Chapter -2

Review of Literature
CHAPTER-II
REVIEW OF RELATED LITERATURE

The research scholar has gone through related literature available which are relevant to the study. The relevant studies found through various sources, which the research scholar has come across, are enumerated below.

Singh, A. Singh, S. and Singh, S. (2011) conducted a study on “Effects of 6-week yogic exercises training on blood pressure”. The aim of the study was to assess the effects of 6-week selected yogic exercises training on blood pressure. 20 purposively selected male blood pressure patients from Amritsar (Punjab, India), aged 30–50 years, volunteered to participate in this study. Subjects were assigned into two groups: A (experimental: N-10) and B (control: N-10). The subjects from Group A were subjected to a 6-week yogic exercises training programme which included 5 Asana and 3 Pranayama. This lasted 8 weeks and consisted of daily sessions, lasting 45 min. Both systolic and diastolic blood pressures were measured with the auscultatory method by using sphygmomanometer and stethoscope. Student’s t test was used to assess the between-group differences for dependent data to assess the Post and Pre differences. The level of p ≤ 0.05 was considered significant. The systolic and diastolic blood pressures significantly reduced in Group A experimental when compared with the control one. The yogic exercises training may be recommended to control blood pressure and may contribute to enhance health status and wellness.

Singh, R. (2010) made a study on “A study of certain yogic asanas and physical exercises of kinesthetic ability”. Eighty subject age ranged 19-21 years, were randomly divided in four groups, physical exercise
group, yogic group, combined group and control group. The experimental groups went for twelve weeks of treatment programme, both pre and post test were made for collection of data. The data collection was made on kinesthetic ability test by arms raising test suggested by Scott. The result of analysis of covariance (Ancova) showed significant difference in all the groups except the control group. Between the combined and yoga group, physical exercise group and yoga group, a significant difference in paired adjusted final mean is seen in the mean difference obtained by asana groups was most significant than other groups.

Singh, R. (2010) made a study “A study of certain yogic asanas and physical exercises on Balance ability” Eighty healthy adults were divided in four groups. Experimental group ‘A’, ‘B’, ‘C’ and control group ‘D’ of 20 subjects each were compared in this study. The purpose of this study was to investigate the response of certain asanas and exercise programme on balance ability and to assess their effectiveness as measured by ‘BASS-STRICK’ test (cross-wise), Johnson and Nelson (1988). The analysis of data revealed that the three experimental group trained by exercise, asanas and combined exercise and asanas, showed significant improvement (P>10.05), in performance of balance ability but the mean gain achieved by combined exercise and yogic asanas groups was higher than the other groups.

Singh, R.(2010) made a study with the aim to find out effect of pranayama on development of accuracy in air rifle shooting .For this forty eight boys from ninth standard of kendriya vidyalaya , Gwalior were randomly selected. The subjects were divided into two equal group’s one experimental and other one control. The experimental group A did ujjayi and anulome-viloma pranayama in swasthika asana for a period of eight weeks the ten round of pranayama of ujjayi and anuloma- viloma each
with Proportion of 1:2:2 the rechaka and kumbhka was double then the
puraka phase. The experimental group was practicing six days in a week.
The performance of subjects in shooting accuracy was recorded on CRT
target prior and after experimental period. The data collected from the
subjects were statistically analyzed by using T test. It was observed that
there was significant difference in the performances of experimental
group at 0.5 level of confidence.

Rajakumar, J. (2010) The purpose of the study is to analyze the
impact of yogic practices and physical exercises on selected physiological
variables among the intercollegiate soccer Players. To achieve this
purpose, sixty (60) male inter collegiate soccer players from the various
colleges; Chennai were selected at random. Their age ranged between 17
to 22. The selected subjects were divided in to three equal groups of 20
each, namely yogic practice group (Group A), physical exercises group
(Group B) and control group (Group C). The experimental groups have
underwent 12 weeks of training namely; yogic practices and physical
exercises respectively, whereas the control group (Group C) maintained
their daily routine activities and no special training was given. The
subjects of the three groups were tested using standardized tests and
procedures on selected physiological variables before and after the
Training period to find out the training efforts in the following test items:
Resting pulse rate through stethoscope, Breath holding time through
digital stop watch, Peak flow rate through Wright's peak flow meter. The
collected data were analyzed statistically through Analysis of Co-variance
(ANCOVA) and Schiff's pošt hoc test to find out the pre and post training
performances, compare the significant difference between the adjusted
final means and the better group. The yogic practice group showed
significant improvement due to 12 weeks training on resting pulse rate,
breath holding time and peak flow rate compared to the physical exercise and control group. In the overall training effects in terms of improved number of physiological variables and their magnitude of improvement through training, yogic practice group is found to be the better group when compared to the other two groups.

**Santoshi, J. (2010)** The purpose of the present study was to find out the effects of Calisthenics and Yogic exercises on selected Physical and Physiological variables. The study was conducted on a total of 120 randomly selected male students from Yogashastra College. Based on their initial performance they were divided in into four groups. Group-A, only calisthenics exercise group, Group-B, only yogasana practice group, Group- Combined group, (calisthenics and yogasana group), Group-D control group, (who didn’t undergo any treatment). Their age was ranging from 18 to 22 years.

**Ross, A. and Thomas, S. (2010)** made a study on “The Health Benefits of Yoga and Exercise” A Review of Comparison Studies, 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 downregulation of the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic nervous system (SNS). The purpose 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. Methods: 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 (n¼30), wait list controlled (n¼16), or comparison (n¼35). The most
common comparison intervention (n¼10) 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. 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.

Yogaraj, P. Ramaraj, P. Elangovan, R.(2010) The purpose of the study was Find out the Effect of Selected Yogic Practices and Physical Exercises on Bio-Chemical Variables among College Women Students. The study was conducted on 20 women students of Queen Mary’s College, Chennai, Tamil Nadu were selected as subjects. The selected subjects were divided in two groups. Group I underwent the selected yogic practices training and Group II underwent the physical exercises. The subject age ranged from 18 to 23 years. The subjects were selected at random from the College Women Students. The study was formulated as pre post test and pre experimental design. The yogic practice group had significant improvement in body cholesterol and improved triglyceride, HDL and LDL.

Sodhi, C. Singh, S. and Dandona, P. K., (2010) conducted a study on “The role of yoga breathing exercises, as an adjunct treatment for bronchial asthma is well recognized. One hundred twenty patients of asthma were randomized into two groups i.e Group A (yoga training
group) and Group B (control group). Each group included sixty patients. Pulmonary function tests were performed on all the patients at baseline, after 4 weeks and then after 8 weeks. Majority of the subjects in the two groups had mild disease (34 patients in Group A and 32 in Group B). Group A subjects showed a statistically significant increasing trend (P<0.01) in % predicted peak expiratory flow rate (PEFR), forced expiratory volume in the first second (FEV1), forced vital capacity (FVC), forced mid expiratory flow in 0.25–0.75 seconds (FEF25-75) and FEV1/FVC% ratio at 4 weeks and 8 weeks as compared to Group B. Thus, yoga breathing exercises used adjunctively with standard pharmacological treatment significantly improves pulmonary functions in patients with bronchial asthma.

Field, T.(2010) made a study on “Yoga clinical research review’ In this paper recent research is reviewed on the effects of yoga poses on psychological conditions including anxiety and depression, on pain syndromes, cardiovascular, autoimmune and immune conditions and on pregnancy. Further, the physiological effects of yoga including decreased heart rate and blood pressure and the physical effects including weight loss and increased muscle strength are reviewed. Finally, potential underlying mechanisms are proposed including the stimulation of pressure receptors leading to enhanced vagal activity and reduced cortisol. The reduction in cortisol, in turn, may contribute to positive effects such as enhanced immune function and a lower prematurity rate.

Sayyed, A. Patil, J. Chavan, V. Patil, S. Charugulla, S. Sontakke, A. and Kantak, N. (2010) intended a study to see the effect of Sudarshan Kriya Yoga on Lipid Profile, Pulmonary Function and Hemoglobin concentration; they conducted a work shop of 8 days consisting of 150 participants. Out of which 55 were included in the study
group. Our results show that after practicing Sudarshan Kriya, there is decrease in Total Cholesterol, LDL-Cholesterol along with significant increase in HDL-Cholesterol. There are significant changes in Pulmonary Function, but statistically non-significant changes in Hematological parameters. From the observation Sudarshan Kriya Yoga may play vital role in reducing Total Cholesterol (P<0.05), LDL-Cholesterol (P<0.001) and significantly increasing HDL-Cholesterol (P<0.001). Spirometric Pulmonary Function Tests studied were Forced Vital Capacity, Forced Expiratory Volume in first second, Peak Expiratory Flow Rate and Maximum Voluntary Ventilation. The results showed improvement in all Pulmonary Function parameters in all subjects as compared to before practicing Sudarshan Kriya Yoga. Thus Sudarshan Kriya Yoga may have therapeutic implication in the adjunctive (nonpharmacological) management of cardiovascular diseases and respiratory diseases. The present study confirmed the positive effect of Sudarshan Kriya Yoga on Lipid Profile and Pulmonary Function over period of 8 days.

Krzysztof, Stec. and Choudhry, R. (2009) The objective of this study was to investigate the effects of dynamic suryanamaskar on the negative breath holding capacity. 20 male subjects were selected from physical education department Banaras Hindu University, Varanasi. Dynamic suryanamaskar was considered the independent variables and negative breath holding was considered dependent variables. The repeated measures design was used for this study. Only one group of 20 participants was created. Tests were administrated in equal intervals of two weeks. The test started four weeks prior to the dynamic suryanamaskar treatment and took place every two weeks thereafter, for a total of three times. To determine the effect of dynamic suryanamaskar on physiological and anthropological variables on selected students. ANOVA was used at 0.05 level of significance, In relation to negative
breath holding capacity, a significant \((p < 0.5)\) effect of dynamic suryanamaskar was found.

**Aslan, U. B. and Livanelioglu, A. (2002)** made a study “Effects of Hatha yoga training on aerobic power and anaerobic power in healthy young adults”. A clinical study was carried out with the aim of investigating whether Hatha Yoga (HY) training affects aerobic and anaerobic power in healthy young adults. Material and method: 33 sedentary, healthy, young adult subjects, aged 18 to 26 were divided into two groups according to age, sex and activity levels. 10 female and 7 male (mean 20.06 +/- 2.41 years, range 18-26 years) young adults were trained with Hatha Yoga (HYG). The aerobic exercise group (AEG) consisted of 9 female and 7 male (mean 19.75 +/- 1.81 years, range 18-26 years) young adults who performed aerobic type strength and stretch exercises of at least 60% maximal heart rate or higher. Both training programs were given by a supervisor, one hour per day, four days per week, for six weeks. Subjects in both groups were assessed by Cooper’s 12 minutes running test for cardiovascular endurance and vertical jump test for anaerobic power before and after training. Results: Aerobic and anaerobic power increased by 9.8%, 5.5% following HY and by 6.6%, 2.3% following aerobic training respectively. A significant increase was found in aerobic power and anaerobic power \((p < 0.001)\) in HYG. There was a significant increase in aerobic power \((p < 0.01)\) in AEG, while anaerobic power of subjects in AEG were consistently higher compared to that of before training, statistically the difference was not significant \((p > 0.05)\). Although there was no substantial differences between the groups concerning cardiovascular endurance \((p > 0.05)\), anaerobic power was significantly higher \((p < 0.05)\) in the HYG. Conclusion: The results of this study suggest that HY training has positive effects on cardiovascular aerobic and anaerobic power. Therefore HY could be an
exercise option for enhancing aerobic and anaerobic power in young adults.

Udupa, K. et al. (2004) made a study “Modulation of cardiovascular response to exercise by yoga training”. This study reports the effects of yoga training on cardiovascular response to exercise and the time course of recovery after the exercise. Cardiovascular response to exercise was determined by Harvard step test using a platform of 45 cm height. The subjects were asked to step up and down the platform at a rate of 30/min for a total duration of 5 min or until fatigue, whichever was earlier. Heart rate (HR) and blood pressure response to exercise were measured in supine position before exercise and at 1, 2, 3, 4, 5, 7 and 10 minutes after the exercise. Rate-pressure product \[ \text{RPP} = \frac{(HR \times SP)}{100} \] and double product \( (\text{DoP} = HR \times MP) \), which are indices of work done by the heart were also calculated. Exercise produced a significant increase in HR, systolic pressure, RPP & DoP and a significant decrease in diastolic pressure. After two months of yoga training, exercise-induced changes in these parameters were significantly reduced. It is concluded that after yoga training a given level of exercise leads to a milder cardiovascular response, suggesting better exercise tolerance.

Prasad, K.V. et al. (1994) made a study “Comparison of effects of yoga & physical exercise in athletes”. The effect of pranayama and, a controlled breathing practice, on exercise tests was studied in athletes in two phases; sub-maximal and maximal exercise tests. At the end of phase I (one year) both the groups (control and experimental) achieved significantly higher work rate and reduction in oxygen consumption per unit work. There was a significant reduction in blood lactate and an increase in P/L ratio in the experimental group, at rest. At the end of phase II (two years), the oxygen consumption per unit work was found to
be significantly reduced and the work rate significantly increased in the experimental group. Blood lactate decreased significantly at rest in the experimental group only. Pyruvate and pyruvate-lactate ratio increased significantly in both the groups after exercise and at rest in the experimental group. The results in both phases showed that the subjects who practiced pranayama, and could achieve higher work rates with reduced oxygen consumption per unit work and without increase in blood lactate levels. The blood lactate levels were significantly low at rest.

Ray, U. S. et al. (2001) made a study “Effects of yogic asanas and physical exercise on body flexibility in middle aged men”. A study was undertaken 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 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. 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.

**Yadav, R. K. and Das, S. (2001)** made a study “Effect of yogic practice on pulmonary functions in young females”. During recent years, a lot of research work has been done to show the beneficial effects of yoga training. The present study was undertaken to assess the effects of yogic practice on some pulmonary functions. Sixty healthy young female subjects (age group 17-28 yrs.) were selected. They had to do the yogic practices daily for about one hour. The observations were recorded by MEDSPIROR, in the form of FVC, FEV-1 and PEFR on day-1, after 6 weeks and 12 weeks of their yogic practice. There was significant increase in FVC, FEV-1 and PEFR at the end of 12 weeks.

**Ray, U. S. et al. (2001)** made a study “Aerobic capacity and perceived exertion after practice of Hatha yogic exercises” Forty men from the Indian army (aged 19-23 yr) were administered maximal exercise on a bicycle ergo meter in a graded work load protocol. The oxygen consumption, carbon dioxide output, pulmonary ventilation, respiratory rate, heart rate (HR) etc., at maximal exercise and PE score immediately thereafter were recorded. The subjects were divided into two equal groups. Twelve subjects dropped out during the course of study. One group (yoga, n = 17) practiced Hatha yogic exercises for 1 h every morning (6 days in a week) for six months. The other group (PT, n = 11) underwent conventional physical exercise training during the same period. Both groups participated daily in different games for 1 h in the afternoon. In the 7th month, tests for maximal oxygen consumption (VO2Max) and PE were repeated on both groups of subjects. Absolute value of VO2Max increased significantly (P < 0.05) in the yoga group after 6 months of training. The PE scores after maximal exercise
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decreased significantly (P < 0.001) in the yoga group after 6 months but the PT group showed no change. The practice of Hatha yogic exercises along with games helps to improve aerobic capacity like the practice of conventional exercises (PT) along with games. The yoga group performed better than the PT group in terms of lower PE after exhaustive exercise.

**Karambelkar, P. V. et al. (1977)** made a study “Effect of short term yogic training on serum cholesterol level”. For the purpose of this study 22 males and females were selected and trained for three weeks in yogic physical culture. Pre and post test data made before and after training programme. He observed a reduction of mean cholesterol level in 22 males and females at the end of three weeks training in yogic physical culture. The reduction was not significant in the case of females. No significant changes were observed in weight, body fat percentage and skin fold.

**Patel et, al. (1975)** made a study “Determine the effect of yoga and bio-feedback on hypertension”. 34 patients were assigned at random either to six weeks of yoga method with bio-feed back or to general relaxation. Both groups showed a reduction in blood pressure although the decrease was significantly greater for the yoga group. The control group was then trained in yoga relaxation and their blood pressure feels to that of the other group (now used as control).

**Gharote, M. L. and Gangully, S.K. (1973)** made a study “Effect of yogic training on physical fitness”. Cardio-vascular fitness plays a vital role in the maintenance of proper health and physical fitness. The purpose was to determine the effects of long term yogic training program on cardio-vascular efficiency. Harvard step test was administered on eleven male students and the results of the study indicated that one hour
of daily yogic exercises including Pranayam schedule, significantly improve cardio-vascular efficiency of the students.

Nandi, S. and Adhikari, H. (1999) made a study “Effect of selected yogic practices on cardio-respiratory endurance of school boys.” conducted a study on the effect yogic practice on cardio-respiratory endurance of school boys. The present study was undertaken on twenty male students of Rajagram S.B.Raha institution Bankura. cardio-respiratory endurance was measured using cooper’s 12 minute run/walk test. During the experimental period the subjects were given yogic exercises for period of eight weeks. The final test was conducted after experimental period the data shows a significant improvement in the fitness test as a result of yogic practice.

Khodaskar, A. N. (1977) made a study “Comparative study of effects of yogic and non yogic exercises on selected physiological variables of Kabaddi players”. This study was conducted on 75 male Kabaddi players of age groups 18-25 years of local physical education training college. The subjects were divided into three groups, (a) experimental yogic exercises group (b) Non yogic exercises group and (c) control group. Yogic and Non Yogic training programme was given respectively to group A and B for six weeks for 30 minutes daily except Sundays. All these three groups were being involved in the common physical education programme of the college in addition to the experimental exercises regularly. The results showed that the training based on some yogic exercises had more positive effects compared to non-yogic exercises on the elected physiological variables.

Bhole, M. V. et, al. (1970) conducted a study on “Effect of yoga practices on Vital Capacity- A preliminary communication”.

(35)
Capacity was significantly increased from 3399 ml. to 3443 ml. in a group of 24 adult’s males undergoing training in yogic physical culture for three weeks in comparison to the increase from 3095 ml. to 3132 ml. in the control group.

**Kulkarni et al. (1997)** conducted a study on “Effect of short term yoga training programme on Peak Expiratory Rate” the present study was conducted on healthy adult males (nl=48) and females (n2=15) between the age group of 16-24 years. The Peak Expiratory Flow Rates were recorded by Mini Wrights peak flow meter before and after yoga training. The training was for the period of 21 days (3 weeks). The results showed an increase in the Peak Expiratory Flow Rate after yoga training.

**Santra, P. and Das, S.S. (1999)** conducted a study “Effect of yogic practices on Asthma”. Ten adult chronic asthmatic of age of selected yogic practices was planned and administered for a period of one year in three phases. The first phase consisted of a total of thirteen asanas of which five altogether twenty one yogic and it was administered for six months. After completion of the training programme, it was found that the number of asthmatic attack was noticeably reduced for all the subjects. In the case of attack, the intensity was minding the subject rarely any oral medicine.

**Bhole, M. V. and Karambelakar, P. V. (1971-72)** made a study “Effect of yoga training on vital capacity and breath holding time”. A study on male students on male students of the summer camp course in yoga held for one month in May at Kaivalyadham. The students were mostly physical educationists and of an age group between 18 to 50 years. They were taught twenty asanas, toe yogic breathing practices viz. Kapalbhati and Ujjaji. The students practiced for one a half hour every
morning for three weeks. After 3 weeks of training vital capacity was measured in ml. with empty stomach in the morning on Palmer’s six liter spirometre on the other day the breath holding time was noted down in seconds with a stop watch. In all 147 students the vital capacity increased at the final test rang of the increase was from 50 to 184 ml, average being 157 ml. for all the batches taken together.

**Gore, M. M. and Gharote, M.L. (1981)** conducted a study on “Effect of yogic training on Peak flow Rate”. Peak Expiratory flow rate was found to increase significantly in 105 males and 30 females at the end of 3 weeks of training in yogic physical culture indicating an improvement in the ventilator efficiency.

**Yadav, Y. H. (1973)** made a study “Yoga for students”. Interprets to be the control of bio-energy through the respiratory system. According to him pranayam is collection of health, lungs, emotion, feeling the respiratory system. Some of the benefits of pranayam mentioned are (1) better blood circulation (2) increasing lung capacity (3) more oxygenation (4) purification of blood (5) longevity (6) emotional control (7) mental concentration (8) cheerfulness.

**Karambelkar, P. V. Gaungly, S. K. and Moorthy, A. M. (1981)** made a study “Effect of yogic practices on cholesterol level in females”. Investigated that yogic training helped the females to reduce their cholesterol level. Although apparently a slight lowering in the mean weight and triceps skin fold measurement, these reductions is statistically non significant relationship was found between weight reductions, triceps changes and cholesterol level changes. The present study has confirmed that just as in males given even three weeks of yogic programme reduce cholesterol significantly in female also. It was also observed in this that
the females have generally higher cholesterol than normal. On the whole, yogic training the mean cholesterol level significantly.

**Bhole, M. V. et al. (1974)** made a study “Effect of yoga practices on Vital capacity”. 89 measured vital capacity in two groups at males’ mach and trained them for three weeks. The result should be significant increase in vital capacity after yogic training in the experimental group when compared control group.

**Wanger, M. A. and Bagchi, B. K. (1996)** measured finger temperature and finger pulse volume before and after Kapalbhati, Ujjayi and Bhasrika Pranayam and reported that ;average finger temperature decreases in Ujjayi and Bhasrika only. It showed increases in Kapalbhati. The heart rate showed elevation of two beats per minute during Bhasrika and 4 beats during Kapalbhati. In non-yogic hyperventilation, the elevation was much greater, amounting to increase of 28-32 beats per minute. In the same subjects systolic blood pressure increased by 6 mm. of hgl. During Kapalbhati and decreased slightly during Ujjjayi.

**Shenbagavali, A. and vallimurugan, V. (2009)** conducted a study “Effects of selected yogic exercise and psychological skill training on selected psycho-physiological and psycho-motor variables of high level participants”. Forty five intercollegiate level players, age ranging from 18-24 years, from Murthy College of physical education coimbature, were selected as subjects at random and were divided in to three equal groups namely, psychological skills training group, yogic exercise group and control group. Progressive muscular relaxation and imagery were given to the psychological skills training and selected yoga training group, whereas no training was given to control group. The results show a significant difference in cognitive anxiety, somatic
anxiety, self confidence, heart rate, hand eye coordination and reaction time whereas diastolic blood pressure, systolic blood pressure and body temperature showed an insignificant difference.

**Oczenski, W. and Schwarz, S.** (2004) conducted a study on “vital capacity man oeuvre in general anesthesia”, as a telecasts occurs in most patients during general anesthesia and may be one of the major cause for the development of hypoxemia and nosocomial pneumonia, its prevention may be considered as an important objectives in preoperative management. The major causative mechanisms are the loss of respiratory muscles tone, compression and gas absorption. Vital capacity man oeuvres have been proposed as a means to eliminate atelectasis in the vast majority of patients and restore normal pulmonary gas exchange during general anesthesia, in this review, we describe the pathogenesis atelectasis in the preoperative period discuss in the light of recent published investigations the suitability of the vital capacity man oeuvre as tool during general anesthesia. Reviewing the current literature a vital capacity man oeuvre general anesthesia may only be useful under specific circumstances when mechanical ventilation with a high inspiratory fracton of oxygen is required or during cardiac surgery at end of cardiopulmonary by pass to reduce the amount of atelecatasis and to maintain adequate gas exchange.

**Gore, M. M.** (2003) made a study on immediate effect on anulome vilom pranayama in four different conditions on eight male volunteers who were beginners or fresh students of yoga. Four conditions were (1) without kumbhaka as well as time ratio (2) with out kumbhaka but with time ratio of 1:2:2, (3) with kumbhaka and time ratio 1:2:2 and (4) with kumbhaka and three bandhas and time ratio of 1:2:2 results showed that in condition no 1 there was insignificant reduction in blood pressure and
increase in pulse rate, in condition no 2 also an increase in systolic blood pressure by 8.7mmHg was non significant (p>0.05), where in condition no 3 an increase in systolic blood pressure by 5.3mm Hg was significant (p<0.05) and in condition no 4 blood pressure increased but not significant (p<.10) by 6.8mmHg, marginal increase in pulse rate 3 beats per minute was non significant. The increase in blood pressure due to practice of kumbhaka, bandhas and specific time ratio was found with in the normal range and therefore the traditional technique of anulom, viloma pranayama (condition no 3 and no 4) are physiologically safe, even for beginners.

Tripathi, R. Bhagirathi, S.E. and Pathak, A. (2005). investigated the" effect of kapalbhati on vital capacity and positive and negative breath holding capacity". 40 male subjects were selected randomly from B, P, E, first year class of vidya niketan collage of physical education, Bhopal. All together these 40 subjects were categorized in two equal groups by random sampling. It was ensured that all of them were medically fit to undergo the training for research project. The age of subject ranged from 18 - 21 years. In order to study the effect of kapalbhati on vital capacity, positive and negative breath holding capacity. The test of significant (t'test) was chosen to test the hypothesis and was applied at 0.5 level of significance. The finding of study showed significant improvement in all the selected variables, vital capacity, and positive and negative breath holding time as a result of eight weeks training program of kapalbhati, hence the hypothesis was accepted.

Tripathi, U. S. (2004) studied on the effects of a 12 weeks physical education and yogic exercise on selected physiological variables of mentally retarded students. The variable selected for the study were systolic blood pressure, diastolic blood pressure, resting heart rate and
maximum breath holding time, in order to study the comparative effect of physical education, yoga and programme on selected physiological variables, the analysis of co-variance was applied at 0.05 level of significance to find out the difference between the adjusted means for four groups, critical difference for adjusted final mean was applied on the basis of the result, the following conclusions were drawn in case of SBP(1042) DBP(0.14) PP(0.08) and MBHC(0.21), the experimental treatment groups did not prove experimental treatments proved to be superior then the control groups and sequence of the training effect of the experimental groups was physical education > yoga > physical education and yoga.

Singh, S. Kyizom, T. Singh, K.P. Tandon, O. P. and Madhu, S.V. (2008). studied that “influence of pranayamas and yoga asanas on serum insulin, blood glucose and profile in type -2 diabetes” this study was conducted on 60 patients of uncomplicated type -2 diabetes (age 35-60 years, 1-1110 years duration) were divided in two groups, group 1, N=30 performed yoga along with the conventional hypoglycemic medicines. Duration of this study was 45 days. Basal recordings of blood glucose (fasting and post prandial), lipid profile and serum insulin was taken at the time of recruitment and the second readings after 45 days. Results showed significant improvement in all the biochemical parameters in group 1, while group 2 showed significant improvement only few parameters, thus suggesting a beneficial effect of yoga regimen on these parameters in diabetic patients.

Amita, S. Prabhakar, S. Manoj. I. And Harmindar, S. (2009) made a study on “effect of yoga nindra on blood glucose level in diabetic patients” this study was conducted on 41 middle aged, type 2 diabetic patients. Who were on oral hypoglycaemic. These patients were divided
in to two groups; A- 20 patients on oral hypoglycaemic with yoga-nindra, and B- 21 patients were on oral hypoglycaemic alone. Yoga-nindra practiced for 30 minutes daily up to 90 days. Patients were recorded every 30 days. Results of this study showed that most of the symptoms were subsided (p<0.004, significant) and fall of mean blood glucose level was significant after 3 months of yoga-nindra. This fall was 21.3 mg/dl. p<0.0007 (from 159+ 12.7 to137.7+23.15) in fasting and 17.95 mg/dl, p= 0.02(form 2555.45+16.85 to237.5+30.54) in post pranetial glucose level. Result of this study suggests that subjects on yoga nindra with drey regimen had batter control in their fluctuating blood glucose and symptoms associate with diabetes. Compared to those were on oral hypoglcaemics alone.

Singh, B.B. and Singh, M. L. (2009) investigated the effect of yoga and aerobic on the selected 60 patients suffering from insomnia, three groups were randomly assigned there experiment namely, aerobic program, yoga program, and combined aerobic program, to analysis the data “t test” analysis of variance, and covariance, was computed the findings revealed that all three programs were effective in the treatment of insomnia. The post hoc analysis of data revealed that aerobic programs. The yogic and combined, aerobic and yogic programs are almost equally effective in the treatment of insomnia.

Mahajan A.S. Reedy,K.S. and Sachdeva,U.(1999). studied that the effect of yogic life style on lipid status in angina patients and normal subjects with risk factor of coronary artery disease. The parameters included the body weight estimation of serum cholesterol, triglycerides, H D L, L D L and cholesterol H D L ratio. A base line evaluation was done and then the angina patients and the risk factor subjects were randomly assigned as control (n=41) and investigation (yoga) group (52).
Life style advice was given two both groups, an intrigued course of yoga training was given for four days followed by practice at home. Serial evaluation of both the groups was done. After fourth, tenth and fourteenth weeks’ dyslimpidemia was constant feature in all cases. An inconsistent pattern of change was observed in control group of angina (18) and risk factor subject (n=23) the subject practing yoga showed a regular decrease in all lipid parameters expect H D L, the effect of yogic life style on some of modifiable explain the preventive and therapeutic beneficial effect observed in coronary artery decease.

Grandjean, P. W. (1996) examined the influence of a work site aerobic training program serum lipid and lipoproteins and cardiovascular fitness in female employees (ss) from Westinghouse Corporation (college station Texas) volunteered for the study. Ss were randomly assigned to either an exercise group [EX (n=20)] or control group (n=17) prior to training (pre) and following training (post). All ss were measured for weight (wt), body composition (% fat) and tested for maximal oxygen consumption (vo2 max) pre and post lipid analysis included. Total cholesterol (tc), high density lipoprotein cholesterol (hdl-c), low density lipoprotein (ldl-c), triglycerides (tgl), following pre testing, the exercise group aerobically trained by walking, jogging and cycling at least3 days per week for 24 weeks in vo2 max (p<0.0006)and a 2 kg weight loss in exercise group (p<0.025) with no change in control group, both exercise (ss exhibited a loss in % fat (p<0.0001) and a decrease in Tc (p<0.001) and Ldl-c (p<0.0001), no difference were observed between groups or over the training period for Vldl-c difference did not reach statistical significance (p<0.0625). these results demonstrate that aerobic training by females in a worksite fitness program significant improves cardiovascular fitness without altering lipids or lipoproteins.
Lary, A. (1994) examined the relationship between aerobic dance (AD) volume and total HDL cholesterol ratios in 11,826 women (m=40.4 years) and assessed the effect of potential confounders, such as age, smoking, alcohol use, body mass, estrogen use, and physical activity other than aerobic dance, on the aerobic dance–cholesterol association. Physical activity was assessed using a questionnaire that measured frequency and duration of 21 activities. Blood (venipuncture) was analyzed by a certified lab using the enzymatic method, five aerobic dance volume categories were formed, aerobic dance 0- aerobic dance 4, aerobic dance 0 subjects were not involved with aerobic dance. Aerobic dance 4 reflected the highest aerobic dance volume. Aerobic dance 0 was used as the reference group, high risk was defined as ratios >4.5 risk of elevated total/HDL ratios was substantially lower for aerobic dance 4– aerobic dance 1 compared to aerobic dance with out control of the potential confounding factors (odds ratios : 0.03, 95% CI = 0.20 - 0.40, CI = 0.30 – 0.53, 0.56, CI = 0.44 – 0.72, 0.72, CI = 0.53 -.97, respectively) after adjusted for all of the potential confounders simultaneously, risk remained significantly lower for aerobic dance 4 – aerobic dance 3 (OR:0.57, CI= 0.33 – 0.99, 0.67, CI=.45 -1.00) respectively. Although cause and percent conclusion are not warranted, regular aerobic dance seems to be strongly related to favorable cholesterol level in women. Women involved in high and moderately high volume, aerobic dance appear to be reduced risk unhealthy cholesterol level compared to women not involved in aerobic dance.

Saldana, Cardose. Hernandez, G. C. Deleon,S. and Zamora, G.J. (1995) investigated the effects of long term high level physical exercise on plasma lipids and lipoproteins. Ninety one young athletes, 70 males and 21 females, who practiced sports such as running, swimming,
rowing, boxing and soccer, were studied. The control group included 101
healthy subjects, 77 male, 24 females with sedentary life style. The mean
plasma levels of the total cholesterol [T C (p=0.04)], low density
lipoprotein cholesterol [L D L –c (p=0.04)] and the atherogenic index
(p=0.01) were lower, and high density lipoprotein cholesterol [H D L-c
(p<0.05)] significantly higher in male athletes, then in controls,. Mean
plasma lipids and compared with their control. The prevalence of
hypercholesterolemia, hiperglycerodemia and low H D L –C levels, were
lower in male and female athletes of the five sports disciplines than
sedentary controls. However only hypercholesterolemia (p<0.05) and the
atherogenic index (p<0.01) were statistically different. The results,
consistent with data previously published, show that low plasma levels of
TG and high levels of H D L –C characterizes the athletes who practice
an aerobic physical activity, additionally, in male athlete we found that
long- term exercise appears to reduce L D L- C plasma levels. These
latter findings agree with most, but not all, students in the literature. They
conclude that athlete’s have lipid profile that they may be proactive
against the development of atherosclerosis.

**Suter, E. and Hawes, M.R. (1993)** studied the relationship of
physical activity, body fat, diet and blood lipid profile in youths of 10 -15
years. Blood lipid profile was examined in 39 boys and 58 girls aged 10 -
15 years. It was concluded that the association between beneficial
lifestyle habits and blood profile generally described in adult are already
evident in children over years; promotion of physical activity at
adolescent age seems to be warranted.

**Shaver, L. G. (1981)** found out that endurance training tends to
lower the resting heart rate (Brady cardia) for instance resting heart rates
in highly trained athletes may be as low or lower than 40-45 beats per
minutes on the other hand. In healthy but untrained subjects resting heart rates may be as high as 90 to 100 beats per minute, thus the trained subject is generally characterized as having a low resting heart rate the untrained as a high resting heart rate.

**Egoroff, A.** (1924) studied that changes taking place in the white blood cells as a result of exercise may be divided in to three groups.

1- lymphocytic phase, characterized by an increase in lymphocytes up to 55%. It appears after exercise of short duration.

2- Neutrophilic phase, characterized by an increase in neutrophiles some times to 78%. This phase usually followes the first, usually develops during exercise requiring a considerable amount of energy.

3- Intoxication phase, which is sub divided in to, regenerative types. The regenerative is merely a higher degree of the neutrophilic phase. The neturophlies may rise 90%, the lymphocytes may drop 5%, iosinophiles disappear entirely. This type develops after exercise of high intensity, the degenerative type has marked drop in the total number of white blood cells.

**Shrivastava, A. and Swapana, A. M.** (2005) assessed the health benefits of one month yoga training in first year untrained male MBBS, students. By calculating BMI and caloric intake they assessed the nutritional status, 14% underweight (BMI 17 +0.9) and 8% overweight (BMI 27.9+1.84) attained normal weight following training. The calorie intake showed significant improvement (p<0.05). The health status scores (CMI) obtained after practice (76.94+5.48) showed significant (0.001) reduction as compared to pre training score (98.0+19.7). Indian version of taylor’s modified MAS and weschler adult performance intelligence scale.
used. The study revealed a significant reduction in anxiety scores following training (31.74+7.32) as compared to score (37.82+16.85) before training performance. Performance IQ score improved significantly (p<0.001). The training significantly improved the following of general well being, physical and mental efficiency, confidence, and coping ability of the participants as assessed by a subjective well being inventory.

Kenyon, G. S. (1961) selected sixteen college students who underwent eight treadmill exercises, varying in intensity and duration. Peripheral blood samples were obtained before and after exercise. The data suggested that treadmill exercise elicited eosinopenia within broad limits exercise eosinopenia was proportional to work. A short period of physical training had no effect on the number, of eosinophils in the peripheral circulation or the eosinophils response to exercise. Adaptation to exercise was unrelated to the circulasatory eosinophils the degree of exercise eosinopenia.

Stephens, M. (1976) studied the effect of isotonic and isometric exercise on selected physiological variable in which hemoglobin concentration was not observed under exercise conditions, but isotonic conditions resulted in greater hemoglobin concentration than isometric.

Krebs, Paul, S. Scally, Brain,C. and Einkgraf, Stephen, A. (1983) selected 36 male volunteers to investigate the effect of marathon running on the 20 blood parameters. Red blood corpuscles was one of the variables studied pre- marathon test done at the race site within one hour of the start of the race. Post marathon test were taken with 15 minute of the race completion. The analysis of data revealed a significant increase at .05 levels in the concentration of red blood corpuscles in the blood.
Uppal, A. K. (1986) studied the hematological response to graded exercise in males belonging to high and low fitness group. Twenty students of both groups were at random using a table of random numbers to serve as subject for the study. The subjects belonging to both the high and low fitness group were tested in few selected hematological variables. The exercise stress for both grades of exercise was provided with the help of electrical ergometer. The stimulus volume was fixed at five minutes which was kept constant for both the exercise conditions. A significant change was observed in red blood cells as a result of application of sub maximumal load as compared to the change brought about by inter- mediate load and resting condition. The difference in the means of resting condition and inter- mediate load was not found statistically significant in this variable, in the case of low fitness group, both the inter mediate and sub maximal loads produced a significant change in the red blood cells as compared to the resting condition.

Panny, C.D. (1982) have pointed out that the role of exercise (especially running) in raising the level of H D L – cholesterol has received considerable attention over the past few years and is presently being researched in various laborites through out the world. Epidemiologic research indicates that a vigorous exercise program may bring about an increased level of H D L-cholesterol in young and middle aged men. While at the same time, exercise appears to bring about minor, if any decrease in total serum cholesterol levels.

Tooth, M. J. Gardner, A. W. and Poehlmon, E. T. (1995) investigated difference in resting metabolic rate ( r.m.r) and cardiovascular disease risk factors among 86 middle-aged men (36 to 59) years classified as resistance trained [R,T(n=19) aerobic trained [A T,(n=37) ] or untrained [U T,(n= 30)] according to habitual exercise
patterns, r m r body composition, body fat distribution, systolic blood pressure, maximum aerobic capacity, plasma lipid levels, and fasting level of insulin, glucose and thyroid hormones were measured, we found that r m r adjusted for difference in fat- free mass, showed a tendency to be greater in aerobic trained mean as compared with resistance trained mean(p=0.99) and was greater in aerobic trained mean as compared with untrained mean (p<0.05).no difference in r m r were noted between resistance trained and untrained mean. untrained mean had higher values for total cholesterol, triglycerides, low density lipoprotein cholesterol(L D L-C)and the insulin to glucose ratio and lower values for high density lipoprotein (H D L-C) all p<0.1 as compared with resistance trained and aerobic trained mean, where as no difference in these variables were noted between resistance trained and aerobic trained men. Diastolic blood pressure was lower in resistance trained men as compared with both aerobic trained and untrained men. Stepwise regression analysis showed that variation in body fatness accounted for the greatest variations in fasting lipid profile, blood pressure and the insulin to glucose ratio among groups.

Young, D. R. (1993) opined that aerobic exercise training studies involving volunteers generally on an improved cardiovascular risk factor profile. Little is known, however, about associations between physical activities to evaluate functional fitness. Normally flexibility, agility, strength, and endurance, were affected positively by the exercise program (all p<0.1). Adjusting for preprocess by means of analysis of covariance revealed a significant difference between the groups psychological wellbeing, which favors the exercise (p=.012) after 12 months, back pain reported by exercise was lower than reported by control groups (p=.740). These results suggested then after 12 months exercising can produce a
significant increase above initial levels in the functional fitness. Wellbing and self-perceived health of osteopenic women. Intensity of back pain can also be lowered by exercise. The exercise program succeed in stabilizing spinal BMD but had no effect on femoral BMD.

**Milton, G. C. (1967)** selected 463 collage males and studied the effect of three program of distance running and an isometric exercise program on the development of cardio-vascular efficiency. The subject trained four days a week, either running 10, 20 or 30 minutes each session, or with isometric exercise and no running. All the four groups made significant gains in cardio-vascular efficiency. The three running groups improved more than the isometric group but with no difference among three group. although running was superior to isometric exercise. The amount of running showed no relation to cardiovascular endurance.

**Krishanan, A. (1971)** made a study effect of selected bhartiyan exercise and yogic exercise on physiological variables among school boys he observed that due to selected bhartiyan exercise and yogic practice pulse rate was decreased significantly and breath holding time, cardiovascular efficiency and vital capacity improved significantly.

**Counsilman, J. E. (1977)** in a study on swimmers during five consecutive summers (1960-1964) noted a statistical rise in the number of red blood cells of the blood, as a result of six weeks training in over 50% of the performance time slightly favorable the swimmers who had experienced a rise in their red blood cells counts.

**Johnson and Burkirke (1973)** mentioned about the changes in the respiratory responses to exercise during training. The changes were progressive and four to six weeks were regarded as adequate to read maximum efficiency ‘changes in pulmonary ventilation for minute were associated with a decrease in rate and an increase in depth of breathing
(increase vital capacity). In the trained subjects, even at rest the depth of breathing was found to be greater and the respiratory rate should slowed a decrease from even twenty to about eight breaths per minute.

Singh, Baljeet, Dolly, Kewal Krishan, Dhaiya, Rajesh, and Singh, Mahendra (2004). Conducted a study with the aim to find out the effect of yogic asana on physical fitness of college level players in relation to sports performance. For this purpose 80 female players of different games were taken as a sample these 80 players further divided in to two groups of 40 each. One group was given the training of selected asanas for twelve weeks and the other group was kept controlled. Result show that regular practices of yoga asanas improved some of the physical fitness components, but others hand no effect of it.

Stec, K. and Choudhary, R. (2009). Made a study on “The effect of dynamic suryanamaskar on negative breath holding capacity of physical education students.” 20 male subjects were selected from department of physical education at Banaras Hindu university. Dynamic suryanamaskar was considered the independent variable and negative breath holding capacity was considered the dependent variable. The repeated measures design was used for this study. Only one group of 20 students was created. Test were created equal intervals of two weeks. The tests started four weeks prior to the dynamic suryanamaskar treatment and took place every two weeks thereafter, for a total of, three times. Tests took place every two weeks during the treatment and after the completion of the treatment, they were continued for the following four weeks period. To determine the effect of dynamic suryanamaskar on physiological and anthropometric variables of selected students. One way ANOVA was used at .05 level of significance. In relation to negative
breath holding capacity, a significant (p<.05) effect of dynamic suryanamaskar was found.

**Danucalov, M.A. (2008)** made a study on “Cardiorespiratory and metabolic changes during yoga sessions: the effects of respiratory exercises and meditation practices.” The novelty of this study was to investigate the changes in cardiorespiratory and metabolic intensity brought about by the practice of pranayamas (breathing exercises of yoga) and meditation during the same hatha-yoga session. The technique applied was the one advocated by the hatha-yoga system. Nine yoga instructors-five females and four males, mean age of 44+/−11, 6, were subjected to analysis of the gases expired during three distinct periods of 30 min: rest, respiratory exercises and meditative practice. A metabolic open circuit computerized system was applied (VO2000, MedGraphics-USA). The oxygen uptake (VO(2)) and the carbon dioxide output (VCO(2)) were statistically different (P <or= 0.05) during meditation and pranayama practices when compared with rest. The heart rate also suffered relevant reductions when results at rest were compared with those during meditation. A smaller proportion of lipids was metabolized during meditation practice compared with rest. The results suggest that the meditation used in this study reduces the metabolic rate whereas the specific pranayama technique in this study increases it when compared with the rest state.

**Gordon, L. A. et, al. (2008)** conducted a study on “Effect of exercise therapy on lipid profile and oxidative stress indicators in patients with type 2 diabetes”. This study investigated the impact of Hatha yoga and conventional physical training (PT) exercise regimens on biochemical, oxidative stress indicators and oxidant status in patients with type 2 diabetes. This prospective randomized study consisted of 77 type 2
diabetic patients in the Hatha yoga exercise group that were matched with a similar number of type 2 diabetic patients in the conventional PT exercise and control groups. Biochemical parameters such as fasting blood glucose (FBG), serum total cholesterol (TC), triglycerides, low-density lipoprotein (LDL), very low-density lipoproteins (VLDL) and high-density lipoprotein (HDL) were determined at baseline and at two consecutive three monthly intervals. The oxidative stress indicators (malondialdehyde - MDA, protein oxidation - POX, phospholipase A2 - PLA2 activity) and oxidative status [superoxide dismutase (SOD) and catalase activities] were measured. The concentrations of FBG in the Hatha yoga and conventional PT exercise groups after six months decreased by 29.48% and 27.43% respectively (P < 0.0001) and there was a significant reduction in serum TC in both groups (P < 0.0001). The concentrations of VLDL in the managed groups after six months differed significantly from baseline values (P = 0.036). Lipid peroxidation as indicated by MDA significantly decreased by 19.9% and 18.1% in the Hatha yoga and conventional PT exercise groups respectively (P < 0.0001); whilst the activity of SOD significantly increased by 24.08% and 20.18% respectively (P = 0.031). There was no significant difference in the baseline and 6 months activities of PLA2 and catalase after six months although the latter increased by 13.68% and 13.19% in the Hatha yoga and conventional PT exercise groups respectively (P = 0.144). The study demonstrate the efficacy of Hatha yoga exercise on fasting blood glucose, lipid profile, oxidative stress markers and antioxidant status in patients with type 2 diabetes and suggest that Hatha yoga exercise and conventional PT exercise may have therapeutic preventative and protective effects on diabetes mellitus by decreasing oxidative stress and improving antioxidant status
Alyson Ross and Sue Thomas (2010) made a study “The Health Benefits of Yoga and Exercise: A Review of Comparison Studies.” 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). The purpose 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. Using PubMed® 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. 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.

Brown, R.P. and Gerbarg, P.L. (2009) made a study on, “Yoga breathing, meditation, and longevity”. Yoga breathing is an important part of health and spiritual practices in Indo-Tibetan traditions. Considered fundamental for the development of physical well-being,
meditation, awareness, and enlightenment, it is both a form of meditation in itself and a preparation for deep meditation. Yoga breathing (pranayama) can rapidly bring the mind to the present moment and reduce stress. In this paper, we review data indicating how breath work can affect longevity mechanisms in some ways that overlap with meditation and in other ways that are different from, but that synergistically enhance, the effects of meditation. We also provide clinical evidence for the use of yoga breathing in the treatment of depression, anxiety, post-traumatic stress disorder, and for victims of mass disasters. By inducing stress resilience, breath work enables us to rapidly and compassionately relieve many forms of suffering.

Cade, W. T. et, al. (2010) “Yoga lifestyle intervention reduces blood pressure in HIV-infected adults with cardiovascular disease risk factors”. Sixty HIV-infected adults with mild-moderate CVD risk were assigned to 20 weeks of supervised yoga practice or standard of care treatment. Baseline and week 20 measures were: 2-h oral glucose tolerance test with insulin monitoring, body composition, fasting serum lipid/lipoprotein profile, resting blood pressures, CD4 T-cell count and plasma HIV RNA, and the Medical Outcomes Study Short Form (SF)-36 health-related QOL inventory. Resting systolic and diastolic blood pressures improved more (P=0.04) in the yoga group (-5 +/- 2 and -3 +/- 1 mmHg, respectively) than in the standard of care group (+1 +/- 2 and+2 +/- 2 mmHg, respectively). However, there was no greater reduction in body weight, fat mass or proatherogenic lipids, or improvements in glucose tolerance or overall QOL after yoga. Immune and virological status was not adversely affected. Among traditional lifestyle modifications, yoga is a low-cost, simple to administer, non-pharmacological, popular behavioral intervention that can lower blood
pressure in pre-hypertensive HIV-infected adults with mild-moderate CVD risk factors.

**Ray, U. S. et, al. (2001).** made a study on, “Effect of yogic exercises on physical and mental health of young fellowship course trainees”. A study was undertaken 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 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 wellbeing were 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. 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.

process of excessive exercise training in high-performance athletes that may lead to overtraining syndrome. Overtraining syndrome is a neuroendocrine disorder characterized by poor performance in competition, inability to maintain training loads, persistent fatigue, reduced catecholamine excretion, frequent illness, disturbed sleep and alterations in mood state. Although high-performance athletes are generally not clinically immune deficient, there is evidence that several immune parameters are suppressed during prolonged periods of intense exercise training. These include decreases in neutrophil function, serum and salivary immunoglobulin concentrations and natural killer cell number and possibly cytotoxic activity in peripheral blood. Moreover, the incidence of symptoms of upper respiratory tract infection increases during periods of endurance training. However, all of these changes appear to result from prolonged periods of intense exercise training, rather than from the effects of overtraining syndrome itself. At present, there is no single objective marker to identify overtraining syndrome. It is best identified by a combination of markers, such as decreases in urinary nor-epinephrine output, maximal heart rate and blood lactate levels, impaired sport performance and work output at 110% of individual anaerobic threshold, and daily self-analysis by the athlete (e.g. high fatigue and stress ratings). The mechanisms underlying overtraining syndrome have not been clearly identified, but are likely to involve autonomic dysfunction and possibly increased cytokine production resulting from the physical stress of intense daily training with inadequate recovery.

Sisodia, A. and Tomar, S.S. (2009). conduct a study on, “effect of anuloma viloma pranayama on selected respiratory variables”. 30 male students was selected For the purpose of the study, 15 students in each
group (experimental & control) with the purpose to investigate the effect of anuloma viloma pranayama on selected respiratory variables. The selected respiratory variables were vital capacity, peak flow rate, positive breath holding time & negative breath holding time. Analysis of co-variance (ANCOVA) was employed at 0.05 level of significance. On the basis of results, the following conclusion were drawn: significance improvement were found in relation to vital capacity (189.37), peak flow rate (13.44) & negative breath holding time (47.17). no significance effect was found on male students in relation to positive breath holding time (1.042).

Krishan, K. and Sharma, S. K. (2009). Made a study, “effect of yogic practices and callisthenic exercise on resting pulse rate variable of secondary school boys”. The objective of this research was to study the effect of yogic practices and callisthenic exercise on resting pulse rate variable of secondary school boys in Hamirpur district of U.P., total 120 boys (40 yogic practice, 40 callisthenic, 40 control) were selected. And pre test was taken for all groups. Six week training of yogic practices, and callisthenic exercise was given to respective groups. A post test was taken after six week of training. Analysis of variance was applied to compare the four groups, for their heart rate response pattern, and scheffe’s post hoc test was applied to find out the superiority of the group, the result of the study indicated that resting pulse rate of yogic practices group was better than the other two groups.

Ghose, S. K. (2003). Made a study, “effects of physical exercises, yogic practices and their combined training on selected physiological variables among high school boys. For the purpose of the study sixty subjects, age ranged from 13-15 years, were randomly divided in to four groups of equal number; physical exercise group, yogic practices group,
combined group and the control group. The experimental groups underwent 12 weeks treatment programme. Both pre-test and post-test were made for the collection of data. The data collection was made on the selected physiological variables, namely, pulse rate, respiratory rate, breath-holding time and mean arterial pressure. The result of analysis of covariance (ANCOVA) followed by the scheffe’s test showed significant decrease in all the groups except control group. Between combined group, physical exercise group and control group. A significant difference in paired adjusted final mean is seen. But there was no significant difference in pulse rate in control group when compared with the physical exercise group.

Mishra, S.R., Tripathi, P.K., And Bera, T. K., (2003) conducted a study on “Cardiac efficiency of long distance runners and yoga practitioners.” for the purpose of the study cardiac efficiency of 120 male students, in age ranged 16 to 17 years, from the Aggarsain Public School, Kurukeshetra, Haryana, was tested through Harvard step test. The students were divided in to three equally matched groups, long distance runner, yoga group, control group; duration of the experimental period was 6-month that was divided into two sessions of three months each. Result of 2 X 3 factorial ANOVA revealed that yoga practitioner had higher cardiac efficiency than long distance runners.

Nandi, S., Adhikari, H., and Bera, T.K.,(2004) Research reports reveal that lifestyle affects overall health in deteriorating cardio respiratory function of today’s school students. The present investigation was therefore, undertaken to study the Effects of aerobic exercise, yogic practice and the combination of both on cardio-respiratory endurance. Eighty school boys (9th & 10th grades) were randomly selected and then subdivided into four equal groups (n=20) in each group. Three training
programme viz. aerobic exercise, yogic practice, and combination of both, were randomly allotted to three groups, where the remaining one group studied as the control group. The performances on cooper’s test (12 minutes run & walk test) of all the groups were recorded before and after the 12 weeks training programmes. Result of ANCOVA reveals that the aerobic exercise group showed the greater cardio respiratory endurance ability. However the yogic practices as well as combination of both also have significant improvement on the development of cardio respiratory endurance.

Michishita, R. Shono, N. Inoue, T. Tsuruta, T. Node, K. (2010) made a study on Effect of exercise therapy on monocyte and neutrophil counts in overweight women. This study aimed to test the hypothesis that endurance aerobic exercise training has cardiovascular protective effects as a result of inhibiting inflammatory processes Forty-two overweight women [age, 53.4 +/- 9.8 years; body mass index (BMI), 28.0 +/- 2.8] received electric bicycle ergo meter exercise therapy at the lactate threshold intensity for 30 to 60 minutes per day, 1 to 6 times per week for 6 weeks. The exercise training was performed within the possible load (exercise duration and frequency) for each subject. Leukocyte, monocyte, and neutrophil counts significantly decreased after the exercise therapy (P < 0.05). In simple regression analysis, percent changes in monocyte and neutrophil counts were correlated with percent changes in fasting triglyceride levels, insulin sensitivity index, BMI, and maximal oxygen uptake (VO2max). In stepwise multiple regression analysis, the percent change in monocyte counts was associated with percent changes in fasting triglyceride and VO2max (r = 0.368, P < 0.001), and the percent change in neutrophil counts was associated with percent changes in insulin sensitivity index and BMI (r = 0.292, P < 0.001). Endurance aerobic exercise training
can influence some inflammatory processes. Furthermore, increased aerobic capacity may be anti-inflammatory and have cardiovascular protective effects in overweight women.

Gopal, A. Mondal, S. Gandhi, A. Arora, S. Bhattacharjee, J. (2011) made a study Effect of integrated yoga practices on immune responses in examination stress - A preliminary study. The study was carried out on sixty first-year MBBS students randomly assigned to yoga group and control group (30 each). The yoga group underwent integrated yoga practices for 35 minutes daily in the presence of trained yoga teacher for 12 weeks. Control group did not undergo any kind of yoga practice or stress management. Physiological parameters like heart rate, respiratory rate, and blood pressure were measured. Global Assessment of Recent Stress Scale and Spielbergers State Anxiety score were assessed at baseline and during the examination. Serum cortisol levels, IL-4, and IFN-γ levels were determined by enzyme-linked immunosorbent assay technique. In the yoga group, no significant difference was observed in physiological parameters during the examination stress, whereas in the control group, a significant increase was observed. Likewise, the indicators of psychological stress showed highly significant difference in control group compared with significant difference in yoga group. During the examination, the increase in serum cortical and decrease in serum IFN-γ in yoga group was less significant ($P<0.01$) than in the control group ($P<0.001$). Both the groups demonstrated an increase in serum IL-4 levels, the changes being insignificant for the duration of the study. Yoga resists the autonomic changes and impairment of cellular immunity seen in examination stress.

Danilo, F. Santaella, Cesar, R. S. Devesa, Marcos, R. Rojo, Marcelo, B. P. Amato, Luciano, F. Drager, Karina R. Casali, Nicola,
Montano, Geraldo, Lorenzi-Filho (2011) Conducted a study with the aim of Yoga respiratory training improves respiratory function and cardiac sympathovagal balance in elderly subjects: a randomised controlled trial. Since ageing is associated with a decline in pulmonary function, heart rate variability and spontaneous baroreflex, and recent studies suggest that yoga respiratory exercises may improve respiratory and cardiovascular function, we hypothesised that yoga respiratory training may improve respiratory function and cardiac autonomic modulation in healthy elderly subjects. 76 healthy elderly subjects were enrolled in a randomised control trial in Brazil and 29 completed the study (age 68±6 years, 34% males, body mass index 25±3 kg/m²). Subjects were randomised into a 4-month training program (2 classes/week plus home exercises) of either stretching (control, n=14) or respiratory exercises (yoga, n=15). Yoga respiratory exercises (Bhastrika) consisted of rapid forced expirations followed by inspiration through the right nostril, inspiratory apnoea with generation of intrathoracic negative pressure, and expiration through the left nostril. Pulmonary function, maximum expiratory and inspiratory pressures (PEmax and PImax, respectively), heart rate variability and blood pressure variability for spontaneous baroreflex determination were determined at baseline and after 4 months. Subjects in both groups had similar demographic parameters. Physiological variables did not change after 4 months in the control group. However, in the yoga group, there were significant increases in PEmax (34%, p<0.0001) and PImax (26%, p<0.0001) and a significant decrease in the low frequency component (a marker of cardiac sympathetic modulation) and low frequency/high frequency ratio (marker of sympathovagal balance) of heart rate variability (40%, p<0.001). Spontaneous baroreflex did not change, and quality of life only marginally increased in the yoga group. Respiratory
yoga training may be beneficial for the elderly healthy population by improving respiratory function and sympathovagal balance.

**Hala Nabil Yahiya (2010)** The research aims to identify the effect of Hatha Yoga exercises on some physiological and psychological variables and the level of performances in judo. Researcher used the experimental group, using design for one group by the pre and post measurement. The size of research sample (30) student from judo students who are in the third year of Faculty of Physical Education and measure some physiological variables like (pulse rate, blood pressure, systolic and, vital capacity, duration of self-hiding) and some psychological variables like (the ability to relax - muscular tension - focus attention). Student- t test were used for the analyzing the data. The researcher Recommendations with Use Hatha Yoga exercises because of its clear and positive impact on improving the psychological and physiological variables and skill, encourage female students to the practice of sports activities in general, to alleviate the pressures of life.

**Madanmohan, Kaviraja Udapa, A.B. Bhavanani, P. Vijayalakshmi and A. Surendiran (2005)** made a study on the effect of slow and fast pranayams on reaction time and cardiorespiratory 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) pranayams 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. 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 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 bhasrika group. It is concluded that different types of pranayams produce different physiological responses in normal young volunteers.

Paranamik, T.N., Sharma, D. P., Singh, A. (2010) made a study, the main purpose of the study was to investigate the effect of yogic practices (asana & pranayama) on selected physiological variables & BMI. For the purpose of this study 45 students were randomly selected at Noida college physical education, Dadari, from Bachelor of physical education. There after they have been randomly distributed in to three groups of 15 each. (control group, asanas group, pranayama group,) the result of t test revealed after 42 days specific yogic practices programme has been concluded that vital capacity, positive breath holding time, negative breath holding time, resting pulse rate, peak flow ratio & BMI, has been found significant at 0.05 level. Where as systolic blood pressure, and diastolic blood pressure, was found to be insignificant. In the light of the same scholar conclude that a yogic practices place positive role in appraisal of physiological variables & above mentioned BMI.

Lega, S. (2010) made a study on the effects of yoga training on cardio-respiratory function on school children. During the surya namaskar the muscle of entire body experience stretch and pressure alternately and therefore it is said to give more benefits with less expenditure time. Yogic life style, yogic diet, yogic attitudes, and various yogic practices help man to strengthen his body and mind and develop positive health. 30 healthy students were recruited for the present study. the subjects were randomly
divided into the yoga, surya namaskar, and control group 10 each. The subjects did yogasana and surya namaskar daily 30-40 minutes for total duration of 4 months. The subjects of control group did not receive any training and attend school as usual during the period of the study. Height, weight, body mass index, heart rate, systolic blood pressure, diastolic blood pressure, isometric hand grip strength, endurance time for 33% of IHG and cardiovascular response to exercise were measured. The data was analyzed by using paired t test to compare the pre and post training values of each group. Body weight as well as BMI of the yoga and surya namaskar group increased significantly. There was a statically significant increase in IHG and endurance in both groups the yoga training of four months also improved the ability of cardiovascular system to withstand stressful stimuli.

Yaduvanshi, S. and Mishra, D. (2011) studied the effect of suryanamaskar on selected physiological variables of challenge learners. For the purpose of this study thirty hearing impaired students age ranged 9-14 years were selected from BGC School for hearing impaired, and Navvani Vidhyalaya, Badhir bachcho ke liye in varanasi. Heart rate, respiratory rate, cardiovascular endurance, was measured before and after the training programme of 12 weeks. t- Test was applied to find out the effect of suryanamaskar on selected physiological variables of challenge learners. The level of significance was 0.05 on the basis of finding it can be concluded that heart rate and respiratory rate of challenge learners was significantly improved and there was no significant difference was found on cardiovascular endurance.

Acharya, B.K., Upadhyay, A.K., Upadhyay, R.T., and Kumar, A., (2010) made a study with the aim to find out the Effect of Pranayama (voluntary regulated breathing) and Yogasana (yoga
postures) on lipid profile in normal healthy junior footballers. And for the purpose of this study, twenty male junior footballers younger than 15 years of age, belonging to the Mohun Bagan Athletic Club, Kolkata, were selected at Haridwar. They had to play in a Football Cup organized in UK and they were here to practice yoga sequences taught by Swami Ramdevji. They were of age 14.65±0.58 years and none of them had a history of lipid metabolism disorders. All the footballers were healthy with no history of smoking or alcohol consumption. The scope and objectives of the present study were explained to the subjects and their written consent was obtained for participation in the study. The institutional ethical committee had approved the study protocol and design. The subjects were asked to follow their routine diet and exercise pattern during the period of study. None of the subjects were exposed to yogic practices before this yoga training session. There was a significant reduction in the levels of serum cholesterol, Low-density lipoprotein (LDL) cholesterol, serum triglycerides, and very-low-density lipoprotein (VLDL)-cholesterol at the end of the yoga session. The results indicated that the fasting blood sugar (FBS) level was positively elevated in junior footballers. This demonstrated that Pranayama and Yogasana were helpful in regulating sugar level also.

Kasundra, P. M. Thumar, P.B. and Mungra, J.D. (2010) The objective of the study was to assess the impact of Pranayama training on selected components of blood. For the present study subject selected were students of Bachelor of Arts studying in Mahadev Desai Gram Seva Mahavidyalaya. Randomly 30 students were selected for the study and then subjects was divided into two equal groups randomly consisting of 15 subjects each belonging to one experimental (Group A) and one control group (Group B). Group A were exposed to Pranayama and group
B was control group. Experimental group participated in Pranayama training for eight weeks. The variables and test items selected for the present study were cholesterol, blood glucose, hemoglobin, WBC, RBC, platelets. For analyzing the data t-test was used to find out the significant difference between pre-test and post-test. This study revealed significant difference in pre-test and post-test of experimental groups of selected blood components i.e. cholesterol, blood glucose, hemoglobin, WBC, RBC, platelets. This shows that Pranayama training has an impact on selected components of blood.