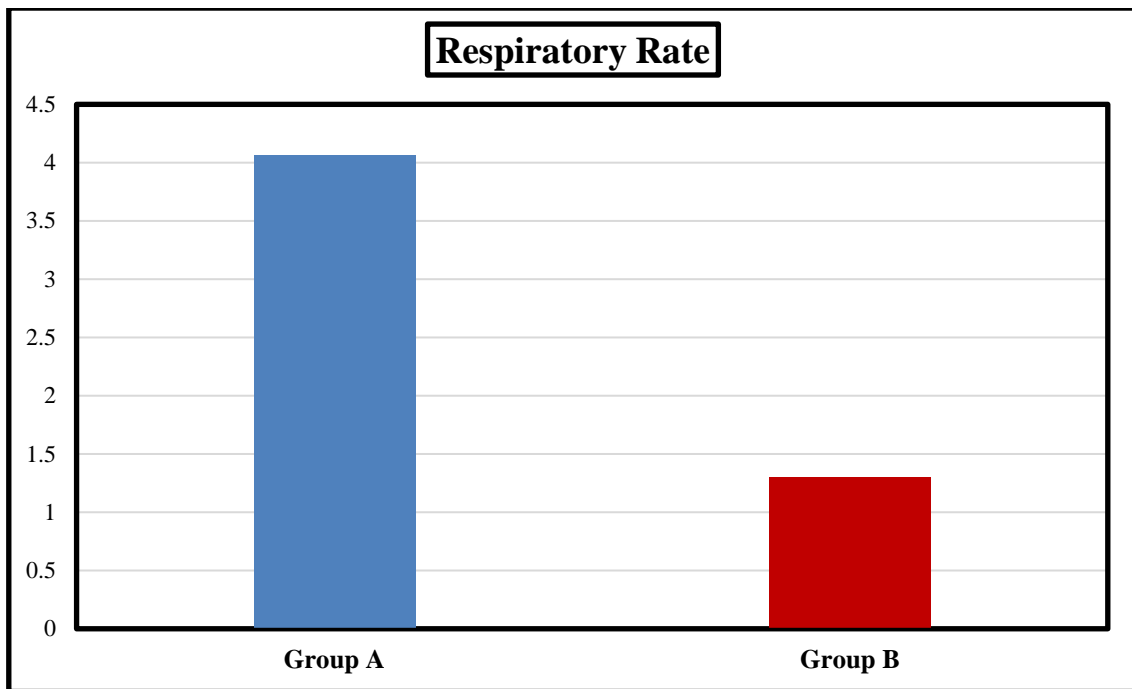
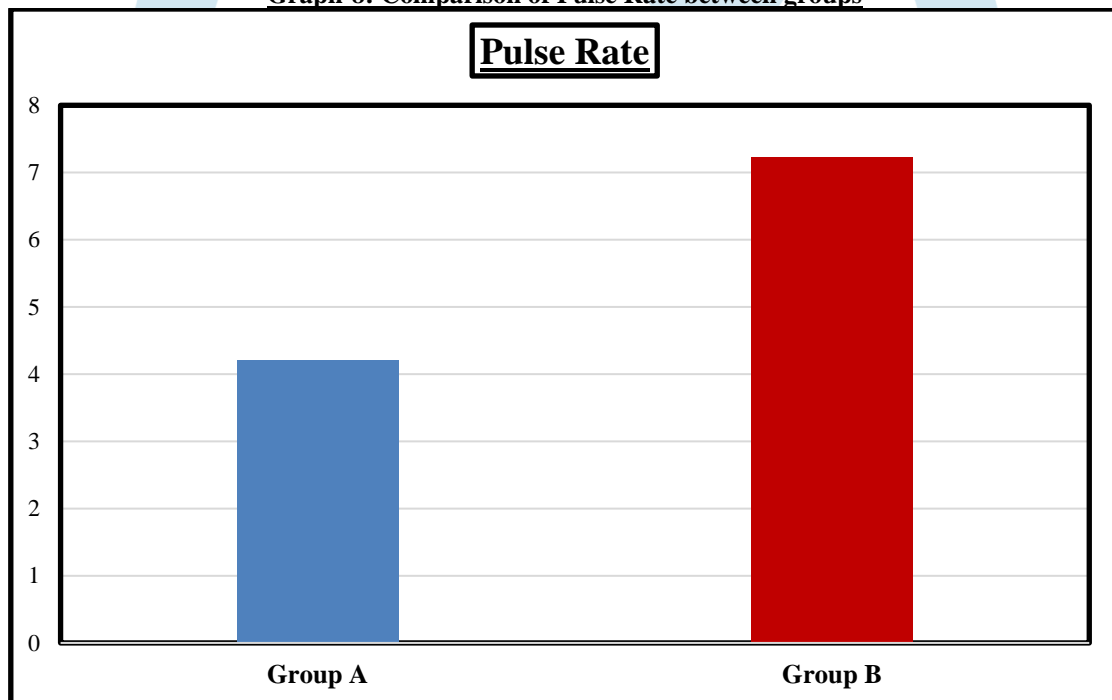
Outcome Measures	Groups	Mean	SD	t-value	p-value
Systolic BP	Group-A	12.40	4.07	5.143	0.861
	Group-B	7.10	3.90		
Diastolic BP	Group-A	5.86	1.96	3.213	0.950
	Group-B	4.23	1.97		
RR	Group-A	4.06	1.22	9.606	0.795
	Group-B	1.30	0.98		
PR	Group-A	4.20	2.74	-3.199	0.007
	Group-B	7.23	4.40		

The above table shows the between group comparison of all the four outcomes that is Systolic BP, Diastolic BP, RR & PR. The results revealed that:

1. The p-value >0.05 in Systolic BP of two groups hence it is not statistically significant, there is no difference in Systolic BP between the two groups.

2. The p-value >0.05 in Diastolic BP of two groups hence it is no statistically significant, there is no difference in Diastolic BP between the two groups.
3. The p-value >0.05 in RR of two groups hence it is no statistically significant, there is no difference in RR between the two groups.
4. The p-value >0.05 in PR of two groups hence it is no statistically significant, there is no difference in PR between the two groups.

Graph-5: Comparison of Systolic Blood Pressure between groups**Graph-6: Comparison of Diastolic Blood Pressure between groups****Graph-7: Comparison of Respiratory Rate between groups**

**Graph-8: Comparison of Pulse Rate between groups****DISCUSSION:**

In this study, 60 prehypertensive young adults were selected & divided in to two groups. Group-A Alternate nostril breathing exercise & Group-B Deep breathing exercise was given for a period of 10 minutes every day for 4 weeks. All the peoples were observed on the basis of cardio-respiratory functions. Before & after the 4-week intervention in this study outcome measure used are Blood Pressure, Respiratory Rate & Pulse Rate for cardio-respiratory functions.

Cardio- respiratory functions reduce in prehypertensive young adult. so, our study was focus on how to maintain cardio-respiratory function in prehypertensive young adult. For that my treatment protocol was alternate nostril breathing & deep breathing exercise in prehypertensive young adult, so it helps in improving cardio-respiratory function.

Statistically, within group analysis: the comparison of pre- & post-treatment scores for cardio-respiratory function shows that p-value is <0.05 for Systolic BP, Diastolic BP, Respiratory Rate & Pulse Rate in Group- A (Alternate Nostril Breathing Exercise) Which suggest that Alternate nostril breathing exercise helps in stimulating the main nerve in the parasympathetic nervous system & the vagus nerve, thus helping in decelerating the pulse rate, lowering the BP, & calming the body & mind. Because antihypertensive drugs have many side effects & complications, their rate of noncompliance is high. Complementary therapy such as alternate nostril breathing exercise is proved to be most effective in reducing the BP among prehypertensive young adult.⁽⁴⁵⁾

There is less data on autonomic sensory system work in the time-frame quickly following a meeting of alternate nostril breathing. By utilizing Heart Rate, no progressions in autonomic control following 10 min of ANB in normal experts of breathing. Be that as it may, these expansions in pulse & skin conductance. Then again, Srivastava et al.⁽⁴⁶⁾ revealed a decrease in heart rate following 10 min of ANB. These various discoveries might be part of the way clarified by the member populaces as subjects had at any rate three months experience with ANB, while it shows up Srivastava et al. utilized people who were not customary specialists of yogic breathing. In any case, a significant thought that appears to have been disregarded in past work is the impact that respiratory rate has on autonomic control of the heart. Since it has been very much archived that breathing rate can impact autonomic control of heart & ANB is for the most part performed at a moderately sluggish rate, it is conceivable that modifications in respiratory rate alone are liable for any autonomic changes. In this way, it is invaluable to contrast the prompt impacts of ANB with that of a controlled breathing condition at a similar respiratory rate.⁽⁴⁷⁾

Gathering B (Deep Breathing Exercise): the examination of pre- & post-treatment scores for cardio-respiratory function shows that p-value is <0.05 for Systolic BP, Diastolic BP, Respiratory Rate & Pulse Rate which propose that there is a critical decrease taking all things together the circulatory strain boundaries in the prehypertensive young adult when practice as ahead of schedule as about a month. Different specialists have shown that prehypertension happens because of thoughtful hyperactivity & parasympathetic withdrawal. An investigation done by Chako N. Joseph et al has presumed that deep breathing at 6 cycles/min decreased circulatory strain in prehypertensive young adults.⁽⁴⁶⁾ They have contemplated that the decrease in pulse following deep breathing is related with an expansion in the vagal arm of baroreflex affectability, decrease in thoughtful movement, showing a change in autonomic equilibrium. Comparative investigation done by Kaur Harneet et al in pre-hypertensives has affirmed that deep breathing assumes a critical part in decreasing the circulatory strain & respiratory rate & heart rate in typical & subjects with prehypertension.⁽⁴⁷⁾

The baroreceptor reflex (baroreflex) is a negative input instrument including stretch receptors, present principally in the aortic curve & carotid sinuses, that screen blood vessel circulatory strain & react to intense changes through focal neural-autonomic pathways, blood vessel baroreceptors are enacted by an increment in pulse & fire signals by means of afferent nerves to the cardiovascular focus in the medulla oblongata, which transfers quick parasympathetic efferent signs by means of the vagus nerve to the sinoatrial (SA) hub to diminish pulse, while thoughtful efferent signs h&ed-off by means of the thoughtful chain in the thoracic spinal segment to the heart & veins are smothered, adding to diminished pulse, heart yield & vasomotor tone (looked into by WEHREIN & JOYNER). Baroreceptor movement is decreased when pulse is low, bringing about the converse impacts.⁽⁴⁸⁾

Different investigates have demonstrated that ordinary act of moderate deep & cadenced breathing exp&s parasympathetic tone, diminishes thoughtful movement, improves cardiovascular & respiratory capacities, diminishes the impact of anxiety on the body consequently improving physical & psychological wellness.^(48,49) Subjects with fundamental prehypertension have shallow breath with an improved chemoreflex affectability. Deep breathing prompts a reduction in the focal chemoreflex affectability which thus pushes down the vasomotor focus. This diminishes the thoughtful surge, causing fringe arteriolar vasodilatation, diminishing fringe vascular opposition & accordingly decreasing diastolic circulatory strain. The decline in thoughtful release further abatements the tone of venules with increments in its capacitance, decline in mean fundamental filling pressure, decline in venous return & in this manner bringing down the systolic pulse.⁽⁵⁰⁾

Breathing activities are one of the nonpharmacological modalities. there is huge decrease in circulatory strain in the pre-hypertensive people at, about a month. This can be clarified as - the lung swelling which increments with diminishing respiratory rate, invigorates gradually adjusting pneumonic stretch receptors & this physiological reflex balance fills in as a contribution to the medulla & is coordinated with the data about circulatory strain level produced by blood vessel baroreceptors⁽⁴⁹⁾ & as an intense reaction to pulse height &/or lung expansion, vasodilation happens in various vascular regions, like the appendages, skin, muscles, kidney & splanchnic vascular bed.^(50,51)

In this way, the two gatherings are altogether improving & both the treatment were compelling.

Genuinely, between bunch examination: the correlation of post treatment score for cardio-respiratory capacity shows that p-value >0.05 in Systolic BP, Diastolic BP, Respiratory Rate & Pulse Rate of two gatherings subsequently it isn't measurably critical, there is no distinction in Systolic BP, Diastolic BP, Respiratory Rate & Pulse Rate between the two gatherings.

In this way, we acknowledge our invalid theory which was no huge distinction in the viability of substitute nostril breathing activity & deep breathing activity on cardiorespiratory function of prehypertensive young adults. Both the treatments are similarly effective. In our present examination the treatment which recommended for 10 minutes consistently for about a month.

As the outcomes result estimates systolic BP, Diastolic BP, Respiratory Rate & Pulse rate in both Group-A just as Group-B better improvement in cardio-respiratory function.

As indicated by study it is demonstrated that no huge contrast in the viability of alternate nostril breathing exercise & deep breathing exercise on cardiorespiratory function of prehypertensive young adults.

In the current examination, according to the outcomes it very well may be said that:

- Alternate Nostril Breathing & Deep Breathing Exercise beneficially affects individuals living with prehypertension.

The other advantages are as follows:

- Once the activity instructed to the individual, it very well may be performed without help from anyone else effectively at their homes.
- It can be considered as one of the essential counteraction strategies for prehypertension.
- This savvy strategy can be rehearsed even at the essential medical care level.

CONCLUSION:

The present study concluded that both Alternate Nostril Breathing & Deep Breathing Exercise are effective in improving cardiorespiratory functions. There was a significant improvement when the results within the group were analysed.

When between group analysis was done, decrease in systolic BP, Diastolic BP, Respiratory rate & Pulse Rate of all the four outcomes were statistically showing no significant difference in their effectiveness.

Hence, we conclude that practicing alternate nostril breathing & deep breathing exercise decreases the sympathetic excitability, thereby effectively reducing the blood pressure. Moreover, our study has shown that practicing regular alternate nostril breathing & deep breathing exercise 10 minutes every day has significantly reduced both the systolic, diastolic blood pressure from 4 weeks. Thus, alternate nostril breathing & deep breathing exercise is appropriate as a primary preventive strategy to achieve blood pressure control in pre-hypertensive subjects. Alternate nostril breathing & Deep breathing exercise together with other life style modifications can definitely ensure a healthy living in pre-hypertensive individuals.

SUMMARY:

A comparative study titled “To Compare the Effect of Alternate Breathing Exercise & Deep Breathing Exercise on Cardiorespiratory Functions in Prehypertensive Young Adults.” was conducted.

The study was concluded on 60 people. Peoples were selected on the basis of convenient sampling method. The Subjects with age of 18-35 were included in the study. The subjects were divided in to 2 groups, group-A was given Alternate nostril breathing exercise & group B was given Deep breathing exercise.

As pre intervention outcome measure Systolic BP, Diastolic BP, Respiratory Rate & Pulse Rate were taken. Intervention was carried out for 10 min every day for 4 Weeks.

The results were derived using statistical methods with the help of SPSS- 21.0.1 software. The comparison within the group was done using “paired t-test” & comparisons between the groups was done using “unpaired t-test”.

Statistical analysis showed significant difference within pre-intervention & post-intervention values of outcome measure variables of each group in within group of comparison pre- & post-treatment scores for cardio-respiratory function. shows that p-value is <0.05 Systolic BP, Diastolic BP, Respiratory Rate & Pulse Rate in both groups. Which suggest that both groups are significant in improving symptoms & also showed significant difference in value of outcome variable in between group comparison of post treatment score for cardio-respiratory function shows that the p-value >0.05 in Systolic BP, Diastolic BP, Respiratory Rate & Pulse Rate of two groups hence it is not statistically significant, there is no difference in Systolic BP, Diastolic BP, Respiratory Rate & Pulse Rate between the two groups.

So, we accept our null hypothesis which was no significant difference in the effectiveness of alternate nostril breathing exercise & deep breathing exercise on cardiorespiratory functions of prehypertensive young adults.

LIMITATION:

- The subjects in the study were taken from a single geographical area.
- The sample size of the study was small.
- There was no follow up done after 4 weeks to assess the beneficial effects of alternate nostril breathing & deep breathing exercise after cessation of the intervention.

FURTHER RECOMMENDATION

- A multi centric study can be done by including subjects from different geographical location.
- The study can be performed by enrolling more subjects for better results.
- A longer duration study can be recommended along with a follow up after a month of cessation of protocol to study the long – lasting beneficial effects of both interventions in improving cardio-respiratory functions in all age peoples.

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I was and an always will be thankful to ALMIGHTY to bless me with all these sparkling diamonds who helped me to take a step ahead towards my aim of “**HELP EVER HURT NEVER**”.

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