REVIEW OF RELATED LITERATURE

The review of associated studies and reports of experts provide substantial background not merely in selecting unexplored area of research, its verdict helps the researcher in updating his domain of knowledge and highlights the direction to carry out the proposed investigation without unwanted deviation. Since research is based upon everything that is known about a problem the review of associated studies given of proof of researcher’s understanding of the field, and encourage in knowing what is known and what is unknown. The productive or effective research must compare the past knowledge with that of new one and thus the abstract of related literature helps to eliminate the chances of recurrence of what has already been undertaken and provides useful hypothesis and valuable suggestions for the investigation in hand. Keeping this fact in mind the researcher exhaustively gone through numbers Journals published dissertation abstract etc in order to create a strong base for systematically perusing the present investigation. For present study there have been enough reviews available especially with respect to sport so allied area also taken in to consideration for this purpose.

Sharma (2000) conducted a study on the topic “Effect of Bhastrika Programme on Cardio-Respiratory Endurance on Judokas of Inter Collegiate Level”. Objective: The objective of the study was to find out the effect of Bhastrika Pranayama on cardio-Respiratory Endurance. Methodology: They Studies on selected physiological variables on inter college level Judokas with a purpose to find out the effect of Bhastrika Pranayama on cardio-Respiratory Endurance. The variables selected for the study were vital capacity, peak flow rate, maximum breath holding time (Positive & negative) and Resting pulse rate. In order to study the effete endurance’ t’ test was used. Results of Study: Bhastrika Pranayama practice have significantly contributive to cardio-respiratory functions, mainly pulse rate, vital capacity, breath holding time, peak
flow rate and cardiovascular efficiency. **Conclusion:** On the basis of the study it may be considered that Bhastrika Pranayama could be used for training Judokas for improving cardio-respiratory efficiency.

Ross and Thomas (2010) conducted a study on the topic “The health benefits of yoga and exercise: a review of comparison studies” and said that exercise is considered an acceptable method for improving and maintaining physical and emotional health. A growing body of evidence supports the belief that yoga benefits physical and mental health via down-regulation of the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic nervous system (SNS). **Objective:** The objective of this article is to provide a scholarly review of the literature regarding research studies comparing the effects of yoga and exercise on a variety of health outcomes and health conditions. **Methodology:** Using Pub Med® and the key word “yoga,” a comprehensive search of the research literature from core scientific and nursing journals yielded 81 studies that met inclusion criteria. These studies subsequently were classified as uncontrolled ($n=30$), wait list controlled ($n=16$), or comparison ($n=35$). The most common comparison intervention ($n=10$) involved exercise. These studies were included in this review. In the studies reviewed, yoga interventions appeared to be equal or superior to exercise in nearly every outcome measured except those involving physical fitness. **Results:** The studies comparing the effects of yoga and exercise seem to indicate that, 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. Future clinical trials are needed to examine the distinctions between exercise and yoga, particularly how the two modalities may differ in their effects on the SNS/HPA axis. Additional studies using rigorous methodologies are needed to examine the health benefits of the various types of yoga.

Ray, Mukhopadhyay, Purkayastha, Asnani, Tomer, Prashad, and Selvamurthy (2001) conducted a study on the topic “Effect of yogic exercises
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on physical and mental health of young fellowship course trainees”. **Objective:**
objective of the study was observing any beneficial effect of yogic practices
during training period on the young trainees. 54 trainees of 20-25 years age
group were divided randomly in two groups i.e. yoga and control group.

**Methodology:** Yoga group (23 males and 5 females) was administered yogic
practices for the first five months of the course while control group (21 males
and 5 females) did not perform yogic exercises during this period. From the 6th
to 10th month of training both the groups performed the yogic practices.
Physiological parameters like heart rate, blood pressure, oral temperature, skin
temperature in resting condition, responses to maximal and sub maximal
exercise, body flexibility were recorded. Psychological parameters like
personality, learning, arithmetic and psychomotor ability, mental well being was
also recorded. Various parameters were taken before and during the 5th and 10th
month of training period. Initially there was relatively higher sympathetic
activity in both the groups due to the new work/training environment but
gradually it subsided. Later on at the 5th and 10th month, yoga group had
relatively lower sympathetic activity than the control group. **Results:** There was
improvement in performance at sub maximal level of exercise and in anaerobic
threshold in the yoga group. Shoulder, hip, trunk and neck flexibility improved
in the yoga group. There was improvement in various psychological parameters
like reduction in anxiety and depression and a better mental function after yogic
practices.

Ray, Pathak and Tomer (1991) conducted a study on the topic “Hatha
yoga practices: **Objective:** objective of the study was energy expenditure,
respiratory changes and intensity of exercise to critically observe the energy
expenditure, exercise intensity and respiratory changes during a full yoga
practice session. Oxygen consumption (\(\dot{V}O_2\)), carbon dioxide output (\(\dot{V}CO_2\)),
pulmonary ventilation (\(\dot{V}E\)), respiratory rate (Fr) and tidal volume (VT), were
measured in 16 physical posture(Asanas), five yoga breathing maneuvers (BM)
and two types of meditation. **Methodology:** Twenty male (age 27.3 ± 3.5 years,
height 166.6 ± 5.4 cm and body weight 58.8 ± 9.6 kg) yoga instructors were studied. Their maximal oxygen consumption ($\dot{V}O_{2\text{max}}$) was recorded. The exercise intensity in Asanas was expressed in percentage $\dot{V}O_{2\text{max}}$. In Asanas, exercise intensity varied from 9.9 to 26.5% of $\dot{V}O_{2\text{max}}$. Highest energy cost was 3.02 kcal min$^{-1}$. In BM highest $\dot{V}E$ was 53.7 ± 15.5 l min$^{-1}$. VT was 0.97 ± 0.59, 1.41 ± 1.27 and 1.28 ± l/breath with corresponding Fr of 14.0 ± 5.3, 10.0 ± 6.35, 10.0 ± 5.8 breaths/min. Average energy expenditure in Asanas, BM and meditation were 2.29, 1.91 and 1.37 kcal min$^{-1}$ respectively. Metabolic rate was generally in the range of 1–2 metabolic equivalents (MET) except in three Asanas where it was >2 MET. $\dot{V}O_2$ was 0.27 ± 0.05 and 0.24 ± 0.04 l min$^{-1}$ in meditation and Shavasana, respectively. **Results:** Although yogic practices are low intensity exercises within lactate threshold, physical performance improvements possible owing to both better economy of breathing by BM and also by improvement in cardiovascular reserve. Other factors such as psycho-physiological and better relaxation may contribute to it.

**Stancák, Kuna, Srinivasan, Vishnudevananda, Dostálek (1991)**

**Objective:** We studied cardiovascular and respiratory changes during yogic breathing exercise kapalabhati (KB) in 17 advanced yoga practitioners.

**Methodology:** The exercise consisted in fast shallow abdominal respiratory movements at about 2 Hz frequencies. Blood pressure, ECG and respiration were recorded continuously during three 5 min periods of KB and during pre- and post-KB resting periods. The beat-to-beat series of systolic blood pressure (SBP) and diastolic blood pressure (DBP), R-R intervals and respiration were analyzed by spectral analysis of time series. **Results:** The mean absolute power was calculated in three frequency bands--band of spontaneous respiration, band of 0.1 Hz rhythm and the low-frequency band greater than 15 s in all spectra. The mean modulus calculated between SBP and R-R intervals was used as a parameter of bar receptor-cardiac reflex sensitivity (BRS). Heart rate increased by 9 beats per min during KB. SBP and DBP increased during KB by 15 and 6 mmHg respectively. All frequency bands of R-R interval variability were
reduced in KB. Also the BRS parameter was reduced in KB. The amplitude of the high-frequency oscillations in SBP and DBP increased during KB. The low-frequency blood pressure oscillations were increased after KB. The results point to decreased cardiac vagal tone during KB which was due to changes in respiratory pattern and due to decreased sensitivity of arterial bar reflex. Decreased respiratory rate and increased SBP and low-frequency blood pressure oscillations after KB suggest a differentiated pattern of vegetative activation and inhibition associated with KB exercise.

**Birkel and Edgren (2000)** conducted a study on the topic “Hatha yoga: improved vital capacity of college students”. **Objective:** objective of the study was to determine the effects of yoga postures and breathing exercises on vital capacity. The vital capacity of the lungs is a critical component of good health. Vital capacity is an important concern for those with asthma, heart conditions, and lung ailments; those who smoke; and those who have no known lung problems. **Methodology:** Using the Spiro pet spirometer, researchers measured vital capacity. Vital capacity determinants were taken near the beginning and end of two 17-week semesters. No control group was used. Midwestern university yoga classes taken for college credit a total of 287 college students, 89 men and 198 women. Subjects were taught yoga poses, breathing techniques, and relaxation in two 50-minute class meetings for 15 weeks. Vital capacity over time for smokers, asthmatics, and those with no known lung disease. **Results:** The study showed a statistically significant (P < .001) improvement in vital capacity across all categories over time. It is not known whether these findings were the result of yoga poses, breathing techniques, relaxation, or other aspects of exercise in the subjects' life. The subjects' adherence to attending class was 99.96%. The large number of 287 subjects is considered to be a valid number for a study of this type. **Conclusion:** These findings are consistent with other research studies reporting the positive effect of yoga on the vital capacity of the lungs.
Pramanik, Sharma, Mishra, Prajapati, and Singh (2009) conducted a study on the topic “Immediate effect of slow pace bhastrika Pranayama on blood pressure and heart rate” **Objective:** The objective of the study was evaluate the immediate effect of slow pace bhastrika Pranayama (respiratory rate 6/min) for 5 minutes on heart rate and blood pressure and the effect of the same breathing exercise for the same duration of time (5 minutes) following oral intake of hyoscine-N-butyl bromide (Buscopan), a parasympathetic blocker drug. **Methodology:** Heart rate and blood pressure of volunteers (n = 39, age = 25-40 years) was recorded following standard procedure. First, subjects had to sit comfortably in an easy and steady posture (sukhasana) on a fairly soft seat placed on the floor keeping head, neck, and trunk erect, eyes closed, and the other muscles reasonably loose. The subject is directed to inhale through both nostrils slowly up to the maximum for about 4 seconds and then exhale slowly up to the maximum through both nostrils for about 6 seconds. The breathing must not be abdominal. These steps complete one cycle of slow pace bhastrika Pranayama (respiratory rate 6/min). During the practice the subject is asked not to think much about the inhalation and exhalation time, but rather was requested to imagine the open blue sky. The Pranayama was conducted in a cool, well-ventilated room (18-20 degrees C). After 5 minutes of this breathing practice, the blood pressure and heart rate again were recorded in the aforesaid manner using the same instrument. The other group (n = 10) took part in another study where their blood pressure and heart rate were recorded following half an hour of oral intake of hyoscine-N-butyl bromide 20 mg. Then they practiced the breathing exercise as stated above, and the abovementioned parameters were recorded again to study the effect of parasympathetic blockade on the same Pranayama. **Results:** It was noted that after slow bhastrika pranayamic breathing (respiratory rate 6/min) for 5 minutes, both the systolic and diastolic blood pressure decreased significantly with a slight fall in heart rate. No significant alteration in both blood pressure and heart rate was observed in volunteers who performed the same breathing exercise for the same duration following oral intake of
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hyoscine-N-butyl bromide. **DISCUSSION:** Pranayama increases frequency and duration of inhibitory neural impulses by activating pulmonary stretch receptors during above tidal volume inhalation as in Hering Bruer reflex, which bring about withdrawal of sympathetic tone in the skeletal muscle blood vessels, leading to widespread vasodilatation, thus causing decrease in peripheral resistance and thus decreasing the diastolic blood pressure. After hyoscine-N-butyl bromide, the parasympathetic blocker, it was observed that blood pressure was not decreased significantly as a result of Pranayama, as it was observed when no drug was administered. **CONCLUSION:** Vagal cardiac and pulmonary mechanisms are linked, and improvement in one vagal limb might spill over into the other. Bar receptor sensitivity can be enhanced significantly by slow breathing (supported by a small reduction in the heart rate observed during slow breathing and by reduction in both systolic and diastolic pressure). Slow pace bhashrika Pranayama (respiratory rate 6/min) exercise thus shows a strong tendency to improving the autonomic nervous system through enhanced activation of the parasympathetic system.

**Upadhyay, Malhotra, Sarkar, and Prajapati (2008)** conducted a study on the topic “Effect of alternate nostril breathing exercise on cardio respiratory functions”. **Objective:** objective of the study was to evaluate the effect of alternate nostril breathing exercise on cardio respiratory functions. Pranayama (breathing exercise), one of the yogic techniques can produce different physiological responses in healthy individuals. **Methods:** The responses of Alternate Nostril Breathing (ANB) the Nadisudhi Pranayama on some cardio-respiratory functions were investigated in healthy young adults. The subjects performed ANB exercise (15 minutes every day in the morning) for four weeks. Cardio-respiratory parameters were recorded before and after 4-weeks training period. **Results:** A significant increment in Peak expiratory flow rate (PEFR L/min) and Pulse pressure (PP) was noted. Although Systolic blood pressure (SBP) was decreased insignificantly, the decreases in pulse rate (PR), respiratory
rate (RR), diastolic blood pressure (DBP) were significant. Results indicate that regular practice of ANB (Nadisudhi) increases parasympathetic activity.

**Madanmohan, Udupa, Bhavanani, Vijayalakshmi, Surendiran (2005)** conducted a study on the topic “Effect of slow and fast pranayamas on reaction time and cardio respiratory variables”. **Objective**: this study was find out the effect of slow and fast pranayamas on reaction time and cardio respiratory variables. They planned to undertake a comparative study of the effect of short term (three weeks) training in savitri (slow breathing) and bhastrika (fast breathing) pranayamas on respiratory pressures and endurance, reaction time, blood pressure, heart rate, rate-pressure product and double product. Thirty student volunteers were divided into two groups of fifteen each. **Methodology**: Group I was given training in savitri pranayam that involves slow, rhythmic, and deep breathing. Group II was given training in bhastrika pranayam, which is bellows-type rapid and deep breathing. Parameters were measured before and after three week training period. Savitri pranayam produced. **Results**: significant increase in respiratory pressures and respiratory endurance. In both the groups, there was an appreciable but statistically insignificant shortening of reaction time. Heart rate, rate-pressure product and double product decreased in savitri pranayam group but increased significantly in bhastrika group. It is concluded that different types of pranayamas produce different physiological responses in normal young volunteers.

**Subbalakshmi, Saxena, Urmimala, and D’Souza, (2005)** conducted a study on the topic “Immediate effect of ‘nadi -shodhana Pranayama’ **Objective**: objective of the study was some selected parameters of cardiovascular, pulmonary, and higher functions of brain” and said that practice of Pranayama has been known to modulate cardiac autonomic status with an improvement in cardio-respiratory functions Keeping this in view. **Methodology**: The present study is designed to determine whether Nadi-shodana Pranayama practice for 20 minutes has any immediate effect on heart rate, systolic and diastolic blood
pressure, peak expiratory flow rate, and simple problem solving ability. Ten normal healthy subjects of first year physiotherapy course volunteered for this study. They were aged between 17-20 years. Among them, five were females and five were males. They did not have any previous training in Pranayama. They were highly motivated to participate in this study program. Study procedures were done separately for each subject at the same time of the day between 4-5 pm. All the selected physiological parameters were measured before and after performing ‘Nadi-shodhana Pranayama’. Two sets of controls were done in the matched subjects by allowing them to relax in a couch (A) or close their eyes with quiet breathing for 20 minutes. Following nadi-shodhana Pranayama of 20 minutes, a significant decline in basal heart rate (P<0.0001) and systolic blood pressure (P<0.001) was observed. Peak expiratory flow rate was significantly improved (P<0.01) and the time taken for simple problem solving was significantly less following Pranayama practice (P<0.0001). In contrast, both control subjects did not show any significant change in respiratory and cardiovascular parameters with 20 minutes. Results: The present study suggests that the ‘Nadi-shodhana Pranayama’ rapidly alters cardiopulmonary responses and improves simple problem solving. Further studies on a larger sample size need to illustrate the underlying mechanisms involved in this alteration.

Chauhan, Semwal, Mishra, Semwal (2017) reported that Yoga, an ancient Indian system of exercise and therapy is an art of good living or an integrated system for the benefit of the body, mind, and inner spirit. Regular practice of yoga can help to increase blood flow to the brain, reduce stress, have a calming effect on the nervous system, and greatly help in reducing hypertension. Objective: objective of the present study is to evaluate the effect of 1-month yoga practice on body mass index (BMI), and blood pressure (BP). Methodology: The present study was conducted to determine the effect of yoga practice on 64 participants (age 53.6 ± 13.1 years) (experimental group) whereas the results were compared with 26 healthy volunteers (control group). We
examined the effects of yoga on physiological parameters in a 1-month pilot study. Most of the participants were learner and practiced yoga for 1 h daily in the morning for 1 month. BMI and BP (systolic and diastolic) were studied before and after 1 month of yoga practice. Yoga practice causes decreased BMI (26.4 ± 2.5-25.22 ± 2.4), systolic BP (136.9 ± 22.18 mmHg to 133 ± 21.38 mmHg), and diastolic BP (84.7 ± 6.5 mmHg to 82.34 ± 7.6 mmHg). Results: On the other hand, no significant changes were observed in BMI and BP of control group. This study concludes that yoga practice has potential to control BMI and BP without taking any medication.

Nivethitha, Mooventhan, Manjunath, Bathala, Sharma. (2017) Various pranayama techniques are known to produce different physiological effects. Objective: objective of the study was evaluated the effect of three-different pranayama techniques on cerebrovascular hemodynamic. Methodology: Eighteen healthy volunteers with the mean±standard deviation age of 23.78±2.96 years were performed three-different pranayama techniques: (1) Bhramari, (2) Kapalbhati and (3) Bahr-Kumbhaka in three-different orders. Continuous transcranial Doppler (TCD) monitoring was performed before, during and after the pranayama techniques. TCD parameters such as peak systolic velocity, end diastolic velocity (EDV), mean flow velocity (MFV) and pulsatility index (PI) of right middle cerebral artery were recorded. Results: Practice of Kapalbhati showed significant reductions in EDV and MFV with significant increase in PI while, Bahr-Kumbhaka showed significant increase in EDV and MFV with significant reduction in PI. However, no such significant changes were observed in Bhramari pranayama. Various types of pranayama techniques produce different cerebrovascular hemodynamic changes in healthy volunteers.

Klatte, Beelmann, Rosendahl (2016) Objective: reported that the efficacy of body-oriented yoga in the treatment of mental disorders has been investigated in numerous studies. This article is a systematic review and meta-
analysis of the relevant publications. **METHODS:** All studies in which the
efficacy of hatha-yoga, i.e., body-oriented yoga with Asanas and Pranayama,
was studied in adult patients suffering from a mental disorder (as diagnosed by
ICD or DSM criteria) were included in the analysis. The primary endpoint was
disorder-specific symptom severity. The publications were identified by a
systematic search in the Pub Med, Web of Science, PsycINFO and ProQuest
databases, supplemented by a search with the Google Scholar search engine and
a manual search in the reference lists of meta-analyses and primary studies, as
well as in specialized journals. **RESULTS:** 25 studies with a total of 1339
patients were included in the analysis. A large and significant effect of yoga was
seen with respect to the primary endpoint (symptom severity) (Hedges’ $g = 0.91;
95\%$ confidence interval $[0.55; 1.28]$; number needed to treat $[NNT]: 2.03$), with
substantial heterogeneity ($I^2 = 69.8\%$) compared to untreated control groups.
Small but significant effects of yoga were also seen in comparison with attention
control ($g = 0.39; [0.04; 0.73]; NNT: 4.55$) and physical exercise ($g = 0.30;
[0.01; 0.59]; NNT: 5.75$); no difference in efficacy was found between yoga and
standard psychotherapy ($g = 0.08; [-0.24; 0.40]; NNT: 21.89$). In view of the
relatively high risk of bias, these findings should be interpreted with caution.
**CONCLUSION:** Body-oriented yoga with Asanas and Pranayama as central
components is a promising complementary treatment for mental disorders and
should be investigated in further high-quality studies.

**Gong, Ni, Shen, Wu, Jiang (2015)** reported that prenatal depression can
negatively affect the physical and mental health of both mother and fetus.
**Objective:** The aim of this study was to determine the effectiveness of yoga as
an intervention in the management of prenatal depression. A systematic review
and meta-analysis of randomized controlled trials (RCTs) was conducted by
searching Pub Med, Embase, the Cochrane Library and PsycINFO from all
retrieved articles describing such trials up to July 2014. **Methodology:** Six
RCTs were identified in the systematic search. The sample consisted of 375
pregnant women, most of who were between 20 and 40 years of age. The
diagnoses of depression were determined by their scores on Structured Clinical Interview for DSM-IV and the Center for Epidemiological Studies Depression Scale. When compared with comparison groups (e.g., standard prenatal care, standard antenatal exercises, social support, etc.). the level of depression statistically significantly reduced in yoga groups (standardized mean difference [SMD], -0.59; 95% confidence interval [CI], -0.94 to -0.25; p=0.0007). One subgroup analysis revealed that both the levels of depressive symptoms in prenatally depressed women (SMD, -0.46; CI, -0.90 to -0.03; p=0.04) and non-depressed women (SMD, -0.87; CI, -1.22 to -0.52; p<0.00001) were statistically significantly lower in yoga group than that in control group. There were two kinds of yoga: the physical-exercise-based yoga and integrated yoga, which, besides physical exercises, included Pranayama, meditation or deep relaxation. Therefore, the other subgroup analysis was conducted to estimate effects of the two kinds of yoga on prenatal depression. The results showed that Results: the level of depression was significantly decreased in the integrated yoga group (SMD, -0.79; CI, -1.07 to -0.51; p<0.00001) but not significantly reduced in physical-exercise-based yoga group (SMD, -0.41; CI, -1.01 to -0.18; p=0.17). CONCLUSIONS: Prenatal yoga intervention in pregnant women may be effective in partly reducing depressive symptoms.

Gaur, Sharma, Madanmohan, Harichandra Kumar, Bhavanani A. (2015) Pranayamas are breathing techniques that exert profound physiological effects on pulmonary, cardiovascular, and mental functions. Previous studies demonstrate that different types of pranayamas produce divergent effects. AIM: The aim was to compare the effect of 12 weeks of slow and fast pranayam training on pulmonary function in young, healthy volunteers. SETTINGS AND DESIGN: This study was carried out in Departments of Physiology and ACYTER, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry in 2011 METHODS: Ninety one healthy volunteers were randomized into slow Pranayama group (SPG), n =29, fast Pranayama group (FPG), n = 32 and control groups (CG) (n = 30). Supervised Pranayama training
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(SP: Nadi sodhana, Pranav Pranayama and Savitri Pranayama; FP: Kapalabhati, Bhastrika and Kukkriya Pranayama) was given for 30 min/day, thrice/week for 12 weeks by certified yoga instructors. Pulmonary function parameters (PFT) such as forced vital capacity (FVC), forced expiratory volume in first second (FEV1), ratio between FEV1 and FVC (FEV1 /FVC), peak expiratory flow rate (PEFR), maximum voluntary ventilation (MVV), and forced expiratory flow25-75 (FEF25-75), were recorded at baseline and after 12 weeks of Pranayama training using the computerized spirometer (Micro laboratory V1.32, England). RESULTS: In SP, PEFR, and FEF25-75 improved significantly (P < 0.05) while other parameters (FVC, FEV1, FEV1 /FVC, and MVV) showed only marginal improvements. In FP, FEV1 /FVC, PEFR, and FEF25-75 parameters improved significantly (P < 0.05), while FVC, FEV1, and MVV did not show significant (P > 0.05) change. No significant change was observed in CG. CONCLUSION: Twelve weeks of pranayam training in young subjects showed improvement in the commonly measured PFT. This indicates that Pranayama training improved pulmonary function and that this was more pronounced in the FP.

Mooventhalan (2014) reported that Yoga is an ancient Indian science as well as the way of life. Pranayama is a part of yoga. Objective: The study was improves pulmonary function in combination of many Pranayama, but the aim of our study is to evaluate the effect of only Bhramari Pranayama and OM chanting on pulmonary function in healthy individuals. MATERIALS AND METHODS: A total of 82 subjects were randomized into the study group (SG) (n = 41) and control group (CG) (n = 41). Baseline assessment was performed before intervention for both groups. SG practiced Bhramari Pranayama and OM chanting for the duration of 10 min (5 min for each practice)/day for the period of 6 days/week for 2 weeks and CG did not practice so. After intervention post-assessment was performed for SG (n = 40) and CG (n = 39). Statistical analysis was performed by Independent samples t-test and Student's paired t-test with the use of Statistical Package for the Social Sciences version 16 (2007, USA).
RESULTS: The result showed a significant improvement in peak expiratory flow (PEF), forced expiratory flow (FEF)25% and maximal voluntary ventilation (MVV) along with a significant reduction in weight in SG compared with CG in independent samples t-test. Significant improvement in slow vital capacity (SVC), forced expired volume in 1 s (FEV1) along with PEF, FEF25% and MVV; Significant reduction in weight and body mass index were observed in SG unlike in CG in Student's paired t-test. No significant changes were found in forced vital capacity, FEV1 /SVC and FEF50% , between and within the group analysis of SG and CG. CONCLUSION: Bhramari Pranayama and OM chanting are effective in improving pulmonary function in healthy individuals.

Pramanik, Sharma, Mishra, Prajapati, and Singh (2009) conducted a study on the topic “Immediate effect of slow pace bhastrika Pranayama on blood pressure and heart rate”. Objective: the study was to evaluate the immediate effect of slow pace bhastrika Pranayama (respiratory rate 6/min) for 5 minutes on heart rate and blood pressure and the effect of the same breathing exercise for the same duration of time (5 minutes) following oral intake of hyoscine-N-butyl bromide (Buscopan), a parasympathetic blocker drug. Heart rate and blood pressure of volunteers (n = 39, age = 25-40 years) was recorded following standard procedure. Methodology: First, subjects had to sit comfortably in an easy and steady posture (sukhasana) on a fairly soft seat placed on the floor keeping head, neck, and trunk erect, eyes closed, and the other muscles reasonably loose. The subject is directed to inhale through both nostrils slowly up to the maximum for about 4 seconds and then exhale slowly up to the maximum through both nostrils for about 6 seconds. The breathing must not be abdominal. These steps complete one cycle of slow pace bhastrika Pranayama (respiratory rate 6/min). During the practice the subject is asked not to think much about the inhalation and exhalation time, but rather was requested to imagine the open blue sky. The Pranayama was conducted in a cool, well-ventilated room (18-20 degrees C). After 5 minutes of this breathing practice, the blood pressure and heart rate again were recorded in the aforesaid manner using
the same instrument. The other group (n = 10) took part in another study where their blood pressure and heart rate were recorded following half an hour of oral intake of hyoscine-N-butyl bromide 20 mg. Then they practiced the breathing exercise as stated above, and the abovementioned parameters were recorded again to study the effect of parasympathetic blockade on the same Pranayama. It was noted that after slow bhastrika pranayamic breathing (respiratory rate 6/min) for 5 minutes, both the systolic and diastolic blood pressure decreased significantly with a slight fall in heart rate. No significant alteration in both blood pressure and heart rate was observed in volunteers who performed the same breathing exercise for the same duration following oral intake of hyoscine-N-butyl bromide. **Results:** Pranayama increases frequency and duration of inhibitory neural impulses by activating pulmonary stretch receptors during above tidal volume inhalation as in Hering Bruer reflex, which bring about withdrawal of sympathetic tone in the skeletal muscle blood vessels, leading to widespread vasodilatation, thus causing decrease in peripheral resistance and thus decreasing the diastolic blood pressure. After hyoscine-N-butyl bromide, the parasympathetic blocker, it was observed that blood pressure was not decreased significantly as a result of Pranayama, as it was observed when no drug was administered. Vagal cardiac and pulmonary mechanisms are linked, and improvement in one vagal limb might spill over into the other. **Conclusion:** Bar receptor sensitivity can be enhanced significantly by slow breathing (supported by a small reduction in the heart rate observed during slow breathing and by reduction in both systolic and diastolic pressure). Slow pace bhastrika Pranayama (respiratory rate 6/min) exercise thus shows a strong tendency to improving the autonomic nervous system through enhanced activation of the parasympathetic system.

**Kozasa and et.al Siddha Samadhi (2008) Objective:** this study was find out the Yoga is a program in which meditation is associated with Pranayama (breathing exercises). **Methods:** 22 volunteers with anxiety complaints (M age = 42.8 yr., SD = 10.3) were assigned to two groups: 14 attended the yoga group,
and 8 attended a waiting-list or control group. They were evaluated before the intervention and 1 month after it on the State-Trait Anxiety Inventory, the Beck Depression Inventory, Tension Feelings Self-evaluation Scales, and the Well-being Self-evaluation Scales. **Results:** A significant reduction in scores on anxiety, depression, and tension was found in yoga group, as well as an increase in well-being in comparison with the control group.

**Hagins, Moore, and Rundle (2007)** conducted a study on the topic “Does practicing hatha yoga satisfy recommendations for intensity. **Objective:** this study objective of the physical activity which improves and maintains health and cardiovascular fitness” and said that little is known about the metabolic and heart rate responses to a typical hatha yoga session. The purposes of this study were 1). **Methodology:** to determine whether a typical yoga practice using various postures meets the current recommendations for levels of physical activity required to improve and maintain health and cardiovascular fitness; 2) to determine the reliability of metabolic costs of yoga across sessions; 3) to compare the metabolic costs of yoga practice to those of treadmill walking. In this observational study, 20 intermediate-to-advanced level yoga practitioners, age 31.4 ± 8.3 years, performed an exercise routine inside a human respiratory chamber (indirect calorimeter) while wearing heart rate monitors. The exercise routine consisted of 30 minutes of sitting, 56 minutes of beginner-level hatha yoga administered by video, and 10 minutes of treadmill walking at 3.2 and 4.8 kph each. Measures were mean oxygen consumption (VO₂), heart rate (HR), percentage predicted maximal heart rate (%MHR), metabolic equivalents (METs), and energy expenditure (kcal). Seven subjects repeated the protocol so that measurement reliability could be established. **Results:** Mean values across the entire yoga session for VO₂, HR, %MHR, METs, and energy/min were 0.6 L/kg/min; 93.2 beats/min; 49.4%; 2.5; and 3.2 kcal/min; respectively. Results of the ICCs (2,1) for mean values across the entire yoga session for kcal, METs, and %MHR were 0.979 and 0.973, and 0.865, respectively. Metabolic costs of yoga averaged across the entire session represent low levels of physical activity.
are similar to walking on a treadmill at 3.2 kph, and do not meet recommendations for levels of physical activity for improving or maintaining health or cardiovascular fitness. **Conclusion:** Yoga practice incorporating sun salutation postures exceeding the minimum bout of 10 minutes may contribute some portion of sufficiently intense physical activity to improve cardiorespiratory fitness in unfit or sedentary individuals. The measurement of energy expenditure across yoga sessions is highly reliable.

**Madanmohan, Udupa, Bhavanani, Vijayalakshmi, Surendiran (2005)** conducted a study on the topic “Effect of slow and fast pranayamas on reaction time and cardio respiratory variables”. **Objective:** Objective of the study to find out the effect of slow and fast Pranayama on reaction time and cardio respiratory variables. They planned to undertake a comparative study of the effect of short term (three weeks) training in savitri (slow breathing) and bhastrika (fast breathing) pranayamas on respiratory pressures and endurance, reaction time, blood pressure, heart rate, rate-pressure product and double product. **Methods:** Thirty student volunteers were divided into two groups of fifteen each. Group I was given training in savitri pranayam that involves slow, rhythmic, and deep breathing. Group II was given training in bhastrika pranayam, which is bellows-type rapid and deep breathing. Parameters were measured before and after three week training period. **Results:** Savitri pranayam produced a significant increase in respiratory pressures and respiratory endurance. In both the groups, there was an appreciable but statistically insignificant shortening of reaction time. Heart rate, rate-pressure product and double product decreased in savitri pranayam group but increased significantly in bhastrika group. It is concluded that different types of pranayamas produce different physiological responses in normal young volunteers.

**Harinath, Malhotra, Pal, Prasad, Kumar, Kain, and Sawhney (2004)** conducted a study on the topic “Effects of Hatha yoga and Omkar meditation on cardio respiratory performance, psychologic profile, and melatonin secretion”.
Objective: this study was evaluating effects of Hatha yoga and Omkar meditation on cardio respiratory performance, psychologic profile, and melatonin secretion. Thirty healthy men in the age group of 25-35 years volunteered for the study. Methods: They were randomly divided in two groups of 15 each. Group 1 subjects served as controls and performed body flexibility exercises for 40 minutes and slow running for 20 minutes during morning hours and played games for 60 minutes during evening hours daily for 3 months. Group 2 subjects practiced selected yogic Asanas (postures) for 45 minutes and Pranayama for 15 minutes during the morning, whereas during the evening hours these subjects performed preparatory yogic postures for 15 minutes, Pranayama for 15 minutes, and meditation for 30 minutes daily, for 3 months. Orthostatic tolerance, heart rate, blood pressure, respiratory rate, dynamic lung function (such as forced vital capacity, forced expiratory volume in 1 second, forced expiratory volume percentage, peak expiratory flow rate, and maximum voluntary ventilation), and psychologic profile were measured before and after 3 months of yogic practices. Serial blood samples were drawn at various time intervals to study effects of these yogic practices and Omkar meditation on melatonin levels. Results: Yogic practices for 3 months resulted in an improvement in cardio respiratory performance and psychologic profile. The plasma melatonin also showed an increase after three months of yogic practices. The systolic blood pressure, diastolic blood pressure, mean arterial pressure, and orthostatic tolerance did not show any significant correlation with plasma melatonin. However, the maximum night time melatonin levels in yoga group showed a significant correlation ($r = 0.71$, $p < 0.05$) with well-being score. Conclusion: These observations suggest that yogic practices can be used as psycho physiologic stimuli to increase endogenous secretion of melatonin, which, in turn, might be responsible for improved sense of well-being.

Khalsa, Cope. (2006) Studied Previous research has suggested that yoga and meditation practices are effective in stress management. Objective: to objective of the study were alleviating anxiety and musculoskeletal problems
and improving mood and cognitive and physical performance. Musicians experience a number of challenges in their profession including high levels of stress, performance anxiety and performance-related musculoskeletal conditions. **Methodology:** Yoga and meditation techniques are therefore potentially useful practices for professional musicians. Musicians enrolled in a prestigious 2-month summer fellowship program were invited to participate in a regular yoga and meditation program at a yoga center during the course of the program. The 10 participants in the yoga program completed baseline and end-program questionnaires evaluating performance-related musculoskeletal conditions, performance anxiety, and mood and flow experience. **Results:** Fellows not participating in the yoga program were recruited to serve as controls and completed the same assessments (N=8). The yoga participants showed some improvements relative to control subjects on most measures, with the relative improvement in performance anxiety being the greatest. The results from this preliminary study suggest that yoga and meditation may be beneficial as a routine practice to reduce performance anxiety in musicians.

**Udupa, Madanmohan, Bhavanani, Vijayalakshmi, Krishnamurthy (2003)** conducted a study on the topic “Effect of pranayam training on cardiac function in normal young volunteers”. **Objective:** this study was purpose of the find out effect of pranayam training on cardiac function in normal young volunteers. Systolic time intervals (STI) are non-invasive and sensitive tests for measuring the ventricular performance. It has been reported that practice of pranayam modulates cardiac autonomic status and improves cardio-respiratory functions. Keeping this in view, the present study was designed to determine whether pranayam training has any effect on ventricular performance as measured by STI and cardiac autonomic function tests (AFT). **Methodology:** Twenty four school children were randomly divided into two groups of twelve each. Group I (pranayam group) subjects were given training in Nadisuddhi, mukh-bhashrika, pranav and savitri pranayamas and practiced the same for 20 minutes daily for a duration of 3 months. Group II (control group) subjects were
not given any pranayam training. STI (QS2, LVET and PEP) and AFT (RRIV and QT/QS2) were measured in both the groups at the beginning and again at the end of three months study period. **Results:** Pranayam training produced an increase in RRIV and a decrease in QT/QS2, suggesting an enhanced parasympathetic and blunted sympathetic activity respectively. QS2, PEP and PEP/LVET increased significantly, whereas LVET was reduced significantly in pranayam group. In contrast, the changes in STI and AFT were much less marked in the control group. Our study shows that three months of pranayam training modulates ventricular performance by increasing parasympathetic activity and decreasing sympathetic activity. Further studies on a larger sample size may illustrate the underlying mechanism(s) involved in this alteration.

**Bhattacharya, Pandey, Verma (2002). Objective:** this study was found out to assess the effect of yogic breathing exercises (Pranayama) on the oxidatives stress. The study group consisted of 30 young male volunteers, trained for the purpose of this study and an equal number of controls were used. **Methodology:** The free radicals and Super oxide dismutase levels were measured before the study and at the end of the study. The free radicals were decreased significantly in the study group but the SOD was increased insignificantly as compared to the control group. Yogic breathing exercises not only help in relieving the stresses of life but also improve the antioxidant status of the individual. **Results:** An improvement in the antioxidant status is helpful in preventing many pathological processes that are known with impaired antioxidant system of body.

**Ray, Mukhopadhyay, Asnani, Tomer, Prashad, and Selvamurthy (2001) conducted a study on the topic “Effect of yogic exercises on physical and mental health of young fellowship course trainees”. Objective:** objective of the study to observe any beneficial effect of yogic practices during training period on the young trainees. 54 trainees of 20-25 years age group were divided randomly in two groups i.e. yoga and control group. Yoga group (23 males and 5
Methodology: administered yogic practices for the first five months of the course while control group (21 males and 5 females) did not perform yogic exercises during this period. From the 6th to 10th month of training both the groups performed the yogic practices. Physiological parameters like heart rate, blood pressure, oral temperature, skin temperature in resting condition, responses to maximal and sub maximal exercise, body flexibility were recorded. Psychological parameters like personality, learning, arithmetic and psychomotor ability, mental well being was also recorded. Various parameters were taken before and during the 5th and 10th month of training period. Initially there was relatively higher sympathetic activity in both the groups due to the new work/training environment but gradually it subsided. Later on at the 5th and 10th month, yoga group had relatively lower sympathetic activity than the control group. Results: There was improvement in performance at sub maximal level of exercise and in anaerobic threshold in the yoga group. Shoulder, hip, trunk and neck flexibility improved in the yoga group. There was improvement in various psychological parameters like reduction in anxiety and depression and a better mental function after yogic practices.

Arambula . (2001) and et.al Studied to explore the physiological correlates of a highly practiced Kundalini Yoga mediator. Objective: The objective of the study was Thoracic and abdominal breathing patterns, heart rate (HR), occipital parietal electroencephalograph (EEG), skin conductance level (SCL), and blood volume pulse (BVP) were monitored during prebaseline, meditation, and post baseline periods. Methodology: Visual analyses of the data showed a decrease in respiration rate during the meditation from a mean of 11 breaths/ min for the pre- and 13 breaths/min for the post baseline to a mean of 5 breaths/min during the meditation, with a predominance of abdominal/diaphragmatic breathing. Results: There was also more alpha EEG activity during the meditation (M = 1.71 microV) compared to the pre- (M = .47 microV) and post baseline (M = .78 microV) periods, and an increase in theta EEG activity immediately following the meditation (M = .62 microV) compared
to the pre-baseline and meditative periods (each with $M = .26$ microV). These findings suggest that a shift in breathing patterns may contribute to the development of alpha EEG, and those patterns need to be investigated further.

**Sharma (2000)** conducted a study on the topic “Effect of Bhastrika Programme on Cardio-Respiratory Endurance on Judokas of Inter Collegiate Level”. **Objective:** objective of the study was find out the effect of Bhastrika Pranayama on cardio-Respiratory Endurance. They Studies on selected physiological variables on inter college level Judokas with a purpose to find out the effect of Bhastrika Pranayama on cardio-Respiratory Endurance. **Methodology:** The variables selected for the study were vital capacity, peak flow rate, maximum breath holding time (Positive & negative) and Resting pulse rate. In order to study the effete endurance ‘t’ test was used. Bhastrika Pranayama practice have significantly contributive to cardio-respiratory functions, mainly pulse rate, vital capacity, breath holding time, peak flow rate and cardio vascular efficiency. **Results:** On the basis of the study it may be considered that Bhastrika Pranayama could be used for training Judokas for improving cardio- respiratory efficiency.

**Birkel and Edgren (2000)** conducted a study on the topic “Hatha yoga: improved vital capacity of college students”. **Objective:** objective of the study was to determine the effects of yoga postures and breathing exercises on vital capacity. The vital capacity of the lungs is a critical component of good health. Vital capacity is an important concern for those with asthma, heart conditions, and lung ailments; those who smoke; and those who have no known lung problems. **Methodology:** Using the spirometer, researchers measured vital capacity. Vital capacity determinants were taken near the beginning and end of two 17-week semesters. No control group was used, Midwestern University yoga classes taken for college credit .A total of 287 college students and 89 men and 198 women. Subjects were taught yoga poses, breathing techniques, and relaxation in two 50-minute class meetings for 15 weeks .Vital capacity over
time for smokers, asthmatics, and those with no known lung disease. **Results:**
The study showed a statistically significant ($P < .001$) improvement in vital capacity across all categories over time. It is not known whether these findings were the result of yoga poses, breathing techniques, relaxation, or other aspects of exercise in the subjects' life. The subjects' adherence to attending class was 99.96%. The large number of 287 subjects is considered to be a valid number for a study of this type. These findings are consistent with other research studies reporting the positive effect of yoga on the vital capacity of the lungs.

**Schell, Allolio, & Schonecke, (1994)** conducted a study on the topic “Physiological and psychological effects of Hatha-Yoga exercise in healthy women”. **Objective:** The objective of the study was to critically observe physiological and psychological effects of Hatha-Yoga exercise in healthy women. Hatha-Yoga has become increasingly popular in western countries as a method for coping with stress. However, little is known about the physiological and psychological effects of yoga practice. **Methodology:** We measured heart rate, blood pressure, the hormones cortisol, prolactin and growth hormone and certain psychological parameters in a yoga practicing group and a control group of young female volunteers reading in a comfortable position during the experimental period. There were no substantial differences between the groups concerning endocrine parameters and blood pressure. **Results:** The course of heart rate was significantly different; the yoga group had a decrease during the yoga practice. Significant differences between both groups were found in psychological parameters. In the personality inventory the yoga group showed markedly higher scores in life satisfaction and lower scores in excitability, aggressiveness, openness, emotionality and somatic complaints. Significant differences could also be observed concerning coping with stress and the mood at the end of the experiment. The yoga group had significant higher scores in high spirits and extra vertedness.
Margaret (1994), **Objective:** this study was found out the studied the relationship between burns out and sources of stress as perceived by selected bilingual education teachers. **Methodology:** She used Maslach inventory and stressful teaching situation questionnaire (part I). In the self reported rating she identified the prevalence of high, moderate and low levels of emotional exhaustion, depersonalization and personal accomplishments. The responses of all 190 teachers were further analyzed using multiple regressions and Pearson’s ‘r’ correlation. **Results:** These exhibited that age was significantly and positively related to burnout. Interpersonal relationship, instructional management and administrative policies were identified as resources of stress which clearly and significantly explained the variance of all three dimensions of burnout.

Wood, (1993) **Objective:** objective of the study was a effects of three different procedures, relaxation, visualization and yogic breathing and stretch (Pranayama) on perceptions of physical and mental energy and on positive and negative mood states have been assessed in a group of normal volunteers (N = 71, age range 21-76). **Methods:** Pranayama produced a significantly greater increase in perceptions of mental and physical energy and feelings of alertness and enthusiasm than the other two procedures (P < 0.5). **Results:** Relaxation made subjects significantly more sleepy and sluggish immediately after the session than Pranayama (P < 0.05). Visualization made them more sluggish but less content than Pranayama (P < 0.05) and more upset than relaxation after the second session (P < 0.05). Thus, a 30 min programme of yogic stretch and breathing exercises which is simple to learn and which can be practiced even by the elderly had a markedly 'invigorating' effect on perceptions of both mental and physical energy and increased high positive mood. A more extensive investigation is planned to establish whether such a programme can readily be incorporated into everyday life, and with what long-term

Ray, Pathak and Tomer (1991) conducted a study on the topic “Hatha yoga practices. **Objective:** objective of the study was energy expenditure,
Review of Related Literature

respiratory changes and intensity of exercise to critically observe the energy expenditure, exercise intensity and respiratory changes during a full yoga practice session. Oxygen consumption ($\dot{V}O_2$), carbon dioxide output ($\dot{V}CO_2$), pulmonary ventilation ($\dot{V}E$), respiratory rate (Fr) and tidal volume (VT), were measured in 16 physical posture (asanas), five yoga breathing maneuvers (BM) and two types of meditation. **Methodology:** Twenty male (age 27.3 ± 3.5 years, height 166.6 ± 5.4 cm and body weight 58.8 ± 9.6 kg) yoga instructors were studied. Their maximal oxygen consumption ($\dot{V}O_{2max}$) was recorded. The exercise intensity in asanas was expressed in percentage $\dot{V}O_{2max}$. In asanas, exercise intensity varied from 9.9 to 26.5% of $\dot{V}O_{2max}$. Highest energy cost was 3.02 kcal min$^{-1}$. In BM highest $\dot{V}E$ was 53.7 ± 15.5 l min$^{-1}$. VT was 0.97 ± 0.59, 1.41 ± 1.27 and 1.28 ± l/breath with corresponding Fr of 14.0 ± 5.3, 10.0 ± 6.35, 10.0 ± 5.8 breaths/min. Average energy expenditure in asanas, BM and meditation were 2.29, 1.91 and 1.37 kcal min$^{-1}$, respectively. Metabolic rate was generally in the range of 1–2 metabolic equivalents (MET) except in three asanas where it was >2 MET. $\dot{V}O_2$ was 0.27 ±0.05 and 0.24 ± 0.04 l min$^{-1}$ in meditation and Shavasana, respectively. **Results:** Although yogic practices are low intensity exercises within lactate threshold, physical performance improvement is possible owing to both better economy of breathing by BM and also by improvement in cardiovascular reserve. Other factors such as psycho-physiological and better relaxation may contribute to it.

**Kuppusamy M, Kamaldeen D, Pitani R, Amaldas J. (2016):** In yoga, Pranayama has a very important role in maintaining sound health. There is some strong scientific basis on constant physiological changes produced when Pranayama is practiced for long duration. Still, there exists a dearth of literature on the effect of Bhramari Pranayama (Bhr.P) on physiological systems. **OBJECTIVE:** objective of the study was to assess the immediate effect of Bhramari Pranayama (Bhr.P) practice on the resting cardiovascular parameters in healthy adolescents. **METHODOLOGY:** Sixty apparently healthy adolescents of both sex participated in the study. They were randomly divided into Bhr.P (n=30) and
control (n=30) group. Informed consent was obtained after explaining the detailed procedure of the study. Group practiced Bhramari Pranayama for 45 min (5 cycles) and control group was allowed to do normal breathing (12-16 breath/min). Heart rate (HR) was assessed by radial artery palpation method and blood pressure was recorded in supine position after 5 minutes of rest by sphygmomanometer. **RESULTS:** The HR reduced significantly (p<0.001) in group. BP indices, Pulse Pressure (PP), Mean Arterial Pressure (MAP), Rate Pressure Product (RPP) and Double Product (DoP) significantly decreased after Bhr.P practice compared with control. Pre and Post inter group analysis also showed that significant reduction in HR and BP indices in Bhr.P group.

**CONCLUSION:** Present study showed that Bhr.P practice produces relaxed state and in this state parasympathetic activity overrides the sympathetic activity. It suggests that Bhramari Pranayama improves the resting cardiovascular parameters in healthy adolescents.

**Andreoli, Joseph, Curtiss OBJECTIVE:** Some evidence suggests that Hatha yoga might be an effective practice to reduce anxiety. **Objective:** of the study was to examine the effect of Hatha yoga on anxiety, we conducted a meta-analysis of relevant studies extracted from, PsycINFO, the Cochrane Library, and manual searches. **METHODS:** The search identified 17 studies (11 waitlist controlled trials) totaling 501 participants who received Hatha yoga and who reported their levels of anxiety before and after the practice. We estimated the controlled and within-group random effects of the practice on anxiety. **RESULTS:** The pre-post within-group and controlled effect sizes were, Hedges' $g = 0.44$ and Hedges' $g = 0.61$, respectively. Treatment efficacy was positively associated with the total number of hours practiced. People with elevated levels of anxiety benefitted the most. Effect sizes were not moderated by study year, gender, presence of a medical disorder, or age. Although the quality of the studies was relatively low, the risk of study bias did not moderate the effect. **CONCLUSIONS:** Hatha yoga is a promising method for treating anxiety.
However, more well-controlled studies are needed to compare the efficacy of Hatha yoga.

Roopa, Ankad, Herur, Patil, Shashikala, Chinagudi reported that Asana, Pranayama, and meditation are three main techniques of yoga practiced in India over thousands of years to attain functional harmony between the body and mind. Recent studies on long-term yogic practices have shown improvements in cardiovascular functions. **Objective:** The present study was conducted to ascertain if a short-term practice of Pranayama and meditation had improvements in cardiovascular functions in healthy individuals with respect to age, gender, and body mass index (BMI). **SETTINGS AND DESIGN:** This interventional study was conducted in the Department of physiology of S.N. Medical College, Bagalkot. **METHODS:** Fifty healthy subjects (24 males and 26 females) of 20-60 years age group, fulfilling the inclusion and exclusion criteria underwent two hours daily yoga program for 15 days taught by a certified yoga teacher. Pre and post yoga cardiovascular functions were assessed by recording pulse rate, systolic blood pressure, diastolic blood pressure, and mean blood pressure. **STATISTICAL ANALYSIS USED:** The parameters were analyzed by Student's t test. **RESULTS:** There was significant reduction in resting pulse rate, systolic blood pressure, diastolic blood pressure, and mean arterial blood pressure after practicing Pranayama and meditation for 15 days. The response was similar in both the genders, both the age groups, <40 yrs and >40 yrs and both the groups with BMI, <25 kg/m(2) and >25 kg/m(2). **CONCLUSION:** This study showed beneficial effects of short term (15 days) regular Pranayama and meditation practice on cardiovascular functions irrespective of age, gender, and BMI in normal healthy individuals.