Chapter II

REVIEW OF RELATED LITERATURE

A literature review is a body of text that aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. Its ultimate goal is to bring the reader up to date with current literature on a topic and forms the basis for another goal, such as future research that may be needed in the area. It gives an overview of what has been said, who the key writers are, what the prevailing theories are and hypotheses, what questions are being asked, what methods and methodologies are appropriate and useful. As such, it is not in itself primary research, but rather it reports on other findings.

The researcher finds out some of the review of literature which could be very supportive and strengthen this study. In this section some of the relevant literature have been plotted which were collected from books and journals of institutional libraries and internet as well. After going through the available literature, the investigator presented some of the observations and findings of the experts in this area. This literature reviewed is organized under the following headings:

1. Studies pertaining to Psychology
2. Studies pertaining to Massage
3. Studies pertaining to Anxiety
4. Studies pertaining to Depression
5. Studies pertaining to Stress
6. Studies pertaining to Varmam
2.1: Studies Pertaining to Psychology

Hatzigeorgiadis et al., (2008) examined the effects of motivational self-talk on self-confidence, anxiety, and task performance in young athletes. For the purpose seventy-two tennis players were selected as subjects. The experiment was conducted in five sessions, namely baseline assessment, three treatment sessions, and final assessment. After the baseline assessment participants were divided and assigned randomly into experimental and control groups. The two groups followed the same treatment program with the experimental group practicing the use of self-talk. In the last session, the final assessment took place. A forehand drive test was used to evaluate task performance, and the Competitive Anxiety Inventory-2R was used to assess self-confidence and anxiety. Results of two-way mixed model MANOVA revealed that task performance improved for the experimental group ($p < .01$) and remained stable for the control group; self-confidence increased ($p < .01$) and cognitive anxiety decreased ($p < .05$) for the experimental group, whereas no changes were observed for the control group. Correlation analysis revealed that changes in task performance were moderately related to changes in self-confidence ($p < .05$). The results of the study showed that self-talk can enhance self-confidence and reduce cognitive anxiety. Furthermore, they suggested that increased self-confidence could be regarded as a viable function explaining the facilitating effects of self-talk on performance.

Palanisamy (2002) investigated the effects of mental treatment on selected bio-motor, psychological variables and soccer skills of university soccer players. For that purpose thirty-two college level soccer players from Bharathidasan University were selected as subjects. The study concluded that the control group did not show any
significant change in any of the selected variables whereas, the experimental group which was exposed to the mental treatment package showed significant improvement in the biomotor, psychological and soccer skill variables.

Demirhan and Dinc (2007) examined sensation seeking, physical self-perception, and intrinsic and extrinsic motives of rock climbers and to compare these psychological constructs with respect to their years of climbing experience and the difficulty of their climbing routes. Sixty four climbers ($M$ age = 29.1 yr., $SD$ = 6.4) voluntarily participated in this study. The Arnett Inventory of Sensation Seeking (AISS), Physical Self-Description Questionnaire (PSDQ), and Sport Motivation Scale (SMS) were administered to the rock climbers. Analysis indicated that the mean score of rock climbers on the Novelty subscale of the Sensation Seeking Scale was 33.9 ($SD$ = 3.6) and mean value on the Intensity subscale was 29.2 ($SD$ = 5.2). The mean scores of rock climbers on the PSDQ ranged between 3.9 ($SD$ = 1.0, Physical Activity) and 5.1 ($SD$ = 1.1, Body Fat). Descriptive analysis indicated that the highest mean score of rock climbers on the SMS was obtained in intrinsic motivation to experience stimulation (5.7, $SD$=0.9). The independent sample $t$ test showed no significant differences in sensation seeking, physical self-perception, and sport motivation with regard to years of climbing experience and route difficulty ($p >.05$). It may be concluded that sensation seeking in climbers is high, and they have internal motivational orientation and positive physical self-perception; their competence in climbing has no obvious relationship to these variables. Popularized by Sigmund Freud and neo-Freudians, Erickson, the psychodynamic approach to personality is characterized by two themes. First emphasis is placed on unconscious determinants of behavior, such as what Freud called the id, or instinctive drives, and how
these conflict with the more conscious aspects of personality, such as the superego (one’s moral conscience) or ego (the conscious personality). Second, this approach focuses on understanding the person as a whole, rather than identifying isolated traits or dispositions.

Shekhawat and Mishra (2008) conducted this study to demonstrate the effects of Preksha Meditation on various psychophysiological components of healthy human subjects. Subjects were selected randomly and divided into two groups – Experimental and control group, each group consists of 10 subjects. The experimental group of subjects was first trained in the practice of Preksha Meditation Capsule which includes kayotsarga (Relaxation with self awareness), perception of breathing (Deep scientific breathing), internal trip, perception of psychic-centers and perception of psychic-colours. There after they practiced it vigorously in three sessions a day for two weeks. The data was analyzed using student’s paired ‘t’ test. ‘p’ value of less than 0.05 were accepted as indicating significant difference between the values of experimental and control groups. A significant decline was observed in Heart Rate, Systolic pressure, Diastolic pressure, Mean pressure, Rate pulse pressure, Anxiety level, Fear level and Frustration levels (Aggression, Reservation, Fixation and Regression). On the basis of results obtained it was inferred that practice of Preksha Meditation has brought down the level of these components by modulating the functions of Autonomic and Central nervous system.

Manikam (2011) investigated the influence of strength treatment package with and without yogic practices on selected psychological and technical skills level among collegiate level Football players. Three matched groups each having 15 males of 18 to 25 years of age served as subjects. The Group-I acted as control group, Group-II was given strength treatment without yogic practices and Group-III was given strength treatment
with yogic practices. The strength training was given for twelve weeks, four days per week of two hours duration every day in the morning session. Yogic package was given for 45 minutes each for twelve weeks four days per week of two hours duration every day in the evening session to Group-III. Psychological variables namely anxiety and achievement motivation were selected as variables as they may have direct relation to the performance of Football players in competitive situation. These variables were assessed by administering standardized questionnaires. The skill level of the players was subjectively rated by three qualified coaches. Analysis of covariance (ANCOVA) was used to analyze the collected data. Scheffe’s test was followed as a post hoc test to determine the level of significant difference between the paired means. The results clearly indicate that there was a significant difference in players’ performance due to treatment. The results also showed that strength treatment with yogic practice group showed significant improvement in all the selected psychological and technical skill level of the players compared to other groups.

Lion and Yann (2001) examined to determine the relationships between gender and sport participation on the physical self-concept of Taiwanese undergraduate students. The sample for the study consisted of 600 Taiwanese undergraduate students who attended classes at six Taiwanese public and private universities and colleges, during the full 2 semester. Before distributing the instrument to the six selected institutions, a pilot instrument was examined by 160 Taiwanese undergraduate students who were selected randomly. Finally, a 27-item survey that was derived from prior multi-dimension self-perception was developed to examine six specific physical components. The instrument’s co-efficient alpha was between 0.78 and 0.86 and each value of factor loading was above
60. A general linear model, with one way and two way multivariate analysis of Taekwondo treatment program experienced less state and trait anxiety, mood disturbance, and significantly improved levels of emotion regulation.

Natarajan and Vijayaragavan (2011) predicted the Handball playing ability from selected psychological variables among college level Handball players. To achieve the purpose of the study, the investigator selected 100 college Handball players from different colleges. In this study the Handball playing ability was predicted from 100 college Handball players with the help of selected Predictor variables namely psychological variables such as anxiety, aggression, achievement motivation and self confidence. The Handball playing ability was determined by subjective rating by 3 experts and was use as the criterion variables. The Backward multiple regression method was used to determine the prediction equation. Based on the limitation and delimitation of the present research study, it was concluded that the Handball playing ability could be best predicted from psychological variables namely anxiety, aggression, achievement motivation and self confidence.

2.2: Studies Pertaining to Massage

McKechnie, Warren and Behn (2007) investigate the acute effects of two massage techniques on ankle joint flexibility and power of plantal flexor. Nineteen participants were randomly subjected to three conditions (control and two massages) before performing two power tests. Prior to the intervention, subjects completed ankle joint flexibility assessments. The conditions were; (1) control, where subjects lay prone and had a therapist’s hands resting, (2) vigorous petrissage, and (3) tapotement applied at a rate of 4Hz; all on the triceps surae. Following completion of the intervention, subjects
immediately completed a post-ankle joint flexibility test, followed by a drop-jump and concentric calf raise. The power measures were; concentric peak force, rate of force development, and drop-jump height / contact time. The data showed a significant increase (p < 0.05) in ankle joint angle on the right leg and a corresponding tendency on the left. No significant change was seen with the power measures. Results suggest that massage can increase plantar flexors’ flexibility without a change in power and thus may be an alternative to static stretching during an athletic warm-up.

Farr et al., (2002) investigated the effects of a therapeutic massage on delayed onset muscle soreness and muscle function following downhill walking. Eight male subjects performed a 40-min downhill treadmill walk loaded with 10% of their body mass. A qualified masseur performed a 30-min therapeutic massage to one limb 2 hours post-walk. Muscle soreness, tenderness, isometric strength, isokinetic strength, and single leg vertical jump height were measured on two occasions before, and 1, 24, 72 and 120 hours post-walk for both limbs. Subjects showed significant (p<0.004) increases in soreness and tenderness for the non-massaged limb 24 hours post-walk with a significant (p<0.001) difference between the two limbs. A significant reduction in isometric strength was recorded for both limbs compared to baseline 1 hour post-walk. Isokinetic strength at 60°/sec and vertical jump height were significantly lower for the massaged limb at 1 and 24 hours post-walk. No significant differences were evident in the remaining testing variables. These results suggest that therapeutic massage may attenuate soreness and tenderness associated with delayed onset muscle soreness. However it may not be beneficial in the treatment of strength and functional declines.
Arabaci (2008) examined the acute effects of pre-performance lower limb massage after warm-up on explosive and high speed motor capacities and flexibility. Twenty-four physically active healthy Caucasian male subjects volunteered to participate in this study. All subjects were from a Physical Education and Sport Department in a large university in Turkey. The study had a counterbalanced crossover design. Each of the subjects applied the following intervention protocols in a randomized order; (a) massage, (b) stretching, and (c) rest. Before (pre) and after (post) each of the interventions, the 10 meter acceleration (AS), flying start 20 meter sprint (FS), 30 meter sprint from standing position (TS), leg reaction time (LR), vertical jump (VJ) and sit & reach (SR) tests were performed. signed rank test was used to compare before and after test values within the three interventions (massage, stretching and rest). The data showed a significant worsening, after massage and stretching interventions, in the VJ, LR (only in stretching intervention), AS and TS tests (p < 0.05), and significant improvement in the SR test (p < 0.05). In contrast, the rest intervention led only to a significant decrement in TS performance (p < 0.05). In conclusion, the present findings suggest that performing 10 minute posterior and 5 minute anterior lower limb Swedish massage has an adverse effect on vertical jump, speed, and reaction time, and a positive effect on sit and reach test results.

Dawson et al., (2004) evaluated the potential for repeated massage therapy interventions to influence recovery of quadriceps and hamstring muscle soreness, recovery of quadriceps and hamstring muscle strength and reduction of upper leg muscle swelling over a two week recovery period following an actual road running race. Twelve adult recreational runners (8 male, 4 female) completed a half marathon (21.1 km) road
race. On days 1, 4, 8, and 11 post-race, subjects received 30 minutes of standardized massage therapy performed by a registered massage therapist on a randomly assigned massage treatment leg, while the other (control) leg received no massage treatment. Two days prior to the race (baseline) and preceding the treatments on post-race days 1, 4, 8, and 11 the following measures were conducted on each of the massage and control legs: strength of quadriceps and hamstring muscles, leg swelling, and soreness perception. At day 1, post-race quadriceps peak torque was significantly reduced (p < 0.05), and soreness and leg circumference significantly elevated (p < 0.05) relative to pre-race values with no difference between legs. This suggested that exercise-induced muscle disruption did occur. Comparing the rate of return to baseline measures between the massaged and control legs, revealed no significant differences (p > 0.05). All measures had returned to baseline at day 11. Massage did not affect the recovery of muscles in terms of physiological measures of strength, swelling, or soreness. However, questionnaires revealed that 7 of the 12 participants perceived that the massaged leg felt better upon recovery.

Pocklington et al., (2002) determined the effect of massage on metabolism. It was hypothesized that there would be no significant difference in metabolism between the resting state and either during or post massage. The subjects were female, ages 25 to 50 with regular menses. The protocol involved a ten minute resting period, followed by an hour massage and concluded with a fifteen minute recovery period. VO$_2$ (ml/kg/min) and RER were measured continuously during the resting and recovery periods and at various pre-set points during the massage. A full body massage was administered in the standardized order of: back; posterior legs; head; neck and shoulders; arms; abdomen;
anterior legs; and feet. The data was statistically analyzed using descriptive statistics, analysis of variance (ANOVA), analysis of covariance (ANCOVA), pair wise comparisons, and effect size. The results showed a statistically significant increase in metabolism from the resting state (X = 2.93ml/kg/min) to the recovery phase (X = 3.81ml/kg/min) measured by the level of oxygen consumption, (ANOVA p = .004, ANCOVA p = .011). Pair wise comparisons indicated significant differences between sections. The post/recovery phase had significantly higher levels of oxygen consumption than all other sections. The abdomen was significantly lower than all other sections apart from the foot. Pair wise comparisons for RER indicated significantly lower figures for the back than all other sections apart from the posterior leg, and significantly higher figures were obtained for the abdomen than all other sections apart from the foot. It was concluded that massage significantly increases metabolism from the resting level and this increase is maintained for at least 15 minutes after the completion of the massage.

Caruso and Coday (2008) compared different forms of very short rest periods administered between resistance exercises sets of individual workouts on subsequent performance. With a within-subjects design methodology, subjects (n = 30) performed three workouts that were identical in terms of the exercises (45 degrees leg press, prone leg curl, seated shoulder press, standing barbell curl), number of sets, and the resistance employed. For each workout, subjects received one of the following treatments between sets: 1 minute of rest as they stood upright, 30 seconds of rest as they stood upright, or 30 seconds of concurrent massage and body part elevation (MBPE), which entailed Petriissage of the exercised limbs in a raised and supported position in an attempt to abate fatigue and enhance recovery from the previous set. Subjects were instructed to perform
as many repetitions as possible for each set. For each exercise, two dependent variables were calculated: a total work/elapsed time ratio and the cumulative number of repetitions performed. For each exercise, one-way repeated-measures analysis of variance and Tukey's post hoc test revealed the following total work/elapsed time results: 1 minute rest <30 seconds' rest, 30 seconds' MBPE. For each exercise, cumulative repetition results were as follows: 1 minute rest >30 seconds' rest, 30 seconds' MBPE. Results imply that rest period duration exerts more influence on resistance exercise performance than MBPE. Those who seek improved resistance exercise performance should pay particular attention to rest period durations.

2.3: Studies Pertaining to Anxiety

Mellalieu et al., (2008) conducted a study on the effects of motivational general-arousal imagery intervention upon pre-performance symptoms in male rugby union players. They investigated the efficacy of a motivational general-arousal based imagery strategy in modifying pre-competitive symptom interpretations. They used a staggered multiple baseline single-subject design. The study employed with five male collegiate rugby union players ($M = 24.5; SD = 3.05$). The dependent variable was monitored over a full competitive season via measures of pre-competitive anxiety and its effect together with follow-up social validation procedures. The results showed that more facilitative interpretations of symptoms associated with competitive anxiety, and greater self-confidence levels post intervention, together with changes in positive and negative effect. The findings highlighted the importance of employing individualised imagery with motivational general-arousal content to modify performers' perceptions of their pre-competitive experiences. This effect was proposed to occur directly through adaptive
changes in individuals' psychological response systems and indirectly via the protection mechanisms associated with enhanced efficacy expectations.

Robazza and Bortoli (2006) conducted a study on "perceived impact of anger and anxiety on sporting performance in rugby players". The purpose of the study was to extend the notion of directional perceptions beyond anxiety to anger in order to assess rugby players' perception of the facilitative or debilitative effects of trait anger symptoms. A cross-sectional study design was employed using normative measures of anger and anxiety. The frequency and direction of symptoms of competitive trait anger were assessed in one-hundred and ninety-seven Italian rugby players together with the intensity and direction of multi-dimensional trait anxiety. Findings revealed a general tendency of rugby players to experience a moderate frequency of anger symptoms and to interpret their symptoms as facilitative rather than debilitative. Regarding the direction of symptoms, cognitive anxiety was a significant predictor of anger, while self-confidence was a significant predictor of control of anger. They concluded that support was provided for assessment of individual's interpretation of anger symptoms.

Mullen, Lane and Hanton (2009) examined the intensity and direction of the competitive state anxiety response in collegiate athletes as a function of four different coping styles: such as high-anxious, defensive high-anxious, low-anxious and repressors. Specifically, this study predicted that repressors would interpret competitive state anxiety symptoms as more facilitative compared to high anxious, defensive high-anxious and low-anxious performers. Separate Multivariate Analyses of Variance (MANOVA) was performed on the intensity and direction subscales of the modified Competitive State Anxiety Inventory-2 (CSAI-2). A significant main effect was identified for trait worry
revealing that low trait anxious athletes reported lower intensities of cognitive and somatic anxiety and higher self-confidence and interpreted these as more facilitative than high trait anxious athletes. The prediction that performers with a repressive coping style would interpret state anxiety symptoms as more facilitative than performers with non-repressive coping styles was not supported.

Awolfram and Micklewright (2008) examined the effects of anxiety and self-confidence on equestrian performance. Forty riders (12 male, 28 female; 15 elite, 25 non-elite; 12 dressage, 17 show jumping and 11 eventing) completed the Revised Competitive Sport Anxiety Inventory-2 (CSAI-2), which measures the levels of somatic and cognitive anxiety as well as levels of self-confidence. Two-way between-subjects MANOVA tests were used to examine competence-by-discipline interactions and gender-by-discipline interactions in CSAI-2 scores. Post hoc analysis was conducted using one-way univariate ANOVA tests. Spearman’s rank correlation tests were conducted between each of the CSAI-2 subscales according to competence, discipline and gender. Most important findings include lower somatic arousal and higher self-confidence in elite compared with non-elite riders. Negative correlations between cognitive arousal and self-confidence were found among elite riders, non-elite riders, show jumpers and female riders. Greater riding-specific skills in the elite rider may result in increased self-confidence. Lower levels of somatic anxiety may further increase fine motor skills in elite riders. Practical implications are that non-elite riders would benefit from sport psychological interventions increasing levels of self-confidence and reducing symptoms of somatic arousal to improve performance.
Jones and Uphill (2004) conduct a study and examine the capability of the Competitive State Anxiety Inventory-2 in distinguishing between anxious and excited states. Total athletes (N=188) were randomly assigned to one of two groups and asked to complete the CSAI-2 as if they were either excited (excited group) or anxious (anxious group) prior to the most important competition of the season. Data were initially analyzed using Multivariate Analyses of Covariance, with gender as the covariate. Participants in the anxious group reported higher scores on the cognitive and somatic anxiety intensity subscales, while the participants in the excited group reported a more facilitative perception of their symptoms on the somatic anxiety subscale. A logistic regression correctly classified 62.9% of the participants as belonging to either the anxious or excited group on the basis of the scores from the CSAI-2. It is possible to observe differences in scores on the CSAI-2 from participants asked to complete the inventory as if they were either excited or anxious. However, differences in scores were typically small with 37.1% of participants incorrectly classified on the basis of these scores. Accordingly, caution is advised in interpreting the results of the CSAI-2 in research and applied settings.

Fletcher and Hanton (2001) investigated the equivocal findings within the literature addressing the relationship between competitive anxiety responses and psychological skills. Intensity (i.e. Level) and direction (i.e. Interpretation of intensity as facilitative or debilitative) dimensions of competitive state anxiety and self-confidence were examined in performers with different levels of psychological skills usage. A cross-sectional design assessing psychological impact was constructed during the competition. The independent variable was psychological skill usage (“high” and “low” groups) and dependent variables were competitive anxiety responses. Non-elite competitive
swimmers (N=114) completed a modified version of the Competitive State Anxiety Inventory-2 (CSAI-2) which examined both intensity and direction dimensions prior to racing. Following the event these participants completed the Test of Performance Strategies (TOPS) which measures psychological skills usage. Based on the TOPS scores the swimmers were dichotomised using post-hoc median-split into high and low usage groups for certain psychological skills. Results of MANOVAs revealed significant differences in the CSAI-2 scores between the high and low usage groups for the skills of relaxation, self-talk and imagery. The results of ANOVAs indicated significant differences on all CSAI-2 subscales for relaxation groups, and differences on cognitive intensity, somatic direction and self-confidence for self-talk groups, and self-confidence for the imagery groups.

Gupta et al., (2006) studied the short-term impact of a comprehensive but brief lifestyle intervention, based on yoga, on anxiety levels in normal and diseased 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. 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 diseased 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.

Amutha (2010) conducted study to find out the effect of selected yogic exercise and pranayama on anxiety, VO\(_2\)max and flexibility. For this purpose fifty male students were selected from various high and higher secondary schools in and around Chidamabaram town. They were divided into two equal groups. one as experimental group underwent treatment for nine weeks, weekly five days, Monday to Friday between 6.00 a.m to 8.00 a.m. and control group (n=25) did not participate in any special treatment. The result of the study indicated that the anxiety was reduced significantly, maximal oxygen uptake and the flexibility increased significantly for the treatment group. It was concluded that the yogic exercise had reduced the anxiety and increased the maximal oxygen uptake and flexibility.

Telles, Gaur and Balkrishna (2009) conducted study to find out the yoga techniques practiced for varying durations have been shown to reduce state anxiety. In this study, there were 300 novice-to-yoga persons of both sexes who were attending a yoga therapy center in north India for stress relief as day visitors and were not residing at the center. They were assigned to two groups, yoga practice and yoga theory, and their state anxiety was assessed before and after a 2-hr. 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). The difference in scores following the sessions was statistically significant. Hence, yoga practice as well as learning about theoretical aspects of yoga appears to reduce state anxiety, with a greater reduction following yoga practice.

2.4: Studies Pertaining to Depression

Bhasin, Sharma and Saini (2010) studied depression, anxiety and stress among adolescent school students belonging to affluent families and the factors associated with high levels of depression, anxiety and stress. Two hundred and forty two adolescent students belonging to class 9 to 12th were selected for the study. To assessing depression, anxiety and stress Scale -21 questionnaire was used. The scores in the three domains (DAS) were found to be remarkably correlated. Depression was significantly more among the females than the males. Depression, anxiety and stress were all significantly higher among the ‘board classes’ i.e., 10th and 12th as compared to the classes 9th and 11th. All the three depression, anxiety and stress were found to have an inverse relationship with the academic performance of the students. Depression and stress were found to be significantly associated with the number of adverse events in the student’s life that occurred in last one year.

Proudfoot et al., (2004) studied the randomized controlled trial therapy upon clinical and demographic variables and the dependence on the efficacy of Clinical Efficacy of Computerized Cognitive–Behavioural Therapy for anxiety and depression in primary care. A sample of 274 patients with anxiety and/or depression was randomly allocated to receive, with or without medication, Computerised Cognitive Behaviour Therapy or treatment as usual, with follow-up assessment at 6 months. The Computerised
Cognitive Behaviour Therapy improved depression, negative attributional style, work and social adjustment without interaction with drug treatment, duration of preexisting illness or severity of existing illness. For anxiety and positive attributional style, treatment interacted with severity such that Computerised Cognitive Behaviour Therapy did better than usual treatment for more disturbed patients and also led to greater satisfaction. Computer-delivered Cognitive Behaviour Therapy is a widely applicable treatment for anxiety and/or depression in general practice.

Birkeland, Torsheim and Wold (2008) in their study tried to examine the possible directions of the relationships between leisure-time physical activity and depressed mood among adolescents. A ten year longitudinal study with a sample of nine-hundred and twenty-four adolescents was conducted, and data were collected eight times from the age of thirteen years to the age of twenty-three years. The data were analysed using multivariate latent curve modeling. Results showed that Leisure-time physical activity and depressed mood can vary inversely through adolescence. However, baseline levels of leisure-time physical activity do not predict later changes in depressed mood, and baseline levels of depressed mood do not predict later changes in leisure-time physical activity. They concluded that changes in leisure time physical activity and depressed mood are related, but the results do not provide support for the common assumption that a high early level of physical activity protects against later depressed mood, nor that a high early level of depressed mood acts as a barrier for later physical activity.

DeBerry (1982) evaluated the effects of meditation/relaxation on symptoms of anxiety and depression and enlisted the participation of thirty-six female volunteers ranging in age from sixty-three to seventy-nine years in a twenty-week study designed.
Amongst the participants, 83% were widows who were selected because of complaints of anxiety, nervousness, tension, fatigue, insomnia, sadness and somatic complaints. Participants were randomly assigned to one of three groups: (I) relaxation/meditation, (II) relaxation/meditation with a ten-week follow-up consisting of practice on a daily basis using relaxation/meditation tapes, and (III) a pseudo relaxation control group \((N = 12\) per group). The treatment groups received one week of baseline evaluation, ten weeks of weekly thirty-minute treatment sessions, and a ten-week follow-up, with taped relaxation sessions for group II. The control group followed an identical schedule for ten weeks but did not participate in the follow-up. The Spielberg Self-Evaluation Questionnaire and the Zung Self-Rating Depression Scale were administered before treatment, at the end of the ten weeks of treatment and again at the end of the follow-up period (for the treatment groups). In comparison to the control group, the treatment groups manifested a significant pre- to post treatment decrement for both state and trait anxiety. When the treatment groups were compared as to the efficacy of the follow-up practice sessions, it was found that the practice group continued to show a decrement in state anxiety while the no practice group exhibited a return toward baseline levels. However, trait anxiety continued to decrease for both groups. In terms of depression, there was a tendency toward a decrease in mean symptom scores that failed to reach significance. Yet, when questions that correlated highly with anxiety and somatic symptoms were removed and analyzed separately, a significant pre- to post treatment decrement was noted.

### 2.5: Studies Pertaining to Stress

Asha (2003) examined the combined effect of creativity and intelligence on stress and mental health of college students. The sample consisted of 126 postgraduate students
(61 male and 65 female students). Descriptive Test of Creativity, Mathew Test of Mental Abilities, Students Academic Stress Scale and Mental Health Inventory were used. The results indicated that the high creative high intelligent groups of male and female students experienced less stress and better mental health than the less creative-less intelligent male and female students. The study suggested that cognitive excellence is a resource for adapting to stressful conditions and fostering mental health. The available literature regarding the relationship of physical activity and mental health in its clinical point of view suggests that exercise can reduce clinical symptoms of mental illness.

Garanath et al., (2006) compared the psychological and physiological benefits of a Kundalini yoga program and a stress management program based on cognitive behavior therapy principles. Participants in the both groups shared significant improvement in both psychological (self rated stress and stress behavior as anger, exhaustion, quality of life) and physiological (blood pressure, heart rate, urinary catecholamine’s, salivary cortisol) outcomes. There was no significant difference between the two groups. The authors concluded that both “Cognitive behavior therapy and yoga are promising stress management techniques”.

Coleman (1980) determined the personality and stress in the shooting sports. All branches of the shooting sports have one element in common-success in any one is heavily reliant on mental skills. The continental shooters refer to their sport as a "sport of the mind". One would therefore expect that mental make-up would play a very large role in determining the success or failure of a shooter. Systematic measurement of personality characteristics shows this to be the case. Shooters are preselected by virtue of their personality for different kinds of shooting sports. Shooters also differ in the way they
react to stress, and measurement of the coping abilities of shooters gives an almost 100% prediction rate of a shooter's potential success or failure at international level.

Berger and Owen (1988) made an investigation on the influence of exercise made and practice qualities on the stress reduction benefits of exercise. College students in swimming, body conditioning, hatha yoga, fencing, exercise and lecture control classes completed the profile of mood states and the state was unusually positive initial moods. It was reported that there was tension and confusion after swimming, only on the first day of testing. Participants in yoga, and aerobic activity that satisfied three of the four mode requirements were significantly less anxious, tense, depressed, angry, fatigued and confused after class than before on all three occasions. Results of this study supported the possibility that exercise mode and practice requirements in the proposed taxonomy moderate the stress reduction benefits.

Goleman and Schwartz (1976) compared meditation and relaxation for their ability to reduce stress reactions in a laboratory threat situation. Thirty experienced meditators and thirty controls meditated or relaxed, with eyes closed or with eyes open, then watched a stressor film. Stress response was assessed by phasic skin conductance, heart rate, self-report, and personality scales. Meditators habituated heart rate and phasic skin-conductance responses more quickly to the stressor impacts and experienced less subjective anxiety (as indicated by the Activity Preference Questionnaire, State-Trait Anxiety Inventory, and Eysenck Personality Inventory).

2.6: Studies Pertaining to Varmam

According to Sharon Stathis (2008) in ayurvedic reflexology varmam points act as ‘relay stations’ along the body’s subtle energy circuitry. If the varmam points are
functioning well, prana will flow along the naadis without interference. However, if they are not, energy will become sluggish or stagnant at the site of a varmam point. This is where varmam therapy plays a vital role in health maintenance. Varmam therapy incorporates the stimulation of these points to help maintain the optimum flow of prana. The significance of varmam therapy cannot be overestimated. “Through working on varmam points, we can control our prana. Through prana the sensory and motor organs, and eventually the entire mind-body complex can be controlled.”

The nature of varmani’s, the martial arts in the north and the draw backs caused to the asanaas are explained by Tilak and Moses (1982). Selvaraj (1984) investigated varma soothiram. He describes about the medicine used in the treatment of varmam affected patients. The details about Aruvaimaruthuvam, Varmam therapy, its uses and Varmakalai have been dealt by Thyagarajan (1986). Patrick Denaud (1986) studied about the origin of the martial art.

Kannanrajaram (2005) and Subhulakshmi (2005) studied about varmam, their types, treatment and the medicines used for treating the patients. Luijendijk (2005) described about the martial art and part of Siddha vaidhyam. Arjunram et al., (2009) suggested that the medicinal plants from Siddha system of medicine were useful for treating respiratory diseases.

The oldest and deadliest form of south Indian martial art, varmakalai was described in http://www.varmaniam.org and http://www.avrdt.com/varmakalai.apx. These sites focus on Siddhars, Varmaniam medical system, Varmakalai history, Varmakalai diseases, Varmam therapy and treatment areas.
2.7: Summary of the Literature

In this chapter the researcher has discussed the studies completed in relation to the present research. Review of such studies helped the researcher to understand the earlier experiments done on the subject and its results. It gave good inputs for the present study and for future researches. Various studies on sports psychology were analysed and their results have been discussed extensively in this chapter. The related researches confirmed that psychological treatment helped the subjects to improve themselves mentally and perform better. The results showed that psychological treatment was an ideal remedy for sportspersons who were talented but unable to match it with performance. The results of such studies showed that it had enabled the subjects who underwent psychological treatment to handle the pressure of competition in a better way and become more successful.