Chapter II

Review of Related Literature
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2.1 INTRODUCTION

Research in any field implies a step ahead in the exploration of the unknown concepts. The investigator should prepare him/her properly to explore the unknown concepts. One such preparation is the collection of appropriate knowledge of what has already been done in a particular field. A step towards unknown can only be taken after a thorough review of the literature and research conducted in that area. Any research without such a review of related literature is likely to be a building without any foundation. The review of related literature provides a clear picture of the study to be taken as a pre-requisite to the proper planning of the problem and conducting the research. The review of the past investigations in a particular field serves as a guide to the investigator as it helps him/her to avoid duplication of the work already done in that area. The knowledge of what has already been used in the area of research regarding the methods, tools used for data gathering and the results of their analysis, keeps the investigator systematic in his/her own endeavour. According to John W. Best (1977), “Practically all human knowledge can be found in books and libraries. Unlike other animals that must start a new with each generation, man builds upon the accumulated and recorded knowledge of the past. His constant adding to the vast store of knowledge makes possible progress in all areas of human endeavour.”

According to Borg (2007), “The literature in any field forms the foundation upon which all future work will be built. If we fail to build the foundation of knowledge provided by the review of literature, our work is likely to be shallow and naïve and will often duplicate work that has already being done better by someone else.”

A review of related literature is important as it provides background and technical knowledge useful in conducting the proposed research. A careful
review of the research journals, books, dissertations, theses and other sources of information on the problem to be investigated is one of the important steps in the planning of any research study. In the present research, the investigator has reviewed most of the relevant and reported studies done in India and abroad. A limited number of studies have been undertaken in connection with yogic intervention programmes. So, the investigator viewed the studies, which are directly or indirectly related to the problem area and has presented them in the chronological order.

Moorthy (1982) conducted a study to see the influence of selected yogic exercises on minimum muscular fitness of the elementary school children of 6 to 11 years old and their minimum muscular fitness was measured. Yogic training programme of selected asanas was given to all the selected subjects who were kept for the yogic training programme. Six weeks yogic training was given to them. After completing the training programme, their minimum muscular fitness was again measured. The result revealed a positive change amongst the school children

Sahasi, Sundaram and Shambhunath (1984) conducted a study to see the effect of yoga on patients suffering from different ailments. Initially, study included 108 patients; however, only 52 patients could report in post yoga C.M.I. Health Questionnaire. The results revealed significant reduction in distress scores among patients who practised yoga.

Vishal (1985) studied the personality pattern and motive structure of yogis and effect of yogic practices on certain psychological parameters. He found that the yogis differed from the general population in their mean scores on certain factors of personality and values.

Madanimohan et al., (1992) assessed the effect of yoga training on reaction time, respiratory endurance and muscular strength. Twenty seven male medical students aged 18 to 21 years were randomly selected from Jawaharlal
Institute of Postgraduate Medical Education and Research in Pondicherry. They were given yoga training for a period of 12 weeks of 30 minutes every day for six days. Muscular strength was measured using hand grip dynamometer. The results of pre-test and post-test were compared, using t-ratio test. There was significant improvement on reaction time, respiratory endurance and muscular strength among male students after the intervention.

_Sandhu_ (1994) conducted a study to see the effect of selected yoga _asanas_ on motor abilities of high school students. Twelve students ranging in age group of 12 to 16 years participated in the study. These students were randomly divided into two groups: namely, experimental and control groups. The researcher found that yoga _asanas_ have positive effects on speed, strength, endurance, agility, flexibility, power and balance among school students.

_Sakthinanavel_ (1995) studied the effect of continuous running, yogic _pranayama_, and combination of continuous running and yogic _pranayama_ exercise on cardio-respiratory endurance, selected physiological and psychological variables among male students of Indira nagar at Pondicherry. Sixty school students were randomly assigned to four groups*. Group–I performed continuous running, Group–II performed _pranayama_, Group–III performed the combined continuous running and _pranayama_ and Group–IV acted as the control group and was not involved in any specific training. Subjects in each group were trained with respective programmers for a period of fourteen weeks, four times a week and each training session lasted for 30 minutes. Prior to and at the end of training period all subjects were tested for cardio-respiratory endurance, selected physiological and psychological variables. Only combined continuous running and yogic _pranayama_ group showed significant improvement on cardio-respiratory endurance and psychological variables and some of the physiological variables expect for cardiac variables like systolic pressure, diastolic pressure, mean pressure, pulse pressure, and rate pressure product.
Aminbhavi and Vijayalaxmi (1996) studied the impact of yoga on attitude and mental health of adults. The sample of the study comprised 20 individuals, out of which 16 were male and 4 were females. The age of the subjects ranged from 21 to 30 years. The tools used to collect data included P.G.I. Attitude Scale and Mental Health Questionnaire. The collected data were treated with mean, S.D. and t-test. Findings of the study revealed that:

(a) Attitudes of adults towards yoga before and after attending training course in yoga differed significantly.

(b) The mental health scores of adults before and after training in yoga differed significantly.

Raghuraj et al., (1996) conducted a study to determine whether breathing through a particular nostril has a lateralized effect on hand grip strength. One hundred and thirty right-hand dominant school children between 11 and 18 years of age were randomly assigned to 5 groups. Each group had a specific yoga practice in addition to the regular programme in a yoga camp for 10 days. The practices were: (1) right, (2) left, (3) alternate-nostril breathing (4) breath awareness and (5) practice of mudras. Hand grip strength of both hands was assessed initially and at the end of 10 days for all 5 groups. The right, left- and alternate-nostril breathing groups had a significant increase in grip strength of both hands, ranging from 4.1% to 6.5%, at the end of the camp, though without any lateralization effect. The breath awareness and mudra groups showed no change. The results suggest that yoga breathing through a particular nostril, or through alternate nostrils increases hand grip strength of both hands without lateralization.

Abhang and Bhogal (1999) studied the effect of short term yogic training on personality factors of school children of 8th standard belonging to both sexes (age group of 12-16 years) studying in V.P.S High School, Lonavla, India. Yoga group comprising of 24 children practised yoga asanas and control
A group consisting of 24 children underwent physical education programme. The psychological tests were administered to the students to evaluate their physical health and personality factors namely, self-confidence, social ability, ambitiousness and emotional balance prior to and after completion of both the programmes conducted for the same duration of 45 minutes every day over a period of two months. The researcher found that short term yogic training programme was effective for developing personality factors.

Srivastava and Verma (1999) conducted an experimental study to see the effect of yoga education on school students. The sample comprised 411 students with ages ranging from 14 to 16 years, selected through incidental purposeful sampling from eight randomly selected Vidya Bharati School of Delhi, Uttar Pradesh, Madhya Pradesh and Bihar. Two groups, namely, experimental group and control group were formed. The groups were equated in age, academic achievement, and socio-economic status. Experimental group was given yogic exercises for 40 minutes. Data were collected separately during the pre-test and post-test. Mean, S.D. and t-test were employed for data analysis. The following findings were observed:

(a) The yogic exercises were helpful in the increase of chest expansion, weight and grip strength, and the decrease of the bulk in the body.

(b) Yogic exercises were helpful in increasing self-confidence.

(c) The control group had not shown any changes in their state of anxiety, whereas a definite shift was found from higher state anxiety to lower state anxiety among the experimental group. It was concluded that the yogic exercises were helpful in improving the mental harmony and peace.

(d) It was also found that yogic practices help in increasing the level of adjustment.

Lolage and Berra (1999) conducted a study on effect of pranayama on cardio-vascular endurance of Kho-Kho players. This experiment included 40
males of college level Kho-Kho players. The subjects were randomly assigned into two equal groups and their cardio-vascular efficiency was assessed by administering three tests namely, Harvard Step Test, 8 Minute Run Test and 1600 meter Run Test. The experimental group underwent training on pranayama in two sessions of 45 minutes every day for a total period of 3 months. Control group did not participate in the above programme. The researchers found that pranayamas were useful in improving cardio-vascular endurance of Kho-Kho players

Singh (2000) studied the effects of Yogasanas on physical and psychological fitness of college level students in relation to sports performance. He found that yoga asanas had improved the physical fitness components viz. strength, ability, flexibility, speed and endurance of sports persons. He also found reductions in the anxiety and improvement in emotional stability of the experimental group.

Tripathi (2001) compared cardiac efficiency among the regular practitioners of physical activities and yogic activities. One hundred and twenty students in the age group of 15 to 17 years participated in the experimental treatment. These students were randomly divided into the two groups: namely, experimental and control group. Treatments in terms of yogic and physical exercises were given to the respective groups for a period of six months. Finding of the study revealed that students belonging to yogic activity group were found to be significantly higher in their cardiac efficiency, compared to the physical activity group.

Ray et al., (2001) studied the effect of yogic exercises on physical and mental health of young fellowship course trainees. Fifty four trainees of 20 to 25 years age group were divided randomly in two groups i.e., yoga and control groups. The 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, anxiety, depression, mental well-being 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, in the 5th and 10th months, yoga group had relatively lower sympathetic activity than the control group. There was improvement in performance at sub-maximal level of exercise and in an aerobic 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 functioning after the yogic practices.

_Sonia_ (2003) studied the impact of yoga _asanas_ on the physical fitness of girl students of a school in Karnal, Haryana. Sixty female students of class 10th, 11th and 12th were selected for the study. The age group of the subjects ranged from 13 to 17 years. The students were divided into experimental and control groups of 30 each. Treatment in terms of _asanas_ and _pranayamas_ was given to the experimental group for 10 weeks, whereas control group was exposed to the routine physical activities. It was found that regular practice of yoga _asanas_ and _pranayamas_ had improved endurance, flexibility, strength and explosive power but the regular practice of yoga _asanas_ had no significant effect on the speed.

_Harinath et al._, (2004) conducted a study on effects of _Hatha_ yoga and _Omkar_ meditation on cardio respiratory performance, psychological profile, and melatonin secretion. Thirty healthy men in the age group of 25 to 35 years
volunteered for the study. They were randomly divided in two groups of 15 each. Group-I, served as control, performed body flexibility exercises for forty minutes and slow running for twenty minutes during morning hours and played games for sixty minutes during evening hours daily for three months. Group-II, the experimental group, practised selected yogic asanas (postures) for forty-five minutes and pranayama for fifteen minutes during the morning, whereas during the evening hours these subjects performed preparatory yogic postures for fifteen minutes, pranayama for fifteen minutes, and meditation for thirty minutes daily, for three months. Orthostatic tolerance, heart rate, blood pressure, respiratory rate, dynamic lung function and psychological profile were measured before and after three 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. Yogic practices for three months resulted in an improvement in cardio respiratory performance and psychological 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. 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.

*Kamakhya* (2004) studied the *Yoga nidra* and its impact on student’s well-being. The study aimed at finding out the effect of *Yoga nidra* on stress, anxiety and general well-being on college-going students. The study was conducted at the yoga clinic of *Dev Sanskriti Vishwavidyalaya*. Practice time was thirty minutes and the duration was six months. Forty students were taken from P.G. yoga classes for observing the effects as well as 12 were in control group. The result shows a significant change as *yoga nidra* positively decreased the stress level of the
subjects whereas no significant change was seen in the anxiety level. The yoga nidra positively increased the general well-being of the subjects.

*Nandi et al., (2004)* studied the effect of selected aerobic exercises, yogic practices and the combination of both on cardio-respiratory endurance. Eighty school boys of 9th and 10th grades were randomly selected and then sub-divided into four equal groups (20 in each group). Three training programmes namely, aerobic exercises, yogic practices and combination of aerobic exercise and yogic practice, were randomly assigned to all the three groups, whereas the remaining group was studied as a control group. The performance on Cooper’s test (12 minutes run-walk) of all the groups was recorded before and after the 12 weeks training programme. The researcher found that aerobic exercise group showed greater cardio-respiratory endurance ability. However, the yogic practices as well as combination of aerobic exercises and yogic practices both also had significant improvement in the development of cardio-respiratory endurance.

*Brown and Gerbarg (2005)* found that the yogic breathing is a unique method for balancing the autonomic nervous system and influencing psychological and stress-related disorders. Part–I of this series presented a neurophysiologic theory of the effects of *Sudarshan Kriya Yoga* (SKY). Part–II reviewed clinical studies, researcher’s own clinical observations, and guidelines for the safe and effective use of yoga breathe techniques in a wide range of clinical conditions. Although more clinical studies are needed to document the benefits of programmes that combine pranayama (yogic breathing), asanas (yoga postures), and meditation, there is sufficient evidence to consider *Sudarshan Kriya yoga* to be a beneficial, low-risk, low-cost adjunct to the treatment of stress, anxiety, post-traumatic stress disorder, depression, stress-related medical illnesses, substance abuse, and rehabilitation of criminal offenders. Yoga techniques enhanced well-being, mood, attention, mental focus, and stress tolerance. It was suggested that proper training by skilled teachers and a thirty-minute practice every day will maximize the benefits.
Health care providers play a crucial role in encouraging patients to maintain their yoga practices. 

Krishnan (2006) studied the personality development through yoga practices. The study was aimed at investigating the effect of simplified kundalini yoga on personality development of adolescents. The study was conducted on four hundred fifty students of both sexes from government, government-aided and private schools situated in Chennai. Two hundred fifty students formed the experimental group and two hundred students formed the control group. Training consisting of simplified physical exercises, meditation and introspection, was imparted to the experimental group. ‘T’ test was used to study the impact of the yoga on the various aspects of personality and the academic achievement of the students. Analysis of variance was done to find out the differences in the aspects of personality and improvement, if any, in the academic achievement of the practitioners with respect to type of school, sex, and subject studied. It was concluded that sex and subjects studied have no significant bearing on the effects of simplified kundalini yoga, but yoga had a significant effect on the personality and the academic achievement of the students.

Kumar (2006) studied the effect of yogic therapy on diabetic patients. Thirty diabetic patients were included in the study. The experimental group underwent yogic programme that consisted of asana, pranayama, mudra, sudhikriya, kriya and meditation. The control group received no training. The experimental period was of three months. The experimental group was given a training of yogic exercises of one hour a day in the morning for eight weeks. At the completion of three months training programme for the experimental group, the same test was used to check the blood sugar of all thirty subjects (experimental fifteen, control group fifteen) through Accue-check active blood glucose meter. The researcher found that the blood sugar level was significantly reduced after the yoga exercises.
Roy (2006) studied the effect of selected yoga practices on motor ability of the bronchial asthmatic patients. The subjects were residing in a hostel and their age varied from 13 to 19 years. Their diet, daily routine of work and their environment conditions were same as those of their fellow students. The subjects were divided into two groups, namely, A and B. Group-A (experimental group) consisting of 6 boys whereas Group-B (control group) comprising 6 boys. Practices were given to the experimental group for 12 weeks under direct supervision of the experimenter. All the subjects were directed not to take any medicine, special food, cold drink etc. before and after their involvement in yoga practices, their motor ability was tested and measured. The researcher found significant improvement in motor ability of the experimental group.

Kumar (2006) conducted a study on the improvement of physical and mental health through “Yoga nidra”. The study aimed at identifying the effect of Yoga nidra on Alpha Electroencephalography (E.E.G.) and Galvanic Skin response (G.S.R.) of college-going students. The sample consisted of eighty students which includes forty males and forty females. A control group of thirty students (fifteen males and fifteen female) was taken up in the study. The study was conducted at the yoga clinic of Dev Sanskriti Vishwavidyalaya. Practice time was thirty minutes and the duration was six months. The result shows a significant change as Yoga nidra positively increase the Alpha E.E.G. and G.S.R. of the subjects. This indicates the improvement of physical and mental health as a result of practising Yoga nidra.

Reddy and Kumar (2006) compared yogasanas and aerobic dance and their effects on selected motor fitness components in girl students. Seventy five girl students of 11 to 12 years age of Andhra Pradesh Residential School—Hasanparthy, Warangal, Andhra Pradesh—were the subjects of this study. The subjects were divided into 3 groups, namely, control, yogasana and aerobic dance groups. Yogasana and aerobic dance groups underwent training in yogasanas and
aerobic dance respectively for twelve weeks. They found that both yogasana and aerobic dance groups had shown significant improvement after training with respect to speed, agility, flexibility and cardio-respiratory endurance.

Singh (2006) conducted a study on the effects of selected yogic practices on physical and psychological variables of deaf and dumb children. A group of 100 deaf and dumb children was selected randomly from Mata Prakash Kaur Hearing & speech Handicapped Welfare Centre, Karnal and Rotary Club School for the deaf at Ambala, Haryana. The age group ranged from 14 to 20 years. These students were equally divided into two groups i.e., experimental and control groups, each consisting of 50 students. These students went through yogic exercises for nine weeks through training programme under strict supervision of the researcher and a special teacher for deaf and dumb. The researchers found that experimental group has shown statistically significant results on psychological variables i.e., self-confidence, overall adjustment, emotional stability, intelligence and mental health as compared to physical variables. It was concluded that yogic practices improve the psychological variables among deaf and dumb children.

Gupta et al., (2006) studied the effect of yoga-based lifestyle intervention on the state and trait anxiety. The aim of the study was to study the short-term impact of a comprehensive but brief lifestyle intervention, based on yoga, on anxiety levels in normal and sick subjects. The study was the result of operational research, carried out in the Integral Health Clinic (IHC) at the Department of Physiology of All India Institute of Medical Sciences, New Delhi. The subjects had history of hypertension, coronary artery disease, diabetes mellitus, obesity, psychiatric disorders (depression, anxiety, and stress), gastrointestinal problems (non ulcer dyspepsia, duodenal ulcers, irritable bowel disease, Crohn’s disease, chronic constipation) and thyroid disorders (hyperthyroidism and hypothyroidism). The intervention consisted of asanas, pranayama, relaxation techniques, group support, individualized
advice, and lectures and films on philosophy of yoga, the place of yoga in daily life, meditation, stress management, nutrition, and knowledge about the illness. The outcome measures were anxiety scores, taken on the first and last day of the course. Anxiety scores, both state and trait anxiety, were significantly reduced. Among the sick subjects, significant improvement was seen in the anxiety levels of patients of hypertension, coronary artery disease, obesity, cervical spondylitis and those with psychiatric disorders. The observations suggest that a short educational programme for lifestyle modification and stress management leads to remarkable reduction in the anxiety scores within a period of 10 days.

Preetha (2006) conducted a study to find out the effect of selected yogasanas and aerobic exercises on selected physical, physiological and psychological variables among women students of Pondicherry University. Sample aged between 20 to 25 years was selected randomly and divided into equally three groups: control and two experimental groups. Experimental group–I underwent aerobic exercises, Experimental group–II underwent yogasana practice. The training session of both groups was held five days in a week, for a period of twelve weeks. Control group did not undergo any training. Prior to and at the end of training period, all subjects were tested for selected physical, physiological and psychological variables. Aerobic exercises and yoga practice group showed significant improvement in selected physical, physiological and psychological variables like weight, flexibility, and balance among experimental group than the control group.

David et al., (2007) studied yoga as a complementary treatment of depression. Twenty seven females and ten males were enrolled in the study. The pre and post-intervention assessment data was collected. The intervention consisted of twenty classes, led by senior Iyenger yoga teachers, in three courses of twenty yoga classes each. All participants were diagnosed with
unipolar major depression in partial session. Psychological and biological characteristics were assessed in pre and post-intervention, and participants rated their mood states before and after each class. They found that the beneficial effects not only addressed the bio-medically defined symptoms of unipolar major depression but also yields improvements in a more broadly defined set of reports of mood state experience.

Sinha (2007) studied the effect of Integrated Yoga Module on intelligence in school children—a randomized control study. The objectives of the study were to examine the effect of yoga and physical exercises on intelligence. Sample comprised 201 school children, aged 9 to 13 years (age mean and SD 10.72 ± 1.25), randomly divided into two groups: yoga (N=101) and control (N=100). They were participating in a residential summer camp for 10 days in the campus of Swami Vivekananda Yoga Anusandhana Samsthana (SVYASA). Yoga group underwent Integrated Yoga Practices (IYP), including asanas, suryanamaskara (sun salutation), pranayama (breath control), chanting, bhajan etc, while the control group practised physical exercises like jogging, physical training, breathing exercises, games, creativity, patriotic songs etc. A standardized tool, Premila Group Test of Intelligence (PGTI) was used to determine the IQ scores. Assessments were done on 1st and 10th day of the course. Standardized mean difference in all subjects showed significant improvement in IQ scores of 4.47 % and -7.03 % respectively in yoga and control groups. In the yoga group, out of the six components of cognitive abilities, (analogies, classification, disarranged sentences, same-opposite, series and best answer) significant improvement (Wilcoxon Signed Ranks Test) was found in five factors except the best answer. In control group, there was no improvement in 2 factors (same-opposite and series). Comparison between yoga and control groups (Mann-Whitney U-test) showed significant difference between groups on 2 factors namely ‘same-opposite’ and ‘series’. Gender effect showed no significant difference between boys and girls in both the groups. Age-wise analysis showed that girls of 10 years age group had the
best result in yoga group. Thus, the researcher concluded that an integrated yoga practice of 9 days in residential set up is effective in improving IQ level of school children of 9 to 13 years.

Hadi (2007) studied the effects of *hatha* yoga on well-being in healthy adults. The study was designed using the Short Form (SF)-36 questionnaire on 107 volunteers (44 males and 63 females, mean age 34 years, standard deviation 7) who attended yoga classes for 6 months. They completed the questionnaire before and after the yoga practice. There was significant improvement in scores for all health items. The differences according to age, sex and education level were not significant. The researcher discovered that yoga can improve physical and mental health, and promotes well-being.

Gupta (2007) explored the impact of yoga practices on adjustment patterns and self-concept. The study was conducted on 100 subjects (60 males and 40 females) doing a four-month Hindi certificate course in yogic studies at Bihar Yoga Bharti, Mungar, Bihar. The Bell Adjustment Inventory adopted by Mohsin and Hussain (1970) and Mohsin Self-Concept Inventory (1979) were used for measuring the variables. Results indicated that the practice of yoga had a significant impact on different areas of adjustment as well as in building a positive self-image.

Bhushan (2007) studied the effect of *yoga nidra* on qualitative transformation in personality of youngsters. The study was conducted on two separate samples of 86 boys and 102 girls. The subjects belonged to the age range of 15 to 18 years. One hour of yoga *nidra* class was given to the experimental groups continuously for a period of one month while no such practice was given to the control groups. The Tri-Dimensional Inventory was administered in pre-post condition to measure the level of *sattva*, *rajas* and *tamas* gunas. Comparison of pre-post *yoga nidra* period on the selected test indicated that the practice of yoga *nidra* substantially increased the level of
sattva guna and significantly decreased the level of rajas and tamas gunas in the practising female subjects in comparison to control group. Among the male subjects, substantial increase in sattva guna has been found but the decrease in the level of rajas and tamas gunas has not been found significant.

Sidhaye and Anaspure (2008) conducted an experimental study to know the effect of yoga and meditation on emotional intelligence of B.Ed. students. Fifty six B.Ed. students of Tilak Maharashtra University (TMU), Pune were selected for the study. Practices of 1 hour were given to them for one month under direct supervision of the experts. Mayer Salovey Caurso Emotional Intelligence Test (MSCEIT) was used to collect the data before and after the experimental period. It was concluded that yoga and meditation had a significant effect on emotional intelligence of B.Ed. students.

Jadhav (2008) studied the impact of yoga practices on self-concept. The sample consisted of 50 Naturopathy and Yogic Science college students (Yoga practice group) and 50 Medical College (MBBS) students. Personal information schedule and Mukta Rani Rastogi’s Self-Concept Scale (1979) was used as measuring tools. Statistical t-test and ANOVA were employed for analysis of the data. Results revealed that Naturopathy and Yogic Sciences students have better self-concept compared to MBBS students. Dimension-wise, the analysis also revealed that yoga practitioners differ on all the ten sub-dimensions and overall self-concept compared to non-practitioners of yoga.

Sharma, Gupta and Bijlani (2008) studied the effect of yoga-based lifestyle intervention on subjective well-being. The aim of the study was to explore the short-term impact of a comprehensive but brief lifestyle intervention, based on yoga, on subjective well-being levels in normal and sick subjects. Normal healthy individuals and subjects having hypertension, coronary artery disease, diabetes mellitus or a variety of other illnesses were included in the study. The outcomes were measured by ‘Subjective Well-Being Inventory’ (SWBI) which consists of
questions related to one’s feelings and attitude about various areas of life, such as happiness, achievement and interpersonal relationship. There was significant improvement in the subjective well-being scores of the 77 subjects within a period of 10 days as compared to control group.

*Surya Narayan* (2008) studied the influence of yoga programme on anxiety and depression in subjects attending a 1 week yoga camp. The aim of the study was to assess the effect of short-term intensive group yoga intervention on self-reported anxiety and depression levels. Eighty one volunteers with asthma (15), hypertension (10), anxiety and depression (5), arthritis (17), back pain (13), diabetes (5), digestive disorders (12) and obesity (4) participated in a weeklong yoga camp. They were assessed before and after the camp. Baseline-anxiety and depression was measured by Hospital Anxiety and Depression Scale. Integrated set of yoga practices including disease specific physical yoga postures (1.5 hours), *pranayama* (one hour), meditation (one hour), devotional session (one hour), lectures (one hour) and individual counseling on yogic life style management were taught in the camp daily. At the end of the week, significant reduction in anxiety and depression following yoga intervention (p< 0.001) was observed in both groups with high and low baseline scores with significantly greater reduction in those with ‘high’ scores.

*Kumar* (2008) studied the effect of a short term yoga intervention on depression levels among normal subjects. The aim of study was to evaluate the effects of yoga intervention, using Hospital Anxiety and Depression Scale (HADS: Mental Health) questionnaire. Out of 450, three hundred ten subjects were selected for final data analysis. Data were analyzed using non parametric *Wilcoxon* signed rank test and regression analysis was done to evaluate the effect of pre-depression scores and age on the changes in depression levels. At the end of the intervention programme, the researcher found that there was significant reduction in depression levels of healthy individuals following yoga intervention.
Shukla (2008) studied the effect of yoga on the quality of sleep in healthy persons, following a seven day yoga camp. Two hundred eighty one people were admitted for a seven days yoga camp. They were in the range of 15 to 79 years. The subjects were considered as two age groups below 60 years of age and above 60 years of age. The yoga techniques included voluntary regulated breathing (pranayama), loosening exercises (shithlikarna vyayama), and relaxation techniques. They were evaluated by a Sleep Rating Checklist (SRC) on the first and seventh day of yoga camp. The result showed a significant change in the time taken to fall asleep (group average decrease: 8.3 minutes, \( p<0.05 \)), an increase of total number of hours slept (group average increased: 48 minutes, \( p<0.05 \)) and in the feeling of being rested in the morning (\( p<0.05 \)) after seven days of yoga (Wilcoxon paired signed-rank test). It was concluded that yoga practices improved different aspects of sleep in normal volunteers.

Kumar (2008) conducted a study on the impact of yoga nidra on stress and anxiety. The subjects were students enrolled at the Yoga Arogya Polyclinic of Dev Sanskriti Vishwavidyalaya, Haridwar. Practice time was 30 minutes and the duration was 6 months. Eighty students (40 males and 40 females) were taken from post-graduate yoga classes for observing the effect as well as 30 (15 males and 15 females) were in the control group. The result showed a significant change in the practice group as yoga nidra positively decreased the stress level of the male and female subjects.

Kannappan and Lakshmi Bai (2008) studied the efficacy of yoga for correcting maladjustment behaviour in deviant school boys. The aims of the study were (i) to assess the effect of the two experimental groups—Yoga Cognitive Training (YCT) and Human Relationship Training (HRT), and (ii) to compare the effect of these experimental groups with the control group in the scores of maladjusted behaviour and anti-social behaviour of the deviant boys. One hundred and twenty adolescent deviant boys were randomly assigned into
two experimental groups and one control group. The two experimental groups underwent YCT and HRT respectively. The control group did not get any training for the entire period. The training was administered to adolescent school boys for a period of one year, twice weekly. The parents of the adolescent boys of the experimental groups were given Parent Management Training (PMT). The study adopted before-after design. The data collected were analyzed by using Critical Ratio (CR). The results showed that both experimental groups had significant changes in their maladjustment and anti-social behaviours. When the respective effect of the training strategies was compared, yoga-cognitive training had better effect than the human relationship training. The follow-up of these groups showed that the behaviour change in the adolescent boys was sustained.

*Satyapriya et al., (2008)* studied the effect of integrated yoga on stress and heart rate variability in pregnant women. One hundred and twenty two healthy women between the 18th and 20th weeks of pregnancy at prenatal clinics in Bangalore, India, were randomized to practising yoga and deep relaxation or standard prenatal exercises one hour daily. The results for the 45 participants per group who completed the study were evaluated by repeated measures analysis of variance, which showed that ‘perceived stress’ decreased by 31.57% in the yoga group and increased by 6.60% in the control group \((P = 0.001)\). During a guided relaxation period in the yoga group, compared with values obtained before a practice session, the high-frequency band of the heart rate variability spectrum (parasympathetic) increased by 64% in the 20th week and by 150% in the 36th week, and both the low-frequency band (sympathetic), and the low-frequency to high-frequency ratio were concomitantly reduced \((P < 0.001, \text{ between the two groups})\). Moreover, the low-frequency band decreased after deep relaxation in the 36th week in the yoga group. The investigator found that yoga reduced perceived stress and improved adaptive autonomic response to stress in healthy pregnant women.
Rangan, Nagendra and Bhat (2008) conducted a study that the planning ability improves in a yogic education system compared to the modern system. This study was aimed at comparing a Modern Education System (MES) with the ancient Yoga-based system of education, the Gurukula Education System (GES), in developing planning skills. Forty-nine boys with ages ranging from 11 to 13 years were selected from each of two residential schools, one MES and the other GES, providing similar ambience and daily routine. The boys were matched for age and socio-economic status. The GES educational programme was based around integrated yoga modules while the MES provided a conventional modern education programme. Planning and executive abilities were assessed using the Tower of London test at the start and the end of an academic year. Within groups, the pre-post test differences were significant for both groups. However, the between-groups results showed improvement in the GES group compared to the MES group at a $P < 0.001$ significance level. The study suggested that whereas both MES and GES, yoga-based education improved planning and execution skills in school boys, GES is more effective of the two systems.

Deshpande et al., (2008) studied a randomized control trial of the effect of yoga on verbal aggressiveness in normal, healthy volunteers. Of the 1228 persons who attended introductory lectures, 226 subjects of both sexes who satisfied the inclusion and exclusion criteria and who consented to participating in the study were randomly divided into two groups. These 226 subjects were between the ages of 17 and 62 years and 173 out of 226 completed the eight weeks of intervention. The Yoga (Y) group practised an integrated yoga module that included asanas, pranayama, meditation, notional correction and devotional sessions. The control group practised mild to moderate Physical Exercises (PE). Both groups were supervised by trained experts for one hour daily, six days a week for eight weeks. Verbal aggressiveness was assessed before and after eight weeks using the self-administered Verbal Aggressive Scale. The baseline score of
the two groups did not differ significantly \( (P = 0.66) \). There was a significant decrease in verbal aggressiveness in the yoga group \( (P = 0.01 \) paired samples t-test) with a no significant increase in the PE group. ANCOVA using pre-values as covariates showed a significant difference between the groups \( (P = 0.013) \). RMANOVA for interaction between the sexes or age groups in change scores were not significant. It was concluded that an eight week intervention of an integrated yoga module decreased verbal aggressiveness in the yoga group (in males and those below 25 years of age), with no significant increase in the PE group.

Adhikari (2008) studied the effect of yoga practices on occupational stress among Indian army personnel. The aim of the study was to explore the effect of a Yoga Training Programme (YTP) on Occupational Stress (OS) among serving Indian army personnel of 4th Battalion, Raj put Regiment, Sahajahapur, U.P. The programme spread over for 30 days, scheduled two sessions each day in the morning and evening—each session lasting one and half hour. The programme consisted of an integral yoga practice which included selected asanas, pranayamas, prayer \((Omkar & Gayatri Mantra Chanting)\) and Yoga-nidra. A sample of 60 army personnel ranging from the rank of jawan to junior commissioned officer participated in the study. Participants completed the standard Self-Reported Occupational Stress Index Test before and after the training programme, results revealed that participants experienced a statistically significant reduction of stress at work place. The finding suggested the beneficial effects of yoga practices as well as yoga-based intervention in the management of emerging occupation-related stress and associated hazards among the army personnel.

Chen et al., (2009) studied the effects of yoga exercise intervention on health related physical fitness in school-age asthmatic children. Thirty one voluntary children (exercise group 16; control group15) aged 7 to 12 years were
purposively sampled from one public elementary school in Taipei County. The yoga exercise programme was practised by the exercise group three times per week for a consecutive 7 week period. Each 60-minute yoga session included 10 minutes of warm-up and breathing exercises, 40 minutes of yoga postures, and 10 minutes of ‘cool-down’ exercises. Fitness scores were assessed at pre-exercise (baseline) and at the seventh and ninth week after the completion of intervention. A total of 31 subjects (exercise group 16; control group 15) completed follow-up. There was improved Body Mass Index (BMI), flexibility, muscular strength, and cardiopulmonary fitness after yoga practice among yoga group, where as no changes were noticed among control group subjects.

Bakshi and Kumari (2009) studied the effect of practising yoga on subjective well-being and academic performance among adolescents. The sample comprised 100 adolescents, 50 girls and 50 boys (age group 14-16 years) of Jammu city. The subjects were divided into two groups i.e., experimental group and control group. The results revealed that practising yoga significantly affected the subjective well-being positively and it also positively contributed the enhancement of academic performance of the adolescents, studied under experimental group. Furthermore, it can be added here that yoga had similar effects on subjective well-being and academic performance of adolescents, irrespective of their gender.

Danhauer et al., (2009) completed a pilot study on the emotional benefits of restorative yoga for women with breast cancer and to measure changes in fatigue, sleep, psychological distress such as depression and negative effect, and overall positive well-being versus a control group. Restorative yoga is a gentle type of yoga that uses props to provide physical support to result in total relaxation with minimal physical effort. Restorative yoga allows people with a variety of health conditions on many levels to practice yoga more easily. The participants of the study consisted of 44 women
that had breast cancer; 22 participated in restorative yoga classes and 22 in the waitlist control group. Women undertook a ten-week programme of 75 minutes of restorative yoga once a week taught by a yoga instructor with training pertaining to cancer-specific yoga, registered by the National Yoga Alliance. All participants completed a questionnaire at the beginning and end of the ten-week programme, which asked them to evaluate their quality of life. After the week long session, results showed that yoga participants had a 50% reduction in depression and a 12% increase in feelings of peace and meaning after yoga sessions. The scores of women practising yoga reported longer sleep duration compared to the control group which reported worse sleep efficiency scores. However, there was not a significant group effect for fatigue outside of yoga class. It also became apparent that women who participated in restorative yoga classes experienced a wide range of benefits compared to the control group.

Simard and Henry (2009) conducted a pilot study to know the impact of a short-term yoga intervention on medical students' health. Fourteen first-year medical students participated in a 16-week yoga intervention pilot study. Students completed questionnaires at baseline, mid-intervention and end of the study. The students reported improvements in overall health, perceived stress and depressive symptoms following the intervention. It was concluded that yoga intervention could be effective in decreasing stress and improving general well-being in medical students.

Berger, Silver and Stein (2009) conducted a pilot study on the effects of yoga on inner-city children’s well-being. The study compared fourth and fifth-grade students at two after-school programmes in Bronx, New York. One group practised yoga for one hour per week for 12 weeks and the other group did not. Pre-intervention and post-intervention emotional well-being was assessed by Harter’s Global Self-Worth and Physical Appearance subscales, which were the primary outcome measures of the study. Secondary outcomes included other measures of emotional well-being, assessed by 2 new scales:
Perceptions of Physical Health and Yoga Teachings (including negative behaviors, positive behaviors, and focusing/relaxation sub-scales). Pre-intervention and post-intervention, physical well-being was assessed by measures of flexibility and balance. Subjective rating effects of yoga on well-being were evaluated by an additional questionnaire completed by the yoga group only. Data were collected from 78% (n=39) and 86.5% (n=32) of potential yoga and non-yoga study enrollees. No differences in baseline demographics were found. Controlling for pre-intervention well-being differences using analysis of covariance, the researchers found that children in the yoga group had better post-intervention negative behaviors scores and balance (P < .05) than the non-yoga group. The majority of children participating in yoga reported enhanced well-being, as reflected by perceived improvements (e.g., strength, flexibility, balance) in behaviors directly targeted by yoga.

Jadhav and Havalappananavar (2009) studied the effect of yoga intervention on anxiety and subjective well-being. Fifty, first year students were selected from Naturopathy and Yogic Sciences Course to whom, Spielberger’s State Trait Anxiety Inventory as well as Nagpal and Sell’s Subjective Well-being Inventory were administered in the beginning of the academic year and second time after a gap of one year. The data were analyzed by employing mean, SD and ‘t’ ratio. Results revealed a significant decrease in both state and trait anxiety levels and positive change in the subjective well-being of the students.

Benavides and Caballero (2009) studied the ashtanga yoga for children and adolescents for weight management and psychological well-being. The objective of this study was to determine the effect of yoga on weight in youth at risk for developing type- II diabetes. Secondly, the impact of participation in yoga on self-concept and psychiatric symptoms was measured. A 12-week prospective pilot ashtanga yoga programme enrolled twenty children and adolescents. Weight was measured before and after the programme. All participants completed self-
concept, anxiety, and depression inventories at the initiation and completion of the programme. Fourteen predominately Hispanic children, ages 8 to 15, completed the programme. The average weight loss was 2 kg. Weight decreased from 61.2 ± 20.2 kg to 59.2 ± 19.2 kg ($p = 0.01$). Four of five children with low self-concept improved, although two had decrease in self-concept. The study showed that there was improvement in anxiety symptoms.

*Javnbakht et al.*, (2009) studied the effects of yoga on depression and anxiety of women. The study involved a convenience sample of women who were referred to a yoga clinic from July 2006 to July 2007. All new cases were evaluated on admission using a personal information questionnaire as well as Beck and Spielberger tests. Participants were randomly assigned to an experimental and a control group. The experimental group ($n = 34$) participated in twice weekly yoga classes of 90 min duration for two months. The control group ($n = 31$) was assigned to a waiting list and did not receive yoga. Both groups were evaluated again after the two-month study period. The average prevalence of depression in the experimental group pre and post yoga intervention was 12.82 ± 7.9 and 10.79 ± 6.04 respectively, a statistically insignificant decrease. However, when the experimental group was compared to the control group, women who participated in yoga classes showed a significant decrease in state anxiety and trait anxiety.

*Deshpande, Nagendra and Raghuram* (2009) conducted a randomized control trial of the effect of yoga on *Gunas* (personality) and self esteem in normal healthy volunteers. Of the 1228 persons who attended motivational lectures, 226 subjects aged 18 to 71 years, of both sexes, who satisfied the inclusion and exclusion criteria, and who consented to participate in the study were randomly allocated into two groups. The yoga (Y) group practised an integrated yoga module that included *asanas, pranayama*, meditation, notional correction, and devotional sessions. The comparison group practised mild-to-
moderate physical exercises (PE). Both groups had supervised practices for one hour daily, six days a week, for eight weeks. *Guna* (personality) was assessed before and after eight weeks using the *Gita* Inventory of Personality to assess *Sattva, Rajas, and Tamas*. Self esteem in terms of Competency (COM), Global Self Esteem (GSE), Moral Self Esteem (MSE), Social Esteem (SET), Family Self Esteem (FSE), Body and Physical Appearance (BPA), and the Lie Scale (LIS) were assessed using the Self Esteem Questionnaire (SEQ). The baseline scores for all domains of both the groups did not differ significantly ($P > 0.05$ independent samples t-test). There were significant pre-post improvements in all domains in both groups ($P < 0.001$ paired t-test). The number of persons who showed improvement in *Sattva* and decrease in *Tamas* was significant in the Y but not in the PE group (McNemar test). The effect size for self esteem in the Y group was greater than for the PE group in three out of seven domains. It was concluded that there was the influence of yoga on the *Gunas* and self esteem in comparison to physical exercises.

*Rangan, Nagendra and Bhat (2009)* studied the effect of yogic education system and modern education system on memory. Forty-nine boys of ages ranging from 11 to 13 years were selected from each of two residential schools, one Modern Education System (MES) and the other General Education System (GES), providing similar ambiance and daily routine. The boys were matched for age and socioeconomic status. The GES educational programme was based on integrated yoga modules while the MES provided a conventional modern education programme. Memory was assessed by means of standard spatial and verbal memory tests, applicable to Indian conditions before and after an academic year. Between groups, there was matching at start of the academic year, while after it the GES boys showed significant enhancement in both verbal and visual memory scores than MES boys ($P < 0.001$, Mann-Whitney test). Thus, the study showed that the GES meant for total personality
development, adopting yoga way of life, is more effective in enhancing visual and verbal memory scores than the MES.

*Kauts* and *Sharma* (2009) studied the effect of yoga on academic performance in relation to stress. Eight hundred adolescent students—159 high-stress students and 142 low-stress students—were selected on the basis of scores obtained through Stress Battery. Experimental group and control group were given pre-test in three subjects, i.e., mathematics, science, and social studies. A yoga module consisting of yoga asanas, pranayama, meditation, and a value-orientation programme was administered on experimental group for 7 weeks. The experimental and control groups were post-tested for their performance on the three subjects mentioned above. The results showed that the students, who practised yoga, performed better in these subjects. The study further showed that low-stress students performed better than high-stress students, meaning thereby that stress affects the students' performance. With the intervention of yoga, academic performance improved by optimizing the stress levels. It was suggested that yoga module was to become a regular feature in the schools.

*Telles, Gaur* and *Balkrishan* (2009) studied the effects of a yoga practice session and a yoga therapy session on state anxiety. Three hundred persons of both sexes were assigned to two groups, yoga practice and yoga therapy. The state anxiety was assessed before and after two hours of yoga session. A significant reduction in scores on state anxiety was found in the yoga practice group (14.7% decreases) as well as in the yoga theory group (3.4% decrease). It was concluded that yoga practice as well as learning about theoretical aspects of yoga reduces state anxiety to a greater degree following yoga practices.

*Pradhan* and *Nagendra* (2010) studied the immediate effect of two yoga-based relaxation techniques on attention in children. The two yoga-based relaxation techniques, namely, Cyclic Meditation (CM) and Supine Rest (SR) were investigated, using the Six Letter Cancellation Task (SCLT). The subjects
consisted of 208 school students, (132 boys and 76 girls) in the age range of 13-16 years. The subjects were assessed on SCLT before and immediately after both yoga-based relaxation techniques. After both practices, the total and net scores were found to be significantly increased; although the magnitude of change was more after CM than after SR in the net scores (14.5% versus 11.3%). The net scores change in the CM session was significantly larger than the change in the SR, whereas, there was no significant change in the wrong cancellation score. After either practice, the total and the net scores were found to have significantly increased, irrespective of gender and age. It was concluded that both cyclic meditation (CM) and Supine Rest (SR) led to improvement in performance, as assessed by SLCT, but the change caused by CM was larger than SR.

Radhakrishna (2010) studied the application of integrated yoga therapy to increase imitation skills in children with autism spectrum disorder. Parents and six children with Autism Spectrum Disorder (ASD) participated in a 10-month programme of 5-weekly sessions and regular practice at home. The pre, mid and post treatment assessments included observers and parent ratings of children’s imitation skills in tasks related to imitation skills such as gross motor actions, vocalization, complex imitation, oral facial movements and imitating breathing exercises. There was improvement in children imitation skills, especially in pointing to body and postural and oral facial movements. Parents reported change in the play pattern of these children with toys, peers and objects at home. The researcher found that IAYT may offer benefits as an effective tool to increase imitation, cognitive skills and social-communicative behaviour in children with Autism Spectrum Disorder (ASD). In addition, children exhibited increased skills in eye contact, sitting tolerance, non-verbal communication and receptive skills to verbal commands, related to spatial relationship.

Tekur et al., (2010) studied the effect of yoga on quality of life of Chronic Lower Back Pain (CLBP) patients. Eighty patients with CLBP (43 males and 37 females) registered for a week long treatment at SVYASA
Holistic Centre in Bengaluru, India. They were randomized into two groups of 40 each. The yoga group practised a specific module for CLBP, comprising asanas (physical postures), pranayama (breathing practices), meditation and lectures on yoga philosophy. The control group practised physical therapy exercises for back pain. The Perceived Stress Scale (PSS) was used to measure baseline stress levels. Outcome measures were World Health Organization Quality of life (WHOQOL Bref) Scale and Straight Leg Raising test (SLR) using a Goniometer. There was significant negative correlation between baseline PSS with all four domains and the total score of WHOQOL Bref. All the four domains and WHOQOL Bref improved in the yoga group (repeated measures ANOVA P=0.001) with significant group time interaction (P<0.05) and differences between groups (P<0.01). SLR increased in both groups (P=0.001) with higher increase in yoga (31.1% right, 28.4% left) than control (18.7% right, 21.5% left) group with significant group time interaction. In CLBP, a negative correlation existed between stress and quality of life. It could be concluded that yoga increased quality of life and spinal flexibility better than physical therapy exercises.

*Ulger* and *Yagli* (2010) studied the effects of yoga on the quality of life in cancer patients. Twenty patients between 30 and 50 years of age presently under treatment for breast cancer were included in the study. The physical characteristics of the patients were recorded and general physiotherapy assessments performed. Eight sessions of a yoga programme including warming and breathing exercises, asanas, relaxation in supine position, and meditation were applied to participants. The pre- and post-yoga quality of life assessments for the patients were conducted using the Nottingham Health Profile (NHP). Patients' stress levels were assessed using the STAI-I and STAI-II anxiety inventory. Their satisfaction levels about the yoga programme were evaluated using the Visual Analog Scale (VAS). It was found that patients' quality of life scores after the yoga programme were better than scores obtained
before the yoga programme \((p < 0.05)\). After sessions, there was a statistically significant decrease in their STAI-I (measuring the reactions of anxiety) scores and STAI-II (measuring the permanence of anxiety) scores \((p < 0.05)\). It was found that the satisfaction score concerning the yoga programme was considerably increased after the yoga programme \((p < 0.05)\).

Rahimi and Bavaqar (2010) studied the effects of yoga on anxiety and depression in women. Thirty-four Shirazian women volunteers, aged 34± participated in this study and were divided randomly into two groups—control and experimental. Exercise protocol including 16 sessions of Hatha Yoga in the experimental group was carried out. The two training sessions for a week and each session of 90 minutes were performed. The Depression Anxiety Stress Scale (DASS) was used to assess anxiety and depression. Overall findings of the study revealed that there was a significant difference in anxiety and depression between pre-test and post-test experimental groups. Significant difference was also found between the experimental and control groups at \(p < 0.05\) level.

Chidambara Raja (2010) studied the effect of yogic practice and physical fitness on flexibility, anxiety and blood pressure. Forty five subjects, who were working women in various faculties of Annamalai University, in the age group of 35 to 40 years were selected. They were divided into three equal groups—each group consisted of fifteen subjects. Group–I underwent yoga practice, Group–II underwent physical exercise and Group–III acted as control group who did not participate in any special training. The training period for this study was five days in a week for eight weeks. Flexibility was measured by using Sit and Reach test, anxiety was measured by Taylor’s Manifest Anxiety scale and blood pressure was measured using Sphygmanometer. Prior to and after the training period, the subjects were tested for flexibility, anxiety and blood pressure (systolic and diastolic). The data were computed statistically by using Analysis of Co-Variance (ANCOVA). All the variables significantly improved among experimental group.
Lohan (2010) studied the effect of yoga on locus of control of female students. The sample comprised 60 female students of 18 to 25 years. Purposive sampling technique was used to draw the sample of 60 female students i.e., 30 yoga practitioners and 30 non-yogic students from the population. J.B. Rotter’s scale for locus of control was used. It was found that female students practising yoga have more internal locus of control as compared to non practitioners. It was concluded by the researcher that yoga reduced the effects of stress and induced a feeling of calm and peacefulness, combated depression and anxiety, counteracted helplessness and weakness, and thus increased self-esteem and internalized locus of control.

Gupta et al., (2010) conducted a study on Anulom-Viloma pranayama and anxiety and depression among the aged. The study was an attempt to find out the impact of pranayama on the anxiety and depression of the senior citizens living in the rural community. Thirty senior citizens of Madhubani town were selected. Their level of anxiety and depression were measured by Sinha Anxiety Scale and Beck Depression Inventory prior to their enrolment in Yoga sivir (camp) of 7 days duration where they were trained in Anulom-Viloma technique of pranayama. Their level of anxiety and depression were again measured after 3 months during that period the subjects regularly practised the pranayama. The comparison of the pre-test and post-test scores showed significant impact of the pranayama on their anxiety and depression.

Chaudhary (2011) studied the efficacy of yoga on executive stress by means of a yoga technique called Cyclic Meditation (CM). Two groups of 30 executives each, forming yoga and control group from Confederation of Indian Textile Industries, an organization in New Delhi, was taken for the study. The yoga group participated in CM for 20 days, and the control group did not. Stress levels assessment data were measured for yoga and control group before and after 20 days CM participation. The result was assessed using the Perceived Stress
Scale (PSS) and Positive Affect and Negative Affect Schedule (PANAS). The data analysis assessment clearly showed that 20 days practice of CM significantly improved the PSS and PANAS scores of the CM group, while there was no improvement in the control group.

Ravanth Indana (2011) studied the effect of Brhamari pranayama on attention and concentration in healthy adolescents. One hundred and thirty seven (91 male and 46 female) students in age range of 12 to 15 years participated in the study. All the students were undergoing a ten days intensive Yoga based Personality Development Camp (YPDC) programme at a residential yoga centre located in south of India. Experimental session consisted of Brhamari pranayama. The control session was Breath Awareness (BA). Assessments were done immediately before and after experimental and control sessions of 10 minutes by using Six Letter Cancellation Task (SLCT). Results showed significantly higher performance after Brhamari pranayama in net SLCT score and significantly lower score (-10.11 %) following BA. Regarding accuracy level: subsequent to Brhamari pranayama wrong score reduced significantly (-36%), while a significant increase (200%) was found following breath awareness (BA). It was concluded that Brhamari pranayama had a positive effect on the attention and concentration in healthy adolescents.

Rani et al., (2011) conducted a randomized controlled trial to study the impact of Yoga nidra on psychological general well-being in patients with menstrual irregularities. The main aim of the study was to assess the impact of Yoga nidra on psychological problems in patients with menstrual disorders. Patients were recruited from the Department of Obstetrics and Gynecology, C.S.M. Medical University, Lucknow, Uttar Pradesh, India. A total of 150 female subjects were randomly divided into two groups: (i) a group of 75 subjects (with yogic intervention) and, (ii) a control group of 75 subjects (without yogic intervention). Assessment of Psychological General Wellbeing
(tool) was used for all the subjects. This assessment was done twice—first time in the beginning (baseline) and then after six months. Results showed that anxiety and depression significantly decreased in the yoga group. Positive well-being and general health improved significantly, and vitality improved significantly after six months of yoga therapy (Yoga nidra) in the yoga group as compared with the control group. The findings suggested that patients with menstrual irregularities having psychological problems improved significantly in the areas of their well-being, anxiety and depression by learning and applying a programme based on yogic intervention.

Singh et al., (2011) studied the impact of yoga upon female patients, suffering from hypothyroidism. The World Health Organization Quality of Life Scale was used to assess the quality of life of 20 female hypothyroid patients. Subjects attended one hour yoga session daily for a period of one month. A pre-test and post-test research design was used for data analysis. Patients’ quality of life scores following the yoga programme were greater than scores obtained prior to undertaking yoga ($p<0.01$). Patients also reported significant improvements in their perception of the overall quality of life and of their health after yoga intervention.

Woodyard (2011) conducted a study on exploring the therapeutic effects of yoga and its ability to increase quality of life. Therapeutic yoga is defined as the application of yoga postures and practice to the treatment of health conditions and involves instruction in yogic practices and teachings to prevent, reduce or alleviate structural, physiological, emotional and spiritual pain, suffering or limitations. The objective of this study is to assess the findings of selected articles regarding the therapeutic effects of yoga and to provide a comprehensive review of the benefits of regular yoga practice. The manuscript provided information regarding the therapeutic effects of yoga as it had been studied in various populations concerning a multitude of different ailments and
conditions. This study showed that yogic practices enhanced muscular strength and body flexibility, promoted and improved respiratory and cardiovascular function, promoted recovery from and treatment of addiction, reduced stress, anxiety, depression, chronic pain and improved sleep patterns, and enhanced overall well-being and quality of life.

Khemka, Ramarao and Hankey (2011) studied the effect of integral yoga on psychological and health variables and their correlations at Swami Vivekananda Yoga Anusandhana Samsthana (SVYASA) university, in its rural campus, south of Bangalore. The variables were measured at the beginning and the end of a one-month yoga course. There was no control group. The study was carried out at. Based on health criteria, 108 subjects were selected out of 198 volunteers to form experimental yoga group. Ages ranged from 17 to 63 years. The yogasanas (postures), pranayama (breathing exercises), relaxation techniques, meditation, chanting and lectures were the components of yoga intervention. The variables measured were Sustained Attention (SA), Emotional Intelligence Quotient (EIQ), General Health (GHQ), guna personality-sattva, rajas and tamas. Significant pre-test/post-test changes were found in all variables. Significant correlations were found between the two sustained attention variables, emotional intelligence and general health, general health and tamas, sattva and tamas, and rajas and tamas. The study showed that there were significant changes in all variables except in sattva. It also confirms that EQ and general health variables correlate significantly with each other and negatively with tamas. EQ and tamas form positive and negative predictors of health respectively. Sattva correlated positively with EQ suggesting that a sattvic personality indicates better self-control. This suggested that, by improving guna personality, long term yoga practice might stabilize EQ.

Neethi and Chidambara Raja (2011) studied effect of yogic practices and physical exercises on the muscular strength, self-concept and blood pressure. Forty-five healthy, untrained female subjects were selected from
various Departments of Annamalai University and their age ranged from 18 to 25 years. The selected subjects were equally divided into three groups. Group–I underwent yoga practices, Group–II comprised two sub-experimental groups and Group–III was a control group. The experimental groups underwent their training of programme, five days per week for eight weeks. Control group did not undergo any training programme: they continued with their routine work. Muscular strength was measured by sit-ups test, self-concept was measured with the help of Muktha Rani Rasthogi’s self-concept and blood pressure was measured by using Sphygmomanometer. Prior to and after end of the practice period, all subjects were tested. The results of pre-test and post-test were compared by using analysis of co-variance. The yogic practices group and physical exercises group significantly improved in muscular strength and self-concept when compared with the control group. Blood pressure also decreased in yogic practices group and physical exercises group, when compared with the control group.

Jaiganesh, Duraisami and Parthasarathy (2011) studied the combined effect of inclusive games and yogic relaxation on the selected domestic skills among physically challenged boys. About 40 physically challenged school boys in the age group of 14 to 16 years were selected for this study from Chennai city. They were randomly divided into control and experimental groups, using the sealed envelope technique, with each consisting of 20 subjects. Domestic skills referred to practical knowledge necessary to operate successfully a household. Some necessary domestic skills were accounting, bookkeeping, and cookery, first aid, sewing and tailoring. Before training, pre-test was conducted on domestic skills such as toilet training skills, washing, cookery, first aid and sewing by three experts of special schools. The experimental group was exposed to selected inclusive games, namely airplane flying, centipede, crows and cranes, hotdog, octopus tag, poison ball, popcorn, sticky marshmallow, turkey pluck and progressive muscular relaxation
technique. The training was given for a period of 12 weeks. The experimental group was intervened with yogasanas (Shavasana, Matsyakridasana and Crocodile Pose) for relaxation. The control group was not exposed to any type of experimental treatment. Post-tests were conducted on similar domestic skills. The selected inclusive games and yogic relaxation had a significant effect on the domestic skills, namely toilet training skills, washing, cookery, first aid, sewing and tailoring, among physically challenged boys. Thus, the combined effect of inclusive games and yoga had significant benefits in domestic skills.

Narasimhan, Nagarathna and Nagendra (2011) studied the effect of integrated yogic practices on positive and negative emotions in healthy adults. The aims of the study were to: (i) examine the safety and feasibility of conducting a weeklong free yoga camp, and (ii) assess its impact on the negative and positive emotions in normal healthy volunteers. In this study, 450 participants were taught integrated yoga module. It included asanas, pranayama, relaxation, notional correction and devotional sessions. Assessment was carried out on the first and last day of the camp, using a modified version of Positive Affect-Negative Affect Scale (PANAS). It had ten questions each to measure positive (PA) and negative affect (NA). Nine questions were added which were referred to other positive affect (OPA) and other negative affect (ONA) domains. Three hundred and twelve sets of pre-post data were analyzed. There was an increase in PA of PANAS by 13% and OPA by 17%. The NA was reduced by 47% and ONA by 48%. It was concluded that it was feasible and safe to conduct a weeklong yoga camp in an urban setting, and integrated yoga practices could reduce the negative affect and increase the positive affect within one week.

Gururaja et al., (2011) studied the effect of yoga on mental health of young and senior subjects in Japan. Twenty five normal, healthy volunteers of both sexes were divided into two groups according to age. Fifteen participants
of the age group 65 to 75 years and 10 participants of the age group 20 to 30 years were selected. This study was approved by the ethical committee of Kawasaki University of Medical Welfare. Selected individuals were subjected to 90 minutes of yoga classes once or twice a week for a month. Salivary amylase activity was assessed before and after yoga practice. State Trait Anxiety Inventory (STAI) was given before yoga on the first day and after one month of practice. The change in the State anxiety and Trait anxiety were assessed. Decrease in salivary amylase activity might be due to reduction in sympathetic response. Reduction in State and Trait anxiety score signified that yoga had both immediate as well as long-term effect on anxiety reduction. Yoga helped to improve the mental health in both the groups.

Vancampfort et al., (2011) conducted a pilot study on state anxiety, psychological stress and positive well-being responses to yoga and aerobic exercise in people with schizophrenia. The study was undertaken with patients of schizophrenia to evaluate changes in state anxiety, psychological stress and subjective well-being after a single session of yoga and aerobic exercise compared with a control condition. Forty participants performed a single 30 minutes yoga session, 20 minutes of aerobic exercise on a bicycle ergometre at self-selected intensity and 20 minutes with no exercise control condition in random order. After a single session of yoga and aerobic exercise each, individuals with schizophrenia or schizoaffective disorder showed significantly decreased state anxiety, decreased psychological stress and increased subjective well-being compared to a ‘no exercise control condition’.

Yoginder (2011) conducted an experimental study on the effect of yoga on physical and mental health. Eighty students of 9th class studying in Shrimadh Bhagavad Gita Senior Secondary School, Kurukshetra were included in the study. All the students were randomly divided into two groups’ i.e., Experimental and control group. The yoga training programme was applied on experimental group only whereas control group did not expose to any yoga
training programme. It was concluded that yoga had significant effect in improving physical and mental health of school students.

*Sharma* (2011) conducted a study on stress amongst adolescents and *pranayama* as its coping strategy. Objectives of the study were to study (i) the stress among adolescents, (ii) coping strategies of stress with special emphasis on *pranayama* and (iii) effect of *pranayama* on stress. A sample of students from Vivekananda College and Amity University, Noida was taken for the study. The sample size was kept small since the study required the select group of students having high stress level to undergo rigorous training on various *pranayama* techniques and it also required them to devote dedicated time for practicing the same for a period of one month. Perceived Stress Scale was used to measure their stress levels and it consisted of 10 items. Pre and post-test data were tabulated after the period of one month. The study showed that application of breathing exercises was beneficial in lowering the level of perceived stress.

*Dubey* (2011) studied the impact of yogic practices on some psychological variables among adolescents. A group of 50 adolescents (30 boys and 20 girls) aged from 16 to 18 years and similar in educational standard and economic status were tested on seven psychological variables, viz; self-concept, aggressive reactions to frustration, tolerance, *ahimsa*, truthfulness, faith and fidelity. The group was then divided into two groups, having equal number of boys and girls of similar characteristics on these variables. The experimental group was given yogic practices of *asanas, pranayama* and yogic jogging for 15 days daily for one hour and a half in the morning while the control group was free to adopt their original life style. At the end of 15th day, both the groups were tested on seven psychological variables. It was found that the subjects of experimental group, receiving yogic practices had significantly high scores on self-concept, tolerance, *ahimsa*, truthfulness, faith and fidelity but low on extra aggression and ego defence and high on obstacle-dominance, need persistence and introgression of aggressive reactions to frustration as compared to their
scores on these variables before start of the yogic practices. There was no significant change in scores of control group of subjects on these variables.

Sharma (2011) conducted a study on the effect of yoga on mental health of adolescents. The aim of this study was to explore the effect of yoga on mental health of adolescent subjects. The sample consisted of 90 subjects of age range 16 to 19 years, randomly selected from the Yoga Centers and Locality of Meerut City. The sample consisted of three groups of practising yoga at Yoga Center (30), practicing Yoga at home (30) and non practitioners of Yoga (30). An experimental design with one factor was employed in the study. Data were collected with the help of standardized mental health battery and statistically analyzed with the help of one way ANOVA. Results revealed that yoga practitioners showed a significantly higher score of mental health as compared to other two groups.

Praveena et al., (2011) studied the effect of yogic pranayama and meditation on selected physical and physiological variables. Thirty boys in the age group of 12 to 15 years were selected from Department of Yoga, Karnataka University, Dharwad. The subjects were divided into two groups namely control group and experimental group. The experimental group was given yogic pranayama and meditation for a period of twelve weeks, both morning and evening on alternative days in a week. The control group did not participate in yogic pranayama and meditation training programme. The data were statistically analyzed by using Analysis of Covariance (ANCOVA). The experiment group had a significant improvement on the selected physical and physiological variables except systolic and diastolic blood pressure than that of control group.

Hara et al., (2011) conducted an 8 week Iyengar yoga programme on the health and well-being of physically inactive older adults. Thirty eight older adults (mean age 73.21±8.33 years; 19 intervention, 19 control) engaged in either twice-weekly yoga classes or continued their usual daily routines.
Various dimensions of holistic health and well-being were assessed with a combination of noninvasive tests for physical health indicators and two questionnaires to assess self-perceived general, physical, mental, spiritual, and social health and well-being with the Medical Outcomes Study Short Form12 Health Survey Version 2 (SF-12v2™) and Life’s Odyssey Questionnaire. The results suggested that an 8-week *Iyengar* yoga programme had a significant positive effect on some aspects of the health and well-being of physically inactive older people. *Iyengar* yoga practice resulted in improvements in overall muscle strength and in flexibility and in self-perceived physical and emotional well-being.

*Vijayarani et al.,* (2012) studied the influence of yogic practices on selected physiological and psychological variables of adolescent boys. Thirty adolescent boys from Coimbatore were selected as subjects at random and their ages ranged from 12 to 16 years. The subjects (n=30) were randomly assigned to two equal groups as yogic practices (YP) and control group (CG) in an equivalent manner. The competitive sport anxiety inventory–2 was used to measure cognitive anxiety, somatic anxiety and self confidence. A sphygmomanometer was used to measure the systolic blood pressure and diastolic blood pressure. A bio-monitor was used to measure the heart rate. Analysis of Covariance (ANCOVA) was used to find out the difference between the two groups. The yogic practices group showed a decreased level of cognitive anxiety, somatic anxiety, heart rate and increased level of self confidence than the control group owing to the training effects of yogic practices. In case of diastolic blood pressure and systolic blood pressure there was no significant difference between yogic exercises and control group.

*Khurana* (2012) conducted a study to assess the effect of meditation and yoga on anxiety level of B.Ed. students. The sample comprised 60 B.Ed. students, studying in *Swami Devi Dayal* College of Education, Barwala, Punchkuka. The
subjects were randomly assigned to two equal groups, namely: experimental group and control group. Both the groups were given pre-test to check their anxiety level. A yoga module consisting of yoga asanas, pranayama, meditation, and a value orientation programme was administered on experimental group for 4 weeks. The experimental and control groups were post-tested for their performance on the level of anxiety. It was concluded that the students who practised yoga showed low anxiety as compared to the control group.

Shankarapillai, Nair and George (2012) studied the effect of yoga on stress reduction for dental students, performing their first periodontal surgery. A randomized controlled study using a two-way split plot design (pre-post test) was conducted in the Department of Periodontics, Pacific Dental College, Udaipur, India. One hundred clinical dental students who were ready to perform their first periodontal surgery were selected. Students were randomly assigned to two groups and were given a 60 minutes session on stress reduction. Group-A (yogic intervention group) was instructed to do yoga and its performance was monitored for a period of one week whereas, group-B (control group) was given a lecture on stress reduction without any yoga instructions. The investigator who was unaware of the groups had taken the state trait anxiety score of the students three times: a) before assigning them to each group, b) prior to the surgical procedure and c) immediately after the performance of surgery. The statistical results showed a significant reduction in the state trait anxiety of Group-A compared to Group-B. It was concluded that yogic breathing had a significant effect on the reduction of state trait anxiety level of dental students.

Kauts and Sharma (2012) studied the effect of yoga on concentration and memory in relation to stress. The main objective of the study was to assess the effect of yoga module on concentration and memory. The study started with 800 adolescent students; 159 high stress students and 142 low-stress students were selected on the basis of scores obtained through Stress Battery. Experimental
group and control group were given pre-test to assess their concentration as well as short term memory. A yoga module consisting of yoga asanas, pranayama, meditation, prayer and a value orientation programme was administered to the experimental group for 7 weeks. The experimental and control groups were post-tested for their performance in concentration and memory tests. The results showed that the students, who practised yoga module yielded higher concentration levels and exhibited better short term memory.

Thakar and Sharma (2012) conducted a study on the effect of yoga on educational achievement, mental development and physical health of secondary school students. Three hundred and twenty students studying in classes VIII and IX during the year 2008-09 in Gujarati medium secondary schools in Mehsana District, Gujarat was the population of the study. Among them, 160 students were in the experimental group and 160 students were in the control group. A yoga module consisting of asanas, pranayama and exercises was administered to the experimental group. The results showed the significant effect of yoga on academic achievement, mental and physical development of students, meaning thereby that training of yoga could help to increase the academic achievement, develop positive mental health and enhance the physical development of the students.

Gard et al., (2012) studied the effects of a yoga-based intervention for young adults on quality of life and perceived stress. The purpose of this study was to investigate the effects of a yoga-based programme on quality of life, perceived stress, mindfulness, and self-compassion in young adults. These variables were measured in 33 self-selected participants of a four-month residential yoga intervention before and after the programme. Forty-three demographically matched control group subjects completed the same questionnaires at two time points with a four-month interval in between. Participation in the programme predicted increase in quality of life and decrease in perceived stress, mediated by mindfulness and self-compassion.
Multiple mediator models revealed that the effect of group on quality of life was simultaneously mediated by mindfulness and self-compassion, while the effect of group on perceived stress was only mediated by self-compassion. These positive effects on perceived stress and quality of life suggested that yoga-based interventions might be of value in cultivating subjective well-being in young adults.

Yadav et al., (2012) studied the efficacy of a short-term comprehensive yoga-based lifestyle intervention in reducing anxiety, improving subjective well-being and personality. The study was a part of an ongoing larger study at a tertiary care hospital. Participants (n=90) included patients with chronic diseases attending a 10-day, yoga-based lifestyle intervention programme for prevention and management of chronic diseases, and healthy controls (n=45) not attending any such intervention. Changes in State and Trait Anxiety questionnaire (STAI-Y: 40 items), Subjective Well-being Inventory (SUBI: 40 items), and Neuroticism Extraversion Openness to Experience Five Factor Personality Inventory Revised (NEO-FF PI-R: 60 items) was observed at the end of intervention.

Results showed that after following intervention, the STAI-Y scores reduced significantly (P<0.001) at day 10 (66.7 ± 13.0) versus day 1 (72.5 ± 14.7). Also, positive SUBI scores (F1 to F6) improved significantly (P<0.001) at Day 10 versus Day 1. Similarly NEO-FF PI-R scores improved significantly (P<0.001) at day 10 versus day 1. Control group showed an increase in STAI-Y while SUBI and NEO-FF PI-R scores remained comparable at day 10 versus day 1. It was concluded that a short-term, yoga-based lifestyle intervention might be significant in reducing anxiety and improved subjective well-being and personality in patients with chronic diseases.

Sood and Kumar (2012) conducted a study to examine the effect of yogic practices on emotional states of senior secondary school students. A sample of
100 students was selected from Kurukshetra district of Haryana. The selected yogic practices were employed on students for 60 minutes daily for six months. The pre-test and post-test design under controlled condition was followed. The Eight State Questionnaire Scale (8SQ: 1973) developed by Cattle & Cattle was used for collection of data. Results revealed significant positive effects of yogic practices on emotional states i.e., a decrease in stress, anxiety, depression, regression, fatigue, guilt, and extraversion arousal was observed.

Nemati (2013) studied the effect of doing pranayama on test anxiety and test performance. The participants consisted of 107 Master of Arts students who were randomly assigned to the control and experimental groups. The students of the experimental group practiced pranayama for one full semester. Sarason's Test Anxiety Scale was given to both, the control and experimental groups, in the final session, before taking the examination. After practising pranayama, only 33% of the participants of the experimental group experienced high test anxiety, while this percentage was nearly twice in the control group (66.7%). The results of the t-test for test anxiety and test performance showed that the students of the experimental group had significantly lower mean test anxiety scores (M = 16.00) as compared to the students of the control group (M = 19.31). Also, the test performance scores of the experimental group were higher when compared with the control group. There was a negative correlation between the final test performance and test anxiety (r = −.204, P < .05). It was concluded that pranayama seems to have a significant positive effect on test anxiety and test performance. It could be used as an important technique by students prior to their examinations, to reduce their test anxiety and increase their test performance.

2.2 SUMMARY OF THE REVIEW OF LITERATURE

The review of literature revealed that numbers of studies relating to the effect of yoga on different physiological and psychological variables have been conducted. Therapeutic effects of yoga have also been studied by various
investigators on different groups of individual and it was found that yoga helps in overcoming various physiological and psychological problems of an individual. In the light of review of literature, investigator concluded that not much work has been done to study the effect of pranayamas and asanas on physical fitness and psychological health of students with disabilities. Thus, the investigator found that there is a need to generate a yogic intervention programme and to examine its effect on some psychological aspects of students with disabilities.