CHAPTER-II

REVIEW OF LITERATURES
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REVIEW OF RELATED LITERATURE

The researcher made an intensive effort by personally digesting himself many encyclopedias, work of experts in the field and physically imbibing certain applausible degrees. The data furnished are cogently related with the study and bears strong and convincing implications. In the context of this study the researcher collected some directly and indirectly related literature which are reviewed hereunder:

Adams⁴ conducted the study titled “The relationship between children diabetic control and self-concept, internal and external locus of control and trait anxiety. This study investigated the relationship between the degree of diabetes management and internal external locus of control, perceived control, self-concept, and anxiety in children. Subjects were 57 children ranging in the age from 3 to 17 years, attending a residential seminar camp for children with the peer’s Harries children’s self-concepts scale, the

Spielberger’s stat-trait anxiety scale and the Adams perceived control scale. The subject regulation of their diabetic condition was based upon the percentage of glycosylated hemoglobin in the blood.

Bete⁵ conducted a study to (1) determine whether male and female coaches and their athletes could predict the pre-competitive anxiety status of one another, (2) to assess the relationship between empathy and ability of coaches to predict anxiety states of athletes participating in this study were 15 male and female coaches ad 278 female athletes. The results of this study suggests that the athletes were more accurate at predicting their coaches pre-game anxiety than were the coaches in predicting the athletes pre-game anxiety. Female coaches were found to be relatively good predictors of their athletes’ pre-game anxiety-finding of this study indicate a strong relationship between athletes competitive trait and competitive state anxiety. The findings revealed statistical significance between SCAT scores and CSAI score. For the total sample, female coaching groups, and male coaching groups.

Bhattacharya\textsuperscript{6} conducted a study on the effect of jogging on the trait anxiety. The role of jogging in selectively reducing somatic anxiety as has been postulated in the Psychological model of Davidson and Schwartz (1976) has also been examined by many investigators. However experimental designs has rarely been used in these studies, furthermore, as structured exercise programme were organized for the subject in such researches. The subjects participated in 10 week long jogging programme, sixty one adult healthy males, who were basically non-exercised were randomly assigned to one of the three groups. The joggers did jogging three times a week 20 minutes continuously in each session. The anxiety were measured by a trait-state Anxiety Inventory and the cognitive somatic Anxiety a questionnaire. In addition, nevroticism subscale of Eysenck personality inventory was used to determine the effect of jogging in reducing general emotional over responsiveness. The 3 minute step test (Mc Ardle et al.) was used to measure the fitness. The subjects participated in their convenient activities. Repeated measures ANOVAs indicated that although the joggers became significantly more fit than the others,

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there was no reduction in anxiety and nevroticism score for
subjects in all the three groups. It was on personality for the non-
clinical population. It was recommended that whether non-
supervised exercise programme attract subjects who differ in
psychological orientation and level of anxiety. It was concluded
that jogging does not have any long term affect an anxiety and
personality for a non-clinical population.

Boutin\(^7\) conducted a study on the relationship of anxiety level
and performance in NAIA intercollegiate men's basketball teams
and 53 players served as subjects. Two inventories measuring trait
and state anxiety were administered to players one-half how prior
to the intercollegiate games. The relationship between the anxiety
level of NAIA basketball players ad their performance in games
indicated that the players who possessed high level of pre-game
anxiety were apparently able to dissipate it once the game began
not reflecting the anxiety in their performance. Turnover per minute
was the basketball performance indicator most consistently
affected by anxiety reacting significant level in the following
situation:-

\(^7\) Kenneth James Boutin “Relationships at anxiety level and performance in
NAIA Intercollegiate basketball games” Dissertation Abstracts International. 44(Nov.
1983) p.1375-A.
(1) Players who participated over 20 minutes.

(2) In the relationship between the lengths of fair played number of personal fouls and turnovers.

(3) Game starter with anxiety represented by one test item and non-starters by seven test items.

(4) All players with anxiety represented by five different test items.

Boon\(^8\) investigated relationship between anxiety and gymnastic performance, pulse rate and palm sweating were utilized as indicator of arousal. Anxiety was assessed by means of state trait anxiety inventory. The Ithara College women's varsity gymnastic team (N-18) was tested. The inter-correlation matrix of all variables gymnastic ability, pulse rate, palm sweating, state anxiety, trait anxiety and gymnastic performance were calculated and revealed limited relationships between gymnastic performance and arousal anxiety measures.

Boon\(^9\) investigated arousal and anxiety of judo and wrestling performance. Pulse rate and palmar sweating were utilized as

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indicates t arousal. Anxiety aggression was assessed by means of the state trait anxiety inventory. The Ithaca College Men's Varsity Judo and Wrestling Tea (N=12) were tested during the 1973-74 season. The Inter-correlation matrix of all variables judo and wrestlers ability, pulse rate, palmer sweating, state anxiety, aggression, trait anxiety, aggression judo and wrestlers performance revealed limited relationship between judo and wrestling performance and arousal anxiety measures.

Boutin\textsuperscript{10} conducted a study on the relationship of anxiety level and performance in NAIA Inter-collegiate Basketball Games. Five NAIA Inter-collegiate men's basketball teams and 53 players served as subjects. Two inventories measuring trait and state anxiety were administered to the players one-half hour prior to the inter-collegiate games. The relationship between the anxiety level of NAIA basketball players and their performance in games indicated no significant levels players who possessed high levels of pre-game anxiety were apparently able to dissipate it once the gave began, not reflecting the anxiety in their performance.

Turnovers per minute was the basketball performance indicator most consistently affected by anxiety, reading significant level in the following situations (1) players who participated over 20 min., (2) in the relationship between the length of time played, number of personal fouls and turnovers, (3) Game starter with anxiety represented by one test item and non-starters by seven test items, (4) All players with anxiety represented by five different test items.

Bowger\textsuperscript{11} conducted a study compare the state anxiety levels ages, genders, and skill and pre-competition. The study included 137 athletes. Each subject completed the Spielberger state Anxiety Inventory A-state twice, once just prior to a practice session and gain just prior to the state Age Group Swimming Championships. The statistical procedures used was a 3 x 2 x 2 Repeated Measures Analysis of variance. Mean comparisons were made using the Newman Keuls Multiple Range Test which indicated that the 15-18 age groups. Females had significantly higher state anxiety than males and significantly higher state

anxiety was found at the pre-competition situation that at the practice situation.

Brusman\(^{12}\) conducted a study to determine relative efficacy of EMG bio-feedback (a relaxation technique) and guided imagery upon anxiety reduction in high-risk college students. Forty-five high-risk undergraduate male & female students involved in human development programme at Northern Arizona University was selected as subjects for this study. Students in the human development courses are considered non-traditional students because they do not meet the minimum level university entrance requirements (low GPA or low scores in college achievements tests), and are often admitted upon recommendation of an admission review committee. These students are characterized by a range of academic difficulties and elevated levels of anxiety. The current study attempted to compare two forms of anxiety reduction techniques in terms of effectiveness in reducing the physiological components of anxiety. These two techniques were (i) EMG biofeedback relaxation technique (ii) Guided imagery relaxation technique.

A random 3-group design for repeated measures was employed. There were two experimental conditions and a control group. All treatment sessions were 20 minutes in duration each subject was involved in four experimental sessions. A ten-minute post-treatment EMG microvolt reading was taken for each subject during each session. Physiological anxiety as measured in microvolts by electromyography readings, were recorded by the use of an EMG and HT 10 digit integrator. A two way analysis of variance for repeated measures was employed. There were two experimental conditions and a control group. There was significant difference in treatment effectiveness (as measured by post-EMG microvoltage levels) among the EMG biofeedback, guided imagery and control groups. Further analyses utilizing Newmankeuls tests revealed that as significant differences existed in the relative effectiveness of the two anxiety reduction technique's examined in this study. Significant differences were found when comparing the performance of both experimental groups with the no-treatment control group. However, further investigation needs to be conducted in order to determine whether the combination EMG biofeedback and guided imagery would be the most effective method to facilitate anxiety reduction in high risk college students.
Burton\textsuperscript{13} studied the relationship between state and trait anxiety, two motivational dispositions and skill attainment in beginning bowling and beginning riflery. Subjects were 212 college women, results showed that a relationship between trait anxiety and the level of state anxiety were experienced in the two motivational dispositions. There was a significant relationship between both trait and state anxiety and the level of scale attained in beginning a riflery however, these variables did not have a reliable relationship between motivational dispositions and skill attainment in beginning riflery. A negative relationship was indicated between achievement motivation factor I and bowling skill.

Calderaro\textsuperscript{14} conducted a study on stress anxiety in sport, he concluded that sport seems to be source of acute and chronic stress with possible effects in physical and psyche health of a person. A simple test like the one used by Holmes in psychosomatics, has allowed the Author to discover the presence of

\textsuperscript{13} R. Burton, “Relationship between State and Trait Anxiety, Two Motivational Dispositions ad Skill Attainment in Beginning Bowling and Beginning Riflery.” Research Quarterly (d(October 19790); 1340.

“stress anxiety” in the world of sport besides the better known “pre-agonist anxiety” felt by the athlete. In fact, “stress anxiety” can also attract officials, trainees and other sports engaged persons with possible interpersonal side affects (family, school, work). The author also emphasis efficient interventions in order to prevent behavioral and psychomatic negative consequences. Furthermore, in order to increase individual resistance to physic, consequence certain techniques are emphasized.

Chapman\textsuperscript{15} conducted a study to determine what, if any predictive qualities could be identified in a group of skilled women field hockey players. The specific areas investigated were anxiety, visual perception, manual dexterity, ball control, and dynamic balance, years of experience and playing position served as a secondary focus in the study. A total of 106 women field hockey players served as subjects. The results from five tests, selected on the basis of a pilot study, supplied the data for analysis. The sports competition anxiety test (SCAT), a brief paper – and pencil test, provided an anxiety measure. A modified version of Herlcowitz's

Moving Embedded Figure Test (MEFT) was used to assess visual perception. Manual dexterity was determined by the two hand turning and placing test of the Minnesota Rate of Manipulation Test (MRMT). The Chapman Ball Control Test (CBCT), a test designed by the investigator, was employed to assess skill ability in stick work. Dynamic balance was measured by the Scott Sideboard Leap Test (SSLT). Results indicated that dynamic balance, ball control, and anxiety were the discriminating variables for the groups of selected women field hockey players. Visual perception and manual dexterity, as measured in its study, did not discriminate between successful and less successful field hockey players. Years of playing experience were not an important factor in group classification. Significant differences did exist between ball control skills of goalies and field players.

Costa\textsuperscript{16} has investigated the football players personality and reported that the high competitive of the game required in a real champion as well balanced strong, disciplined, conscientious, self controlled and self assured personality.

Cratty\textsuperscript{17}, anxiety appears to be general fears or foreboding personality trait marked by a lower threshold to stressful events. To maintain internal balance the organism must function with a certain level of anxiety always present. Anxiety in its broadest sense refers to the general state of alertness. It is related to the body's alarm system and provides for vigilance against disruptive force in the environment. One must be anxious when crossing the street this brings a sense of alertness in order to ensure the survival in the modern city. However, problem arises if the anxiety produced arousal in too great. If the organism in continually threate\textsuperscript{4}ned, hightened general anxiety measured by increased muscular tension is the result of contemporary researchers have coined the term 'trait anxiety' referring to be permanent or stable personality dimensions.

David. W. Rainey and Herb Chunningham\textsuperscript{18} investigated issues related to competitive trait anxiety on 64 female 64 male university athletes. They computed the sport competition anxiety test (SCAT). The questionnaire measured fear of success, fear of

\textsuperscript{17} Brayant, J. Cratty, Movement Behaviour and Motor Learning (London: Lea and Febiger 1975), p.228

\textsuperscript{18} David W. Rainey & Herb Chunningham, "Competitive Trait Anxiety in Male & Female College A", Research Quarterly For Exercise & Sport. 59(1988):244-247.
failure, fear of evidence. It was hypothesized that these issues would be significantly related to CTA. Results support the proposed relationship of fear of failure and fear of evaluation to CTA, but also suggests that the pattern of the relationship varies with age, gender sport and other variables.

Davis and Gordin\textsuperscript{19} made a study to determine the effect of hypnosis, relaxation training or music on state anxiety and stressing female athletes. Forty-seven inter-collegiate female athletes who volunteered for participation were administered a pretreatment and post-treatment assessment. Treatment phase consisted of 18 sessions of 20 minutes and post-treatment phase consisted of eight weeks under procedure.

Debnath and Bawa\textsuperscript{20} found that sports competitive anxiety between Junior and Senior Cyclist and Judo and Wrestling. But a non significant difference has been found in sports competitions anxiety between male cyclist and Judo and wrestling of National Coaching Camp.


Diana\textsuperscript{21} conducted this study to determine the effect of relaxation training on anxiety, verbal ability, and reading achievement measures of fifth grade students. Independent variables including length of training, gender, pre-treatment anxiety level. Participants were 103 students in nine classrooms from lower and middle class families in four schools.

The relaxation training programme consisted of 15 to 20 min. taped sessions which systematically trained students through exercise in deep muscle relaxation based upon progressive relaxation techniques.

The results of this study indicated some effects of relaxation training on anxiety measures as a function of gender pretreatment anxiety level. No significant positive measures were reported.

Dowthwaite and Armstrong\textsuperscript{22} investigated the effect of competitive game on this anxiety levels of individual players. The game selected was soccer and a squad of eleven male college


soccer players were taken as subjects. Subjects were all eleven members of Worcester college of Higher Education Soccer Team during the 1982-83 competitive season. The players ranged in age from 18-29 years. The adult version of the Sports Competition Anxiety Inventory (SCAI) was administered to determine their trait anxiety ten minutes before the first and immediately after the last match. The competitive short form of Spielberger’s State Anxiety Inventory (CSAI) was administered to determine state anxiety levels ten minutes before and immediately after each game. The CSAI was applied to three matches, two judged to be easy and the other match being classified as crucial. The instrument should detect changes in A-state due to importance of the game. The findings indicated that the group which won all the three games was indicative of changes in anxiety states before and after competition. The men were significantly more anxious before the crucial game when compared to the easy games.

Dureha\textsuperscript{23} administered Kamlesh sports achievement motivation test and Rainer’s sports competition anxiety test (Adult

from) to find out achievement motivation and pre-competition anxiety among Indian Inter-university hockey players and to compare high and low pre-anxiety competition anxiety group on achievement motivation. It was concluded that there is a significant relationship between achievement motivation and pre-competition anxiety of hockey players and significant difference in the level of achievement motivation of high and low pre-competition anxiety group of intervarsity level male hockey players.

Edwin\(^{24}\) conducted a study on progressive muscle relaxation effect on trait state & test anxiety. Many adolescents experience stress and test anxiety and as a result many students do not perform well in test. A little research is located in regards to stress management techniques and anxiety. The purpose of this study was to make investigation of progressive muscle relaxation could change state and trait test anxiety levels in seventh grade students.

A pre-test treatment post-test experimental design was used. The population was 100 students. They were grouped as per their

general anxiety levels as measured by the trait subscale of the state trait anxiety inventory for children. An equal number of high and low anxious, students were randomly assigned to the experimental and control groups. Pre-tests, post-test anxiety evoked prior to taking the test of anxiety instructions and progressive relaxation was provided for the experimental group. A two-way analysis of variance was used to measure change of scores between students who received no instruction. There is no significant interaction between anxiety and treatment on changes in trait anxiety levels.

The results of this study have shown a unit of interaction in progressive muscle relaxation does not significantly reduce state or trait anxiety in junior school children.

Emerson\textsuperscript{25} conducted a study, which study the effect of two relaxation programmes and a control procedure an anxiety and performance levels of test anxious students of college. The treatment groups were, anxiety management training (AMT),

\textsuperscript{25} Emerson, Strohl James, “The Effect of Anxiety Management Training & Breath Training on Test Anxious College Students” Dissertation Abstract International, Vol. 49 p.1102-A.
breath training (BT) and a delayed treatment control training (DTC).

Sixty-two Lehigh University undergraduates who volunteered were randomly assigned, by sex, to either the AMT, BT, or DTC group. The AMT & BT group training consisted of six one-hour sessions. These treatment groups were taught to detect internal anxiety on a daily basis. The AMT group was taught four different relaxation procedures. All treatment subjects were also instructed to practice daily, and they were provided with cassette tapes for home practice.

After the training was completed the three groups were measured with criterion measures. Finger temperatures were also taken during each of the AMT or BT sessions. Although the statistical analysis showed that AMT and BT did not significantly influence anxiety, there was a strong non significant trend found on self reported test anxiety indicating that the treatment may have influenced test anxiety levels. Conclusions could not be drawn from t-test analysis. In contrast to the non-significant statistical findings, the subjects anecdotal reports of the AMT and BT
subjects supported the beneficial effects of these programmes for a variety of anxiety related problems.

Hollingsworth\textsuperscript{26} conducted a study to determine the effects of special programme and encouragement on the acquisition of a gross motor skill. She also investigated the relationship between levels of trait anxiety, state anxiety and performance of the same task. Ninety male and female junior high school students who had scored either “high anxious” or “low anxious” on Spielberger’s Trait Anxiety Inventory (STAI) were randomly divided into a “performance goal group” “verbal encouragement group” and a “control group”. The subjects practiced a two-ball, one hand juggling task for five minutes on twelve consecutive school days. They took the STAI just before each practice session. The average number of catches per trial was recorded for each subjects and each session. All the subjects in the “verbal encouragement group” were told to do their best. Subjects in a “performance goal group” were given a goal based on their previous trial. Apart form the data on anxiety, significant different in performance levels occurred. A strong relationship was found to exist between state and trait anxiety.

anxiety. It was also found that as the performance level increased with practice, the anxiety level tended to decrease.

Huston case study were made of sixty undergraduate women participating in 6 weekly riding lessons to determine whether fear in students with high anxiety levels could be reduced and whether differences in riding skill correlated with anxiety levels. Information was gathered from questionnaire regarding riding experiences. All subjects showed an increased anxiety between the first and third lesson. Five subjects increased in riding skills from the second to the sixty lesson at the .01 level of confidence. Anxiety tended to decrease as skill increased.  

Engels investigated the relationship among induced muscular tension, manifest anxiety levels, and motor learning.

The study was conducted on 24 male students. The subjects were randomly divided in to 4 equal groups for the persuit motor learning task group-I learned at constant rpm's group-II, learned at increasing rpm's producing task induced muscular tension, group-


III learned at constant rpm's while gripping a hand dynomometer and group-IV learned at slow, rpm's but were tested at the same criterion rpm's as the other three groups.

The results of this study seem to indicate that there is differential effect of internally and externally induced muscular tension on pursuit motor learning. Group-O had best performance followed by group, II, IV, III. There was significant difference between group-I and III, IV and between group II and III.

Fix\textsuperscript{29} conducted a study to observe the effect of activity intensity, defined as no – activity moderate activity (50%) and heavy activity (80%) on the state – anxiety adjustments of college students. The subjects were grouped on the basis of their scores on the STAI trait Anxiety scale into low, Middle, and High Anxiety Groups. There were 25 subjects assigned to each group. The results showed significantly lower post – treatment A – state scores at the Low Trait Anxiety Group compared to those of the High Trait Anxiety group (P<0.05). It was also found that there were significantly lower post-treatment A-state scores for the moderate

\textsuperscript{29} David Eldon Fix, "The Effects of Running Intensity on the State Anxiety of College Students", Dissertation Abstracts International 40:2(August 1979):737-A.
activity treatment when compared to the non-activity treatment (P<0.05). There were also significantly lower post-treatment A state scores for the heavy activity treatment when compared to the non-activity treatment (P<0.05). There were no significant differences between the moderate and heavy activity treatments on post-treatment A-state scores. There were no significant differences between the sexes, nor were there any significant interactions between the variables of trait Anxiety Group, sex, and treatment activity level.

Ginter et al.\textsuperscript{30} conducted a study on “Anxiety among children in Israel. A sample at 676 children from Israel participated in the present study. They resided in either a city (N=105) or kibbutz (N=571) in northern or central Israel. Participants completed an Hebrew version of Revised children’s Manifest Anxiety Scale. The current study hypothesized that anxiety is multi dimensional in nature. It was also hypothesized that anxiety, give the unique environment of Israel, would be associated with different sources of potential threat. The anxiety items comprising the revised scale were analyzed via a principal factor analysis with varimax rotation.

A two-factor solution was retained as the most statistically sound solution one factor was labeled Anticipatory Anxiety and the other social anxiety, the results supported the hypothesis.

Griffin\textsuperscript{31} administered Spielberger's Trait anxiety inventory to 682 females engaged in eight competition sports, representing three different age groups. The different in trait anxiety for the three age groups was significant at the .01 level with 19\textsuperscript{th} group being lower in trait anxiety. This difference however was relatively small. Trait anxiety scores also differed significantly for the various sports. Female gymnasts were highest in trait anxiety and female basketball players were lowest in trait anxiety. These differences were also not large. There was no apparent trend that individual or team sport athletes differed in trait anxiety.

Griffith, Steel and Vaccaro\textsuperscript{32} examined the relationship between the anxiety levels of 62 beginning scube diving students and standardized there was no relationship between anxiety and performance on relatively simple tasks while there was a


\textsuperscript{32} T.J. Griffith, D.N. Steel; and P. Vaccaro, “Relationship Between Anxiety and Performance in Scuba Diving” Perceptual and Motor Skill 48 (June 1979): 1009.
relationship between anxiety and performance on the more complex diving maneuvers.

Hardman\textsuperscript{33} conducted a study to compare trait anxiety among 42 different samples of athletes trait anxiety was assessed in all studies by the cattle's 16 P.F. using the derived anxiety factor. Those samples included athletes from 16 different sports, athletes from United States, Great Britain ad athletes of superior and average skill. In almost all samples the athletes were men. The data showed clearly that most athletes (32 of the 42 sample) were within the normal range of trait anxiety when compared with cattle's norms.

Closed examination of the 42 sample reviewed by Hardman failed to reveal any differences between athletes participating in contact and non-contact sports. He suggested that superior athletes are less anxious than average ability players, while displaying higher levels of trait anxiety than the population mean.

Harvatials\textsuperscript{34} conducted a study to find out the effects of A-trait and A-state anxiety upon athletic performance. A total of 90 “Effect Size” (ES) were conducted from the initial investigations and utilized as dependent variables which included anxiety type level, performance outcome, sex of the subject and grade level. The average study ES, was 656 (SD = .842) suggesting that anxiety influences performance some what more than with no anxiety present. Specific suggestions were presented direct attention towards the relationship between anxiety and performance or changes in anxiety level.

Horvatic\textsuperscript{35} conducted a study to find out the effects of A-trait and A-state anxiety upon athletic performance: A meta – Analytic approach. A total of 90 “effect size” (ES) were calculated from the initial investigations, and utilized as dependent variables to assess of 41 independent moderator variables, which included anxiety type, anxiety level, performance outcome, sex of the subject, and grade level. The average study ES was .656 (SD=842) suggesting that anxiety influences performance some what more than with no

anxiety present. Specific suggestions were presented to direct attention towards the relationship between anxiety and performance or changes in anxiety level.

Hovey\textsuperscript{36} tried to find out the relationship between anxiety and competition in men's Inter-collegiate volleyball. He tested 12 members of a men's volleyball inter-collegiate tea, where all subjects completed the sports competition anxiety test. During a team's meeting and state anxiety inventory three times, once 2 min. before a practice session, once 5 min. before a practice session regular session match and once 5 min. before a tournament match. It was found that trait anxiety cannot be used to predict state anxiety the three competitive situations of practice, regular season game and tournament game to not produce different state anxiety and three competitive situations; a positive relationship exist between trait anxiety and tournament state anxiety.

\textsuperscript{36} Kim Hovey, "The Relationship Between Anxiety and Competition In Men's Inter Collegiate Volleyball" Completed Research in Health, Physical Education And Recreation 21 (1980), p.144
Hovey\textsuperscript{37} tried to find out the relationship between anxiety and competition in man's intercollegiate volleyball. He tested 12 members of a men's volleyball intercollegiate tea, where all subjects competed the sports competition anxiety test. During a team's meeting and state anxiety inventory; three times, once 2 min. before a practice session, once 5 min. before a practice session regular season match and once 5 min. before a tournament match. It was found that trait anxiety cannot be used to predict state anxiety the three competitive situations of practice, regular season game and tournament game to not produce different state anxiety and athlete three competitive situations: a positive relationship exist between trait anxiety and tournament state anxiety.

Hutson\textsuperscript{38} studied 6 undergraduate women participating in 6 weekly riding lesson to determining whether fear in students with high anxiety level could be reduced and whether difference in riding skill correlated with anxiety levels. Information was gathered from questionnaire regarding riding experience. All subjects

\textsuperscript{37} ibid.

showed a decrease in anxiety between the first and third lesson. Five subjects increased in riding skill from the second to the sixth lesson at the .01 level of confidence. Anxiety tended to decrease as skill increased.

Jones and Cale\textsuperscript{39} examined changes in cognitive anxiety, somatic anxiety and self-confidence in a sample of 40 male and female university athletes during the period leading up to the quarterfinal stage of the English and Welsh University Athletic Union Championship. Subjects responded to the competitive State Anxiety Inventory –2(CSAI-2) on six occasions during the pre-competition period. 2 weeks, 1 week, 2 days, 1 day, 2 hours and within 30 minutes. The results demonstrated different patterns of change for the females on all three CSAI-2 sub scales. In the case of cognitive anxiety, there was no change across time in the males but females showed a progressive increase as the competition neared. Females also showed an earlier increase in somatic anxiety than males. Self-confidence remained stable in males but decreased in females on the day of the competition.

Jones\textsuperscript{40} studied the effect of anxiety and need for achievement on the performance of high school wrestlers. Data were obtained from the thematic appreciation test, the test anxiety questionnaire, expectancy ratings by the individuals and by their coaches. Performance data were obtained from match score books and observation. It was concluded that the personality traits of anxiety and need for achievement had a tendency to influence both the expectancy and the actual performed better than those high in anxiety. The groups scoring highest in performance was that of low anxiety and high need for achievement. The lowest level of performance was demonstrated by the group high and anxiety and low in need for achievement.

Kenneth\textsuperscript{41} conducted a study on prediction of performance from selected personality traits, and State Anxiety Levels of competitive male and female gymnasts. Subjects for the study were 21 male and 35 female gymnasts, aged 9 to 23 who competed in either sectional or national qualifying meets in the

\textsuperscript{40} Earl R. Jones "The effect of anxiety and need for achievement on the performance of high school wrestlers", \textit{Completed Research in Health, Physical Education and Recreation}, (1973):47.

\textsuperscript{41} Rees Gregory Kenneth, "Prediction of Performance from Selected Personality Traits and State Anxiety Level of Competitive Male and Female Gymnasts", \textit{Dissertation Abstracts International} 45:8(February 1985):2441-A.
United States and Canada. Path analysis, a multiple regression technique was used in the treatment of the data. Based upon the findings and within the limitations of this study, the following conclusions can be drawn: (1) The personality – anxiety model was supported by explaining over 51 per cent of the variability in the criterion, (2) pre-competitive anxiety was not a statistically significant prediction of gymnastics performance, (3) the hypothesis related to the personality performance relationship were not supported since the model explained only 38.1 per cent of the total variability in gymnastics performance.

Kim\textsuperscript{42} studied members of the men's inter collegiate volleyball team of Springfield college. All subjects completed the sports competition anxiety test (SCAT) during tea meeting each subject completed the state Anxiety inventory (SAI) there items, once-2 min. before a practice session, once-5 min. before a tournament game. It was found that trait anxiety cannot be used to predict state anxiety, the three competitive situation of practice, regular session game and tournament game do not produce different state anxiety reaction on interaction costs between traits.

\textsuperscript{42} Kim Hovey, "The Relationship Between Anxiety ad Competition In Men's Inter Collegiate Volleyball" Completed Research in Health, Physical Education And Recreation 21 (1986), p.24.
anxiety and 3 competitive situations, a positive relationship exists between traits anxiety and tournament state anxiety.

Shooting at a basket ball ring for accuracy and the speed was the complex motor still and the IPAI self analysis was used to measure anxiety. The high and low anxious subjects were chosen from a population of 330 boys ages 9 to 11. Two groups were eventually chosen to represent the high and low anxious categories. After rotating the groups through competitive and individual testing procedure and measuring the performance the data well subjected to analysis of covariance. On 't' ratio analysis, the high anxious groups performed better under the competitive situation and there were no other difference.\textsuperscript{43}

Kiselica\textsuperscript{44} conducted a study to evaluate the effectiveness of an anxiety management training programme in enhancing the adjustment of highly anxious ninth grade students. The programme involves teaching 24 trainees progressive muscle relaxation cognitive reconstructing and assertiveness coping skills. A


matched set of 24 highly anxious control students participated in regularly scheduled group guidance classes. The study was conducted in a traditional high school setting over an eight week period. A randomized pre-test, post-test-control group design was employed.

The major results of the study indicated. (a) Treatment subjects scored significantly higher than control subjects at both post-test and at a one-month follow-up on an achievement test designed to assess the subject knowledge of the training concepts. (b) There were no significant gender effect or interaction between trainer and treatment conditions. It was concluded that the anxiety management training was effective in helping trainees' academic performance. (c) Relative to the control subjects, treatment subjects demonstrated significantly greater improvements on the theoretically relevant measures of adjustments, the trait anxiety scale (Spielberger) and the symptoms of stress inventory (Leckie and Thompson, 1979) but not on the transfer of training measures quarterly grade prints average.

Anecdotal finding from the current study suggested a number of important considerations in employing cognitive behavioral
tactics in primary prevention programmes. The current findings also helped to identify several anxiety provoking concerns of the adolescents of this study. Several suggestions were offered regarding the implications of the current findings for the practice of the school counseling. Future research was suggested to evaluate the relative utility of the current training components and to examine the generalizability of the current results on different populations of adolescents and additional outcome measures.

Krane and Williams\textsuperscript{45} conducted a study on performance and Somatic Anxiety, Cognitive Anxiety and confidence changes prior to competition high school gymnasts and collegiate golfers. A version of the competitive state anxiety inventory (Cs AI-2) was administered 24 hours, one hour, and ten minutes prior to competition. Results of ANOVA showed the Golfers and Gymnasts to have different patterns of change in the CSAI-2 sub components. The gymnasts displayed an increase in cognitive and somatic anxiety and a decrease in self-confidence while the Golfers showed a decrease cognitive anxiety, an increase in self-

confidence and no change in somatic anxiety. Overall, the Golfers had lower cognitive and somatic anxiety and higher self-confidence than the gymnasts. Multiple regression analysis indicated none of the CAAI-2 sub components was able to significantly predict high school gymnastic and collegiate golf performance. The results are discussed in terms of differences in sports, competitive conditions and skill and experience level.

Krane and Williams\textsuperscript{46} Compared changes in cognitive anxiety somatic anxiety, self-confidence prior to competition by high school gymnastic and collegiate golfers.

The participants in this study were 36 girls on three high school gymnastic teams competing in conference meets and 44 females collegiates. Athletic association team competing Division 1 National collegiate Athletic Association teams.

Marvin\textsuperscript{47} investigated to determine the relationship between competitive trait anxiety (CTA), state anxiety, and Golf


performance in a field setting 10 low, moderate and high CTA Collegiate golfers (N=30) performed in a practice round on day 1 and 2 of a competitive tournament. State anxiety results indicated a significant CTA main effect, with low CTA subjects displaying lower state Anxiety than moderate or high CTA SS. The competition, main effect was also significant with Post-hoc tests indicating higher levels of state anxiety during day 1 and 2 then during the practice round performance results produced significant CTA main effect, with the low CTA SS displaying higher levels of performance than moderate or high CTA SS. Correlations between SCAT and state anxiety indicated that SCAT was a good predictor of pre-competitive state anxiety. The direction of state anxiety and performance CTA main effects provide support for oxedine's (1970) contentions that sports requiring file muscles co-ordination and precision (eg. Golf) are performed best at low level of Anxiety.

Maynard\textsuperscript{48} conducted a study to assess the relationship between the Martens Sports Competition Anxiety Test and the competitive state anxiety inventory as well as their effectiveness in

predicting game performance in rugby, 22 male university rugby players participated in the research. A multiple regression analysis between the SCAT and the three subscales of the CSAI showed a significant correlation was also noted between somatic anxiety and the performance of players who performed below their normal ability. The author suggested that the increase in self-confidence between games may have been detrimental to the performance of the team.

McGuire et al. 49 conducted a study on Aggression as a potential mediator of the Home Advantage in Professional Ice Hockey. Based on the subject—defined delineation between aggressive and non-aggressive ice hockey penalties established by Midmeyer and Brich, 13 measures were used on data collected from the official game selected ten groups (N=3). On the first day they led through a sequence of isometric muscle tension exercises and immediately afterwards completed the Speilberger's state trait anxiety indicator (STAI). Finally, the second movement sequence of calisthematics was initiated one week after the first, immediately

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followed by the STAI. The STAI scores were then divided into high and low trait anxious groups. These scores were compared to the scores for each movement sequence to determine if the physical activity affected the STAI scores. ANOVA did not reveal any significant difference between trials and did not support the hypothesis that physical activity would decrease the level of anxiety.

Milne\textsuperscript{50} conducted a study to determine the relationship between anxiety and motor performance of young children. The sample of one hundred boys and one hundred girls each from kinder garden grade one and grade two was randomly determined by proportional stratification by school in Battle cirt Michigan. Each child was administered the motor performance Battery which included items for agility, power, flexibility, endurance and reaction time. Anxiety measurements were obtained by the palmar sweat Test, the general Anxiety scale for children, the test Anxiety scale for children and the teacher rating scale. Kindergarden children were not administered the test Anxiety scale for children as they

had not yet encountered the "testing experience". The results of
the present study suggest that a high level of anxiety has a
detrimental effect upon matter performance of young children.

Nleanor conducted a study to compare relaxation
techniques and visuo motor behavioral rehearsal to determine
which of either is more effective than an attention placbo
intervention in reducing anxiety and enhancing performance in
female gymnastics competition for 9-16 years olds in levels five
through nine.

An experimental study was conducted and 50 gymnasts
ages 9-16 years, who were competitors in the Kansas gymnastics
association levels five through nine, were administered the Kansas
self evaluation questionnaire on two occasions, pre-intervention
and post intervention. These tests were used to assess anxiety
prior to the competition. Judge's scores were tabulated to evaluate
performance levels.

Peek51 examined 32 students in a volleyball class by dividing
the into two matched group on the basis of the IPAT 8-parallel

51 Arden Peek, "The Influence of Anxiety on Volleyball skills" completed
research in Health Physical Education and Recreation 9(187):88-89.
from anxiety test prior to 13 class meetings during which the French and Cooper serve ad repeated volley's test were given at the beginning, middle and end of the meetings. Induced anxiety was attempted by verbal and written suggestions that inadequate test performance will result in a low final grade, performance improved significantly on the skill tests but the correlation between the anxiety and test performance were not significant. Induced anxiety produced significant change in anxiety but the changes were not un-uniformly in that same direction.

Krane and Williams\textsuperscript{52} compared changes in cognitive anxiety somatic anxiety, self-confidence prior to competition by high school gymnastic and collegiate golfers.

The participants in this study were 36 girls on three high school gymnastic teams competing in conference meets and 44 females collegiates. Athletic association team competing Division 1 National collegiate Athletic Association teams.

Robbert\textsuperscript{53} conducted a study to investigate several facts of anxiety and motor performance as they related to sports

competition itself. Especially it was looking as a comparison of the effect of trait anxiety level on the performance of a complete motor response time task I the competitive and non-competitive situation. It also looked at the function that pre stimulus delay had on performance and the additional effects of past successful athletic experience. Male volunteer (N=72) under graduate students in professional and general performance physical education classes served as subjects. Subjects were randomly selected from the upper and lower 20 per cent scores on the Martens sports competition Anxiety Test. Statistical analysis of the main effects as well as the interaction was with the analysis of variance procedure statistical results of the investigation showed that athletic experience pre stimulus delay period, competition and trait anxiety had an effect upon the performance of a complex matter response time task such as the one employed in this investigation.

Rodrigo, Lusiardo and Pereira54 examined how the component of the Spanish Version of the Competitive state anxiety

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inventory (CSAI-2) are related to each other and their relationship with performance in 51 male soccer players from our professional teams. The results indicated a moderate relationships between cognitive worry and somatic anxiety, confirming that these are separate, but related components of state anxiety. Also, cognitive worry was the more consistently and inversely related to performance. Finally, alpha coefficients of this Spanish Version indicate that it is an internal reliable measure.

Rodrigo, Lusiardo and Pereira\textsuperscript{55} examined how the component of the Spanish Version of the Competitive state anxiety inventory (CSAI-2) are related to each other and their relationship with performance in 51 male soccer players from our professional teams. The results indicated a moderate relationships between cognitive worry was more consistently and inversely related to performance. Finally, alpha co-efficient of this Spanish version indicate that it is an internal reliable measure.

\textsuperscript{55} Gustavo Rodrigo, op. cit.
Rose 56 conducted this study to investigate the effects of an aerobic dance programme and the combination of progressive relaxation and aerobic dance on anxiety level and fitness level of high school girls. Ninety students in three intact groups were pre-tested and post-tested on state and trait anxiety, resting and recovery heart rate and systolic & diastolic blood pressure. Exercise and/or relaxation training was administered four times a week for four weeks to two experimental groups during school physical education classes while the control group met for scheduled home economics classes. High and low anxiety subjects were identified to determine if treatment had a different effect on anxiety or fitness level over time depending on initial level of anxiety.

Statistical significant ANOVA interactions and main effects were found in the variables measuring both areas of anxiety and fitness. Since no significant differences occurred by groups from pre-test to post-test. No significant differences occurred by groups from pre-test to post-test. Changes in anxiety level were not

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attributed to treatment. No significant differences were found for either high or low anxiety subjects in all groups from pre-test to post-test.

Seward\textsuperscript{57} conducted this study to investigate the effects of frontal is electromyographic biofeedback training on internality, externality, anxiety and muscle tension of deaf students, students volunteers enrolled at a post-secondary institutions providing support services for the deaf were randomly assigned to either an experimental group or a no treatment control group. The experimental group consisted of 36 subjects (21 males, 15 females) and the control group included 34 subjects (18 males, 16 females).

Pre-treatment and post-treatment baseline measures of the dependent variables of locus of control, anxiety and electromyographic (EMG) levels are recorded using the learning styles inventory (National Technical Institute for the deaf at Rochester Institute of Technology, New York). A test of attitudes (P.J.Dowaliby).

The experimental group received six half hour bio-feed back sessions during a 3-week treatment phase. The control group was not seen during the treatment phase.

Results of analysis of co-variance indicated that frontal is electromyographic biofeedback training has got no significant effects on internality (F= .009, p=.923), externality (F=14, p=.905) and anxiety (F=.536, p=.467) significant differences were found between experimental and control groups at electromyographic levels.

Singh58 studied 64 male and 66 female judo players who participated in national games held at Delhi during November, 1985 served as the subjects for this study. Judo competitions were held on knock out basis and those who secured 1st, 2nd and 3rd position in the respective categories were considered as champions those who lost in each weight categories were considered as non-champions, and for selecting non-champions for each weight category, a random method of selection was

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followed. Finally 24 non-champions male judokas at national level were selected as subjects, for study.

Similarly, 18 non-champions female judokas at national level were selected as subjects for the total group of 60.

1. Male champions judokas of national level were found to have a low level of sports competitions. Anxiety as compared to no-champion judokas.

2. Champion and non-champion female judokas at national level did not differ on sports competition anxiety level with each other.

Swain and Jones[^59] conducted a study on the relationship between Sport Achievement Orientation and Cognitive Anxiety, Somatic Anxiety and self-confidence in a sample of male track and field athletes. Subjects responded to the competitive state anxiety inventory – 2(CSAI-2) on five occasions during the pre-competition period and also completed the sport Orientation Questionnaire (SOQ) Stepwise multiple – regression analyses were employed in order to determine whether any of the SOQ subseals emerged as

significant predictors of the CSAI-2 subsides scores. The dominant prediction to emerge for each anxiety subcomponent was the competitiveness subclass. The subjects were then dichotomized into high and low groups of competitiveness by means of the median – Split technique. Two-way Analysis of variance revealed significant groups by time – to – competition interaction's for both cognitive and somatic anxiety. In the case of cognitive anxiety, the high competitive groups exhibited no change across time; the low competitive group showed progressive increase as the competition neared. Findings for somatic anxiety revealed that the low competitive group reported an earlier elevation in the somatic response. Significant main effects of both time – to event and group (but no inter-faction) were found for self-condition. The findings revealed that the high competitive group, although reporting higher levels of self-confidence on the day of competition in the low competitive group, self-confidence remained stable. These results suggest that the pre-competition temporal patterning of the multidimensional anxiety sub-components differ as a function of competitiveness.
Silvestri and Rose\textsuperscript{60} conducted a study to investigate the effects of an aerobic dance programme and the combination of progressive relaxation and aerobic dance on the anxiety level and fitness level of high school girls. Ninety students in three intact groups were pre-tested and post-tested on state and trait anxiety, resting and recovery heart rate, and systolic and diastolic blood pressure. Exercise and relaxation training was administered four times a week for four weeks to two experimental groups during school physical education classes while the control group met for scheduled economic classes. No significant differences were found for either high or low anxiety subjects although the anxiety scores decreased more for high than low anxiety subjects in all groups from pre-test to post-test.

Smith\textsuperscript{61} studied the effect of anxiety on shooting proficiency on members of the 1977-78 South Dakota State University Women's Basketball Team (N=12). The subjects were measured on State Anxiety Inventory (SAI); Sport Competition Anxiety Test.


(SCAT); Pre-game HR; game field goal percentage; game free throw percentage, season field goal percentage and season free throw percentage. Subjects in Group 1 consisted of players who attempted over 122 field goals during the season which Group H attempted 95 field goal or less. Results of ANOVA indicated significant (P.05) difference between groups on season field goal percentage and SAI. Subsequent data analysis throughout this study incorporated only the values from group 1. A significant 'r' was found between scores on the SAI and SCAT. Significant (P.05) Multiple regression equations to estimate field goal shooting proficiency from selected measured of anxiety produced multiple r's ranging from .47 to .66 and accounted for between 22 and 44 per cent of the variance in performance of Multiple regression equation for predicting free throw success was not significant (P.05).

Thomas⁶² made a study to investigate the effects of three contemporary anxiety reduction techniques upon anxiety and performance in a class situation. Subjects were volunteers of students from exercise and health classes. Subjects practiced

three hours of either progressive relaxation, heart rate feedback, content specific meditation or simply sati and rested for three hours throughout the 10 weeks period of class involvement.

In the end of the class it was concluded that there was no significant difference between groups on the performance variable the despite the drop in anxiety.

Weinberg and Rogan\textsuperscript{63} conducted a study about motor performance under three levels of trait anxiety and stress. Approximately three weeks prior to the actual experiment, the Trait Anxiety Inventory was administered to 4200n males attending various under – graduate classes at the University of California, Los Angeles. The motor task consisted of throwing tennis balls at a target comprised at three concentric circles. In this study they conducted, the stress and Trait anxiety main effects indicated that, in general, the three stress groups and the three trait groups differed in state anxiety. More importantly, the stress X state anxiety interaction showed that subjects were equal in state anxiety prior to feedback, whereas, after feedback, subjects were

les anxious in the low-stress condition than in either the moderate or high-stress conditions. In addition, more state anxiety was created in the high-stress than in the moderate-stress condition, of the trait anxiety X state anxiety interaction suggested that, after feedback, high trait anxious subjects exhibited higher level of state anxiety than did either moderate or low-trait anxious subjects.

Weinberg\textsuperscript{64} compared the resultant achievement motivation of athletes and non-athletes. The study included male athletes and non-athletes from three small colleges and two large colleges. The instrument used to assess resultant achievement motivation (n Ach.) was the male form of Mehrabian achievement scale (MAS). The MAS was administered to all the subjects under relaxed conditioned. Individuals were classified as athletes if they earned a college-varsity award or as non-athletes if they had failed to earn athletic award in high school as well as college. Based on this criteria 857 athletes and 673 non-athletes were included in this study. The athletic sample consisted of individual representing 13 different sports. The resultant N. Ach. Levels of athletes and non-

\textsuperscript{64} William T. Weinberg, “A Comparison of resultant Achievement Motivation Level of College Athletes and Non-Athletes”, Abstract Research paper (1976); 5.
athletes were analysed by a two factor fixed effect analysis of variance. The results were (1) athletes demonstrated a high N.Arch. level than no-athletes, (2) the individual sports athletes demonstrated a higher N.Ach. level than team sports athletes, (3) the large college athletes and small collegian athletes demonstrated similar resultant N.Ach. levels.

Weinberg\textsuperscript{65} investigated the relationship between competition trait anxiety and state anxiety and gold performance in the field setting test, low moderate and high CTA collegiate golfers (10\%) performed in a practice round one day, the day 2 of competitive tournament correlation between SCAT and state anxiety indicate that SCAT was a good predictor of pre-competitive state anxiety. The direction of state anxiety and performance CTA main effects provide support for Oxedine's (1970) contentions that sports requiring fine muscles co-ordination and previous are performed best at low levels of anxiety.

Zwart\textsuperscript{66} conducted a study on attentional and anxiety responses of athletes to mental training techniques. This study explores the changes in competition anxiety, attentional direction and focus, and performance in 13-15 year old swimmers after exposure to the super learning mental training programme. The sports competition Anxiety Test (SCAT) (Martens, 1975) was employed as a measure of competition anxiety. The results of the statistical analysis indicate that there was a statistically significant reduction in competitive anxiety in athletes after exposure to the super learning mental training programme. There was also a greater improvement in competitive swimming performance in athletes who reported low competition anxiety than in those athletes who reported higher levels of competition anxiety.

Rationale of Yoga in Dealing with Anxiety

Yoga an Indian traditional science acts to reduce anxiety so far by using the principles of 'operant conditioning, e.g.

Yoga activates physiological process in a controlled manner such as respiration, heart beats, muscle tension etc.

Yoga, by controlling physiological process, emphasizes on stimuli like single sound, thought, object or sensory input.

In fact, the practice of yoga in slow, calm & quite manner do not disturb the inner environment of an individual. This nature of yoga possibly works as an ‘operant’ on human beings and seems to help for internalizing awareness. This awareness is believed to come from.

Listening the internal information caused by becoming internally sensitive and aware with persistent yoga practice. (Harvey, 1987).

Non-identification with attractions and aversions without acting on them and keeping in attitude of a seer or witness. This is believed when one advances in Yoga (Harvey, 1987).

Relaxation of effort and identification of mind with something infinite or endless (Patanjala oga Sutra).

In Yoga by internalizing and awareness, an individual observes the inter-play between environmental stimuli and internal mechanism and thus, he may choose either to act or not (Harvey, 1987). Therefore, it can be logically interpreted that yoga acts as
an ‘operant’ by internalizing awareness and controls the flow of anxiety in human beings.

In fact, anxiety is evolved with the body-mind interactions within the particular environment. The psychology of yoga seems to produce a satisfactory interaction between mind and body by purifying ‘prana’ acts as a catalyst and brings “psychophysiological” relaxation, which is an essential factor for the reduction of anxiety. Such traditional concepts in turn suggest that yoga is useful for controlling anxiety. The research studies (Gharote, 1971; Pratap, 1976; Wenger & Bagchi, 1961) are also in agreement too. Thus, from the interactions between traditional concepts and recent scientific studies, it can be interpreted that yoga is rationale in dealing with anxiety.\(^6^7\)

The ability to deal effectively with anxiety is one of the prime consideration in athletics. Each athlete must learn to cope with anxiety involved in his carrier the various behaviours indicating anxiety are disparate and are often hard to recognized as anxiety

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reactions, what the athlete might do about anxiety is equally varied.\textsuperscript{68}

Anxiety is one of the most common determinants of good performance. Worst effect of anxiety gets the athlete so tied up in the knots that he is frozen in fear. At best anxiety stubbly inspires.\textsuperscript{69}

\textsuperscript{68} Encyclopedia of Sports Sciences and Medicine, 1971 Ed. S.V. "Mental Characteristics".