CHAPTER – II
REVIEW OF LITERATURE

The review of related literature acts as a guideline for identifying the general trend in the research work already done in the concerned field or area. This also helps the investigator in formulating the problem and in providing direction to the research undertaken. The present investigator has made sincere attempt to conduct a comprehensive and thorough survey of the related literature with respect to the variables under investigation. Brief review of the related studies relevant to the problem undertaken for research in the present investigation has been presented in this chapter.

ANXIETY

Psychologically, anxiety is a very important phenomenon. Freud (1936) was the first to define anxiety within the context of psychological theory. According to him, “Anxiety is some thing felt, an unpleasant effects of state or condition”. This state is characterized by all that is covered by the word nervous apprehension or anxious expectation and different discharge phenomena.

The relationship between anxiety and performance has often been explained by one of two theories. The first of these theories is drive theory (Hull, 1943). Drive theory postulates a linear relationship between arousal and performance. That is, as the arousal level of a person increases, the performance level will also increase. This seems to be a viable explanation for movements of a short, explosive, or
ballistic nature (Singer, 1975). However, more complex movements require a different explanation of the relationship between anxiety and performance. This second explanatory theory is the inverted U hypothesis (Duffy, 1962). This theory postulates a curvilinear relationship between arousal (anxiety) level and performance. In other words, there seems to be an optimal level of arousal which will result in a maximum performance. Too little or too much arousal will result in performance which are submaximal. Research evidence, as summarized by Martens (1971), seems to indicate that this curvilinear relationship holds true for complex motor tasks (such as those required for participation in most athletic events). It now appears necessary that a theory be developed to account for the relationship between anxiety and performance in all types of athletic situations.

Harmon (1950) found a close relationship between college football players level of anxiety prior to a game and their actual game performance. They concluded that the higher the level of arousal (anxiety) the higher the quality of performance.

In the decades following World War II, psychologists and psychiatrists evaluated anxiety using two primary approaches. In one approach clinicians used various indirect, or projective methods such as having clients interpret ink blots or having them complete rather general sentence, thereby projecting (or exposing) their inner feelings and fears. In the other approach clinicians employed more direct methods, the most popular of which was a questionnaire labeled the Manifest Anxiety Scale. Its author, Taylor (1953) initially suggested that the scale sampled the general fears an individual would admit having. Its results were applied to a wide variety of situations. Later in
1966, however, she stated that the scale might be a better measure of what she termed emotional reactivity or might be better used to reflect the insertion of some stressor, including competition, into experiments.

The Taylor manifest Anxiety Scale, 1953 (TMAS) is a questionnaire that gave an enormous impetus to research on anxiety. Investigation of items on this scale, its high retest reliability, and its emperiousness to transient stress conditions have tended to support the idea that it should be considered a measure of trait anxiety.

Farber and Spence (1953) studying complex motor learning involving a styles maze task, also found that subjects with high anxiety were significantly retarded, particularly in areas of maze containing difficult choice points. On other hands these experiments found that these same subjects evidenced greater proficiency when their eyelid reflex was conditioned. It was concluded that anxious and non-anxious groups differed primarily with respect to drive level rather than to general learning ability. It was further suggested that the effect of variations in drive level on performance in a function of specific task characteristics.

According to Husman (1954) anxiety levels often change when pre-competition and post-competition measures are compared, a few research studies on this topic suggest that, at least in wrestling, extremely stable measures are found prior to competition. He found no significant differences in pre-match and post-match anxiety in a group of college wrestlers.

The relationship of anxiety to performance of both a simple and complex nature has been demonstrated in studies of verbal and motor
tests. Matarazzo and Matarazzo (1956) found that subjects falling in the middle portions of an anxiety scale performed best on a small maze task, while those scoring at both extremes evidenced inferior performance. At times, heightened anxiety results in increased speed in simple conditioning tasks. However, as Matarazzo and Matarazzo (1956) found in a maze problem and Taylor and Spence discovered when studying in verbal choice-point problem more complex performance is adversely affected by anxiety.

Some researchers as Eysenck (1957) has tried to relate anxiety with specific personality traits Eysenck’s personality study of extraversion neuroticism is based on the property of the central nervous system. That is the balance between the cortical excitation and inhibition. Eysenck (1957) stated that the neurotics were more anxiety prone than the extroverts.

In a study involving college basketball team, Nelson and Langer (1963) examined some of the psychological variables present among athletes in competitive situations. They assessed anxiety levels of the team members by using the Taylor Menifest Anxiety Scale. The results showed that the performance of athletes with extremely high levels of anxiety was poor. They also found that athletes who scored extremely low in anxiety did not perform well either, perhaps because of lack of dedication. The results of Nelson and Langer’s study support the result of an earlier study on the effects of anxiety on learning. In an extensive review of the literature on anxiety, Reed (1960) concluded that both high and low levels of anxiety tended to disrupt the learning process, whereas moderate levels of anxiety created an ideal atmosphere for learning.
Although Weiner (1965) cognitive model appears promising, it is difficult to apply if one is interest specifically in the effects of anxiety on motor performance. In Weiner’s studies, subjects were selected by their combined score on the Thematic Appreciation Test (TAT) and the Mandler Sarason Test Anxiety Questionnaire (TAQ). Subjects were jointly classified on these two variables as high or low in resultant achievements motivation. Low anxious subjects were by definition also high in achievement motivation, conversely, high anxious subjects were also low in achievement motivation. However, a low anxious individual is not necessarily low in need for achievement. Further more, the explanation used to support the results is couched in achievement motivation theory and not in anxiety or arousal theories. If cognitive theory is to be applied specifically to the effects of anxiety on motor performance, it needs further-testing in this situation.

Hollingsworth (1965) conducted a study to determine the effects of special performance 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” a “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 subject and each session. All 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 from the data on anxiety, no significant differences in performance levels occurred. A strong relationship was found to exist between state and trait anxiety. It was also found that as the performance level increased with practice, the anxiety level tended to decrease.

Missiuro (1965) has coined the expression “psychic warming up” in referring to these affective responses to the anxiety provoking stimuli associated with achieving competitive goals. Anxiety in athletes can, according to Missiuro, effectively activate physical resources. For instance, the acceleration of the pituitary – adrenal and sympathetic-adrenal systems not only aids in co-ordinating auxiliary muscles necessary in task completion, but also significantly increases the overall efficiency level of motor acts. Anxiety, he also found, stimulates the adrenergic system. The resulting increase of adrenaline flow creates a beneficial influence on the contraction of fatigued muscles. Because fatigue leads to increments in the threshold for muscle contraction, adrenaline facilitates muscle functioning by intensifying both heart contraction and total blood flow to stimulated muscles.

Hutson (1966) studied the relationship between level of anxiety and the learning of skill in beginning horse back riding. The Parallel Anxiety Battery was used to assess levels of anxiety in six women enrolled in beginning riding class. The findings showed that as the students increased in skill, their anxiety tended to decrease.
Spielberger (1966) has tried to differentiate between state and trait anxiety. According to him, state anxiety refers to the ever changing mood component and is defined as an emotional state, characterized by subjective, consciously perceived feelings of apprehension and tension accompanied by or associated with activation or arousal of the autonomic nervous system. On the other hand, trait anxiety is part of the personality – an acquired behavioural tendency or deposition that influences behaviour. In particular, trait anxiety is a motive or acquired behaviour disposition that predisposes an individual to perceive a wide range objectivity during non-dangerous circumstances as threatening, and to respond to these with state anxiety reactions, disproportionate in intensity and magnitude of the objective danger. He has also proposed that trait anxiety scores reflect a predisposition to respond with heightened state anxiety to situations involving the possibility of failure or loss of self-esteem, and not to situation involving harm or the threat of harm.

The noteworthy research in this direction is that of Spielberger. Spielberger (1966) differentiated two types of anxieties i.e. Trait Anxiety and State Anxiety. Trait anxiety means that there is a varying tendency to be fearful in each of us. On the other hand State-Anxiety reform to situational anxiety or the tendency to become fearful only in specific situations. In North America, Researchers in Sports Psychology have started studying anxiety more specifically in terms of sports performance.

A study completed by Lampman (1967) supports the value of a slight rise in anxiety before competition. Members of the university of Florida varsity team given an anxiety test before the season and
another approximately an hour before the competition. It was concluded that a rise in anxiety before competition improved performance, and that performance was better if the athlete's pre-meet anxiety level was at least equal to or slightly above his pre-season anxiety level.

McCraven (1969) found that basketball players scoring moderately high in a test of anxiety performed better in competitive situation than did those with lower-anxiety scores. Hammer (1969) got similar results when measuring anxiety in wrestlers.

Oxendine (1970) hypothesizes that there is a differential optimal level of arousal for various sports. Since high arousal states expedite motor responding which demands strength, endurance, and speed, Oxendine places distance running, which requires great strength and endurance and markedly less fine muscle control, high on his anxiety continuum.

Selvin (1970) used Spielberger's test of state and trait anxiety (STAI) to assess the effect of anxiety on the performance of an unfamiliar gross motor skill. While being observed by researchers, eighty high school non-athletes executed a modified fencing lunge and recovery under experimental conditions of competition. Results from the study showed that individuals with low levels of trait anxiety performed better in the novel skill than those who had been classified as having high level of trait anxiety.

According to Frost (1971) anxiety is an uneasiness and feeling of foreboding often sound when a person about to embark on a hazardous venture: it is often accompanied by strong desire to excel.
Greig (1971) investigated inter-action of anxiety and warm-up on learning motor task. He found that for high anxiety groups, performance was significantly better under the no warm up conditions, whereas for the low anxiety groups performance was significantly better under the warm up condition. Warm up effected the performance of both the high and low anxiety groups significantly.

In a through review of the literature on anxiety and motor behaviour, Rainer (1971) concluded that generally there is a positive relationship between anxiety level and speed of performance as long as accuracy is not a major factor. Other investigators have also demonstrated the positive relationship between emotional arousal and performance speed and strength (Gerdes, 1958; Henry 1961; and Oxendine, 1965, 1970). Taken in total, these physiological reactions to the threats and pressures of competitive goal achievements serve.

In attempting to determine anxiety-stress relationship, Martens (1971) reviewed the results of 27 studies in which motor performance and the results of the Manifest Anxiety Scale were used, together with a analysis of another 14 studies in which some stressor had been insurted. Generally this review revealed that this test of manifest anxiety was not adequate for predicting motor performance and learning differences between those purportedly high and low in general anxiety or for reflecting clear cut changes in anxiety level, when stressors were employed.

Griffen (1972) investigated that state anxiety levels of women engaged in competitive sports decrease with age. State anxiety levels of women engaged in competitive sports differ among sports. The
effects of age upon state anxiety are not consistent in all sports nor the effects of sports upon state anxiety for varying age levels. Trait anxiety levels of women engaged in competitive sports are significantly different at three age levels. Trait anxiety levels of women engaged in competitive sports differ among sports and the effects of age upon trait anxiety are not consistent in all sports nor the effects of sports upon trait anxiety consistent for varying age levels.

Cratty, (1973) found that all anxiety is not disruptive. An optimum level seems to be needed to perform well. On the other hand, if the athlete is too anxious or projects an "I don't give a damn" attitude, performance is likely to be less desirable. Anxiety is a general trait as well as a temporary state of being. A research make it clear that a moderate amount of anxiety in athletes is often an aid to superior performance.

Misher (1973) conducted a study on the high medium, and low anxious subjects and the effects of competition upon the swimming performance. He noted in his findings that competition with others tended to facilitate persons in a distance swimming performance to a greater than in a sprint swimming performance, regard less of anxiety level. It was also concluded that the interaction of anxiety and competition was a resultant of the distance swim as the distance increased there was a greater tendency to cause differential performance in subjects with varying levels of trait anxiety. He further concluded that low anxious and the medium anxious subjects tended to improve their performance when involved in competition with others and increased distance swim; however the high anxious subjects were
likely not to have improved, or to have suffered a performance decrement.

Marten (1974) investigated several facets of anxiety and motor performance, as they relate to the sports competition itself. The results of investigation showed that athletic experience pre-stimulus delay period, competition had an effect upon the performance of a complex motor response, time task.

According to Milello (1975) anxiety, along with fear, tension and nervousness, seem at first glance to be strongly inappropriate to healthy athletic endeavour. Although anxiety, in all its manifestations, is generally and commonly associated with impaired physical performance and emotionally unhealthy neuroticism, the anxiety exhibited in self determined athletic competition is not necessarily in contradiction to the salubrious opportunities which sport purports to provide. In the field of sports and motor behaviour, several psychological studies have demonstrated that certain optimal levels of pre-competitive anxiety and arousal are instrumental in mobilizing psychological resources and facilitating athletic performance.

The relationship of competitive anxiety and sports performance has been described by Martens et al. (1975) in the theory of competitive stress. The theory is based on an individual’s perception of threat (those psychological and physical dangers which may be present), the degree of threat in a competitive setting is theorized to be a function of the uncertainty of the outcome and the importance of the outcome. Uncertainty is determined by the probability of success, and uncertainty decreases as the probability of success deviates from an
intermediate range. The probability of success is determined on the basis of the content and the availability of information, as perceived by the competitor, about the discrepancy between the standard in the comparison process and the competitor’s ability and the actual performance and the actual performance and the performance outcome.

Dorsey (1976) discovered that relaxation training did not lead to change in state anxiety or an improvement in gymnastic performance. Likewise, in a study conducted by Blacksmith (1977), systematic desensitization failed to reduce state anxiety in collegiate wrestlers. In contrast, relaxation training was found to be effective in improving performance on stabilometer motor tasks (French 1977) also found that biofeedback training significantly improved gross and fine motor skills.

Bahrke (1977), compared the influence of acute physical activity and “Non-cultic” mediation versus a control treatment on state anxiety. Seventy-five adult male volunteers served as subjects with 25 Ss randomly assigned to each group. Physical activity was performed at 70 percent of VO₂ Max for 20 minutes by Ss in the exercise group Ss assigned to mediation group practiced Benson’s Relaxation Response for 20 minutes and the Ss in the control group simply rested quietly in a reclining chair for 20 minutes. State anxiety was measured by means of the Spielberger STAI and it was assessed – (1) prior to, (2) immediately following, (3) ten minutes following each treatment. Oxygen consumption, heart rate, skin temperature and blood pressure were also measured as confirmatory variables under selected conditions. The data were analyzed by means of a two-ways repeated
measures ANOVA, and this analysis revealed that a significant reduction in anxiety occurred for each treatment. This held for both those Ss falling within the normal range for state anxiety, as well as those Ss regarded as high anxious. It was also noted that none of psychological variables differed significantly following the central and mediation treatment. The present evidence suggests that acute physical activity, no cultic mediation, and a quite rest session are equally effective in state anxiety.

Martens (1977) construction of the Sport Competitive Anxiety Test (SCAT) has represented a notable standard of this principle by its measurement of Competitive Trait Anxiety (CTA). This construct assess individual differences in perceiving competitive situations as threatening and leads to corresponding differences in A-State responses. The SCAT Manual presents impressive data and information, documenting theory, development reliability, and validity of this inventory. Essential validity was best demonstrated in that SCAT. Predicted program A-State Score \( (r=0.64) \) as compared to the STAI A-Trait \( (r=0.30) \) and coaches' ratings \( (r=0.12) \).

Novaczyk's (1977) study was conducted on 103 eighth and ninth grade athletes. Both the Sports Competition Anxiety Test (SCAT) and the short form of the State Anxiety Inventory (SAI) were administered to all subjects. Subjects were given tests before and after practice, games, and play off games. There were significant differences among competitive situation and between pretest and post-test situations.

Much of the evidence obtained form athletes confirmed the need for eliciting optimum levels prior to competition (Klavora, 1977). It was
also found however that other variables within pre-competitive situations would sometimes skew the responses obtained from athletes. The presence of a coach (Carron and Bennett, 1977) might elevate state anxiety, whereas other variables expected to raise state anxiety, including and audience (Landers, Brawley & Hale, 1977), did not always do so. Alderman (1974) found that over 425 young Canadian athletes in competition ranked “stress” only in third place, below the needs for affiliation and excellence. This and similar data suggested that simple relationships between state anxiety and performance postulated by many needed to be re-examined.

Scanlan, (1977) have investigated children's anxiety in soccer competition. They found that trait anxiety measured by SCAT was significantly correlated (r= +.48) with the amount of state anxiety children experienced just before competition. Also, in post competition, post game state anxiety was significantly correlated (r=.65) with winning, and losing, with loser being more anxious.

French (1977) also found that biofeedback training significantly improved gross and fine motor skills. Recently another construct has been receiving considerable attention within the area of athletic performance. Nideffer (1976) has concluded that flexibility of attentional style is also vital to athletic achievement. Mental errors, occurred, he contended, when an individual lost control over attentional direction and/or focus.

Marten (1977) stated that it is clear to most people involved in the various stratas of competitive sport that intense competition creates varying levels of anxiety within performers. What is also
becoming more obvious is the fact that some performers react adversely to the competitive situation by reaching states of hyper-anxiousness which often result in the inability to achieve optimum levels of performance.

Tutko (1977) has found supporting evidence for the inverted-U hypothesis is his research measuring the effect of anxiety on the performance of athletic teams. His results showed that the level of anxiety felt by an athlete determined the extent to which he learned. For example, the athlete who was not anxious about the upcoming athletic competition paid less attention to the information given by the coaching staff. On the other hand, the athlete who was concerned about an approaching competition became excessively anxious, this also interfered with learning. Tutko suggested that the athlete who could maintain a moderate level of anxiety would be most efficient performer.

Morgan and Johnson (1978) reported that successful athletes possess higher perceived ability, greater satisfaction and a lower state of anxiety than less successful athletes also possess more desirable social traits than less successful athletes. Norcross (1980) suggests that for some players personal success or failure, may have a greater effect upon their (A-state) levels, than team success or failure. Martin and Hrycaiko (1983) investigated several facets of anxiety and motor performance, as they relate to sports competition itself. Specifically, he was looking at a comparison of the effect of trait anxiety levels on the performance of a complete motor response time task in the competitive and non-competitive situation. He also looked at the function that the pre–stimulus delay had on performance and the
additional effects of the past successful athletic experience as they related to performance. Male volunteer (N=72) undergraduate student in professional and general program physical education classes served as subjects. Subjects were randomly selected from the upper and lower 20 percent scores on the Martens Sport Competition Anxiety Test (SCAT). (N=approx. 2,000). Statistical results of the investigation showed that the athletic experience, pre-stimulus delay period, competition, and trait anxiety had an effect upon the performance of a complex motor response time task such as the one employed in this investigation.

O'Connor (1978) conducted a study on anxiety and found that high anxiety tends to impede learning and performance. Assuming man's ability to rationalize, adapt and learn, he hypothesized that in a situation of high anxiety man would learn and thereby experience a reduction in anxiety. He has also drawn the conclusion that trait anxiety was found to be relatively stable over time and exposure to a high anxiety sport. State anxiety was not altered by a exposure to a high anxiety sport. High anxiety sports tends to be the domain of persons low in trait anxiety and anxiety has no value as a predictive device of success in Scuba diving instructions.

Gerson and Deshaies (1978) examined the relationship between SCAT and A-state, as measured by the competitive short form of Spielberger's SAI. The subjects (N=107) were female varsity intercollegiate softball players competing in the National Women's Intercollegiate Softball Tournament. SCAT and the competitive SAI were given about 30 minutes before gametime on the second day of
the tournament. The correlation between SCAT and A-State was found .59 which accounted for 35% of the shared variance.

Scanlan (1978) found that both high and low A-trait subjects manifested greater A-state level while performing in competition on a peg tossing task as compared to non competitive situation. He also found that high A-trait subjects exhibited a greater A-state than low A-trait subjects. Similar pattern has been found in field studies which have shown that high A-trait players experience greater A-state than low A-trait players during practice session, regular season and play of games. Gill and Martens (1977); Martens and Gill, (1976); and Scanlan, (1977); and Burton (1977) found a significant negative relationship between both A-state and A-trait anxiety and the level of skill attached in rifletry. However, these variables did not have a reliable relationship to bowling skill attained.

Scanlan and Passer (1978) suggest that anxiety can be experienced at any point during the competition process that a person perceives, including: (a) prior to competition if the person anticipates an inadequate performance; (b) during competition if the person perceives the on going performance to be inadequate and therefore, anticipate future failure. This could account for the high pre-game A-state score of the subject above.

One of the more interesting ways in which the state and trait anxiety tests have been used is to assess and athlete’s retrospective feelings of anxiety (“How did you feel prior to your three previous competitions?”) and to ask the athlete to project ahead (“How will you feel just before that next competition in one month?”). Hanin's
description of these approaches with Russian gymnasts and rowers (Hanin, 1980; Cratty & Hanin, 1980) are potentially applicable to the study of a variety of sport situation.

Martens, Rivkin and Burton (1980) conducted a follow-up investigation testing coaches and athletes’ ability to predict each other’s A-state before competition. Fifteen high school interscholastic girls volleyball teams (N=105) completed Martens (1977) Sports Competitive Anxiety test (SCAT) at practice sessions. Then, using the adapted version of Spielberger’s State Anxiety Scale, each coach (N=16) estimated the pre-game anxiety level of their coaches. The competitive state anxiety inventory (CSAI: Martens, Burton, Vealey, Bump, and Smith, 1983) was then taken by the players and coaches within 10 minutes of a regular season game. The overall correlation between coaches’ ratings and actual athlete A-States was again very low (r=.10). Individual correlations between coaches’ predictions and athletic CSAI scores ranges from -.60 to +.55. As expected, SCAT was an excellent predictor of both coach and players A-States. Somewhat surprisingly though, the athletes were quite good at predicting their coaches’ A-States (r=.51).

Singer, (1980) observed that the relationship of the effect of actual competitive situation on anxiety level of performers can be illustrated by the inverted U hypothesis, which states that performance improves with increasing level of anxiety to an optimum point, where upon further increases in arousal (anxiety) cause performance impairment.
Hamm (1981) made an attempt study competitive anxiety of sportsmen of different team-games at the university level. Probably, no such attempt has been made on Indian sportsman and athletes. This perhaps is a first attempt to its own kind in this direction in the field of athletics like the region of north and south.

Huddleston and Gill (1981) using Marten’s Competitive State Anxiety Inventory (CSAI), made an attempt among other things to examine the difference in A-State between two groups of female track and field athletes based on skill level. They found that their lack of significant results may have been partially due to the small number of subjects in the study (N=19) and due to the fact that the skill difference between the two groups was not great.

The results of the data collected by Ikponmwosa (1981) indicate mean sports competition anxiety scores of the two groups which was found to be significant at the .05 alpha level, two failed test (t=2.34, df=75, P=.05). The mean sport competition anxiety score for males with masculine characteristics as defined by BSRT was significantly lower than females defined as feminine by the BSRT. Analysis of the mean difference between the control groups was not significant at the 0.05 alpha level using two tailed t-test (t=1.42, df=75, p=.05). Hence the null hypothesis was rejected in favour of the research hypothesis. The result indicates that males with masculine characteristics are as a group less susceptible to sport competition anxiety than are females characterised by femininity as sanctioned by BSRT.

Liewellyn and Bucker (1982) stated that the personality characteristics identified as A-trait, is present in all of us including
athletes in varying degrees. Those who have higher level of A-trait, tend to be more anxious in situations identified as anxiety producing, such as academic situations, athletic competitions and frightening situations. Efficiency of performance on certain mental or motor task has usually been used to measure anxiety.

Wandzilak et al (1982) conducted a study the primary purpose of their field investigation was to assess the effectiveness of competitive trait anxiety (CTA), two different precompetitive anxiety measures, and two parameters of success / failure to predict pre-game state anxiety. Ninety three female high school volleyball subjects were administered the adult versions of the Sports Competition Anxiety Test (SCAT) and the competitive short form of Spielberger's State Anxiety Inventory (CSAI) to determine their trait, pre-competitive and pre-game state anxiety levels. The subjects were divided into two groups with SCAT and the CSAI being administered to Group 1 (N=48) 24 hours prior to the competition and Group 2(N=45) three hours before the first match. All subjects repeated the CSAI 20 minutes before playing. Replication of previous laboratory findings concerning the relationship between CTA and pre-game state anxiety was confirmed. Then, through a multiple regression technique, it was found that of the independent variables tested, SCAT (20%) and won / loss percentage (8%) resulted in a total of approximately 28% of the variance in predicting pre-game state anxiety for Group 1. For Group 2, the three hour pre-competitive score (36%) and SCAT (13%) were responsible for almost 50% of the variance. It was also noted that there is need for standardization of testing procedures, including times and settings, when basal measures are involved.
Owen and Lanning (1982) examined the effects of relaxation training plus attentional training on anxiety and additional style measures, on 58 high school athletes. Out of 58 athletes, 30 were from a private high school and 28 from a public high school. The average age was 15.8. State–Trait Anxiety Inventory (STAI) developed by Spielberger, Gorsuch and Lushene (1970), and Test of Attentional and Interpersonal Style (TAIS) by Nideffer (1976) were used. One way ANOVA was computed. Duncan’s New Multiple Range Test was used as a post-hoc analysis. Results revealed that when compared with a control all three treatment methods were effective in reducing reported state anxiety. No significant differences were observed among the three treatment methods nor did any of them result in significant differences in attentional style. All the three treatment groups scored significantly better than the control group on the Maze Test Performance Measure.

Power (1982) Martens’ Sport Competition Anxiety Test to sixty-five adult male track and field athletes who were also divided into subgroups representing all ages, events, experience and abilities. There was a significant relationship between age and anxiety (p<.01). No logical pattern regarding CTA emerged from any of the sub group comparisons made. Forty per cent of the whole sample were classified as being high in CTA of the twenty-seven sub-groupings, all but three had twenty-five per cent or more of their subjects classified as being high in CTA.

A study examining competitive stress was undertaken by Gould, Horn and Spreeman (1983) with 464 junior elite wrestlers participating in a national tournament. In the degree of competitive stress reported
by the wrestlers in comparison to the high-trait anxious wrestlers the low trait anxious wrestlers experienced less stress (1) 24 hours prior to competition (2) 1 hour prior to competition (3) 2 minutes prior to competition and (4), in the actual competition against the individual perceives to be their toughest opponent. The low trait anxious wrestler were also superior in terms of (1) their perception of personal ability, (2) their pretournament confidence, (3) the percentage of all matches in which they did not worry, and (4) the trouble (or rather, lack of difficulty) they had in sleeping.

Dowthwaite et. al (1984) investigated the effect of a competitive game on the 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 the age from 18 to 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 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.

Anand et al. (1985) conducted a study to ascertain differentiated personality correlates of death anxiety and locus of control in individual, team and non athletes. Subjects consisted of 50 team athletes, 50 individual athletes and 50 non athletes from the colleges of U.P. in India. The age ranged from 18 to 25 years. Thakur Death Anxiety Scale by Thakur and Thakur (1983) and Hindi version of Rottar’s Locus of controls scale by Kumar and Srivastava (1983) were administered upon individual, team and non-athletes individually. Data was analysed using ‘F’ and ‘t’ tests of significance. The analysis yielded significantly higher death anxiety in non-athletes than in individual athletes and team athletes. The results indicated that non athletes had significantly higher scores on locus of control scale than individual and team athletes. No significant difference was found between individual and team athletes on the Death Anxiety and Locus of Control Scales.

Cox (1986), conducted a study the purpose of which was to determine the relationship between skill performance in volleyball and competitive state anxiety (CSA) of female athletes. Each athlete’s CSA was measured prior to each 15 point game using the CSAI. Volleyball performance was measured throughout the tournament as a function of service reception, serving and spike performance. Data were analyzed using linear and curvilinear regression procedures. Significant linear relationships were observed between spiking performance and CSA. These relationships were linear in nature and suggest that spiking performance decreases as CSA increases.
Singh (1988) investigated that the sport competition anxiety level of 118 top level Indian track and field players (76 male and 42 female) and 71 hockey players (45 male and 26 female) attending national camps in the age range of 18-36 years (males) and 16-26 years (females) and administered to them the Sports Competition Anxiety Test by Martens (SCAT). It was concluded that the male athletes and players have less competitive anxiety as compared to females. Athletes, both male and female differ significantly in competition anxiety with hockey players. Sports competition anxiety is not related to positional play in hockey.

Mann et al. (1988) studied a sample of 44 male players (football 16, basketball 14, volleyball 14) and administered Hamm's scale of competitive Anxiety to them. It was concluded that no significant differences exist in the level of competitive anxiety among football, basketball and volleyball teams. Football team varied significantly from other teams, depicting higher levels of competitive anxiety on anger mode of response.

Burton (1988) examined relationships among components of the Competitive State Anxiety Inventory-2 (cognitive worry somatic anxiety and self-confidence) to each other, to psychological measures and to performance prior to, during, and after bicycle competition. Undergraduate male students (n=24) participated in three counter balance conditions (a) non-competition (b) success, and (c) failure participants completed the CSAI-2 at pre; mid, and post competition in each condition and frontalis muscle activity was recorded at those times. Results revealed that the cognitive and somatic components of
state anxiety are moderately related to one another and change differently over time intra-individual regression analysis conducted to test relationships between anxiety and performance revealed no linear or curvilinear relationships between any of the CSAI-2 components and performance. The frontalis IEMG/performance relationship was best explained by linear trend. The findings support the prediction that competitive state anxiety is a multidimensional construct with related components that are influenced differently by competitive conditions and task demands.

Helon et al (1989) conducted a study to examine the effects of levels of training for counsellors – in – training and levels of education for supervisors for those counsellors–in–training, state and trait anxiety and self–rating of counselling skills of trainees. Trainee participants completed a pre–test and post–test instrument package which included an experimental made questionnaire, the state trait anxiety inventory, the counsellor rating form, and the supervisor rating form (post–test only). Twenty–eight sets of trainees and their supervisors completed the instruments. Results of the multivariate analysis of covariance (MANCOVA) of the data indicated no trainee by supervisor interaction effects for the set of anxiety and self rating dependent variables. Multivariate analysis of covariance indicated no significant main effect for either training level of supervisor education level on the set of dependent variables.

Kumari (1990) investigated the level of state and trait anxiety of track and field male athletes (N=21) and boxers (N=21) by administering to them the State and Trait Anxiety inventory (Self Evaluation Questionnaire) by Spielberger et al. Both the track and field
athletes and boxers exhibited a higher level of state as well as trait anxiety. Boxers were found to be significantly higher in state anxiety and track and field athletes were higher in trait anxiety.

Bird and Horn (1990) tested the relationship between level of cognitive anxiety and degree of mental errors in a sport setting, subject were 202 female high school varsity softball players whose age ranged from 14 to 17 years. The dimensions of cognitive anxiety, somatic anxiety, and self confidence were assessed by the Competitive States Anxiety Inventory-2 (CSAI-2) (Martens et al. 1978). Coaches evaluated mental errors during game play by dichotomising individual who scored lower of the scale (1-4) and higher on the scale (7–10). Analysis of variance yielded a single significant main effect which indicated that the two mental-error groups differed in cognitive anxiety. This supports the major prediction tested. Bird and Horn suggest investigating variables, more intimately associated with the attentional / cognitive disruption process versus focusing on objective sport outcome.

Christina et. al. (1990) conducted research on two or four male undergraduates ranging from 18 to 25 years of age, who were enrolled in physical education classes and had athletic experience in high school. The purpose of the study was to examine relationship of psychological and physiological components of state anxiety to one another and to performance prior to, during and after competition. All the participants performed a bicycle task across three conditions, non-competition, competitive success, and competitive failure. Competitive State Anxiety Inventory-2 (CSAI-2; Martens et al., 1983) was used. Electromyograph was also used for the assessment of Frontalis
Muscle. Two Quinton Monarch bicycle ergometers were used. The task correlations were calculated. MANOVA was conducted. Repeated measure ANOVA was conducted too. The results revealed that the cognitive and somatic components of state anxiety were moderately related to one another and changed differently over time. Intraindividual regression analysis revealed no linear or curvilinear relationships between any of the CSAI-2 components and performance. The frontalis IEMG/Performance relationship was best explained by a linear trend. The findings evidenced that competitive state anxiety is a multidimensional, construct in competitive conditions and task oriented situations.

Swain and Jones (1991) investigated the relationship between sports achievement orientation and competitive state anxiety using Competitive State Anxiety Inventory –2 (CSAI-2) and Pre-competitive levels of anxiety. The subjects were 60 male athletes who competed for Loughborough during the 1989 season. Due to the exploratory nature of this approach no specific hypnosis were formulated but, following Gill 1986 and Bandura (1977) it was predicted that high competitive subjects would exhibit lower levels of competitive state anxiety and higher and higher levels of self-confidence than would low competitive subjects.

Harry Prapavessis et al. (1992) constructed a single subject research design to test the effectiveness of a cognitive behavioral intervention in reducing state anxiety and improving sport performance. A twenty year old male, state level small bore rifle shooter was selected as the subject for the study. A single subject, AB Multidimensional and multimethod idiographic design was used. The
findings revealed that cognitive anxiety, somatic anxiety, gun vibration, and urinary catecholamines decreased whereas self confidence and performance increased from baseline to treatment.

Edmund et al. (1992) conducted a study to examine the sport-specific cognitions of 112 ultramarathoners competing in a 100 mile trail run. The responses of ultramarathoners to constructs of confidence, competitive orientation, and commitment to running were recorded. The sport orientation questionnaire was used. Findings showed no significant differences in cognitive orientations between finishers and non-finishers or between males or females. Responses to open-ended questionnaire revealed that most of the ultramarathoners reported predominantly external thoughts during races. They had feelings of psychological well-being and strength as a result of ultramarathoning. These results demonstrate the unique sport specific cognitive orientations of ultramarathoners.

Ping (1993) examined motivational predictors of cognitive competitive trait anxiety (CCTA) in a sample of 406 subjects involved in 30 events. Factor analysis of CCTAI items revealed six factors; game preparation, failure, opponent's ability, social evaluation, injury and external condition. Factor analysis of the items of competitive motives (CM) revealed five factors: desire for victory, high ability demonstration, social approval, enjoyment, and self-challenge. Stepwise multiple regression analyses demonstrated that all the CCTAI factors were significantly predicted by common and unique predictors of the five CM factors. Positive and negative relationships between CCTAI and CM factors did not clarify conclusiveness of
whether intrinsic or extrinsic motivation differently mediated CCTA. These findings indicate that the motive is a predictor of CCTA.

Krane and Williams (1994) conducted a study the purpose of which was to examine cognitive anxiety, somatic anxiety, and self-confidence in male and female high school and college track and field athletes. Athletes (N=216) completed the Competitive State Anxiety Inventory-2 (CSAI-2) within 20 minutes of each event in which they competed at a prestigious invitational track and field relay meet. Consistent with expectations, a 2x2x2 (gender by competitive level by place) MANOVA revealed male athletes reported lower somatic anxiety and higher self-confidence than female athletes and college athletes displayed lower cognitive and somatic anxiety than high school athletes. Contrary to hypothesis, the place main effect was not significant. A significant three-way interaction was found on the cognitive anxiety subscale. College male non-placers displayed the lowest levels of cognitive anxiety while high school male non-placers displayed the highest levels. When examining the hypothesis that athletes in sports of differing complexity and duration would have different anxiety and confidence levels, only cognitive anxiety was found to differ in athletes in events of differing complexity with the high complexity athletes displaying greater cognitive anxiety than the low complexity athletes. No significant anxiety or confidence difference were found among athletes in events of differing duration.

Sedlock and Duda (1994) in their study they examined the effect of trait anxiety (TA and cardiovascular fitness level on physiological and psychological responses during and following the presentation of a mental arithmetic stressor preceded by an acute bout
of exercise. 300 college-aged females were divided into 4 groups based on their trait anxiety (TA) and estimated maximal oxygen uptake: HI TA/ HI Fit (n=14) HI TA/LOW Fit (n=20), LOW TA/HI Fit (n=10) and LOW TA/LOW Fit (n=14). Subjects then participated in a laboratory experiment consisting of: (a) a resting baseline period, (b) a 15 min cycle ergometer exercise, c) a 20 min recovery period, d) a 5 min cognitively stressful task, and (e) a 10 min post-stressor recovery period. Heart rate (HR) and state anxiety were assessed throughout the experiment. HI TA subjects had a higher HR during min 9-10 of the post-stressor period and higher state anxiety across conditions than LOW TA subjects. HI TA/LOW Fit subjects tended to have higher HR during min 1-2 of the post-stressor period than LOW/TA/LOW Fit subjects. In general, the findings suggest that fitness level does not mediate the influence of trait anxiety on stress responses even if the cognitive stressor follows an acute exercise bout.

David et al. (1995) used the Sport Competition Anxiety Test (SCAT) to identify athletes with high and low (upper and lower 25%) competitive trait anxiety (CTA). The purpose of the study was: (a) To replicate the fear of failure and fear of evaluation portions of Passer's (1983) study, but with a more heterogeneous samples; (b) To determine if three additional issues distinguish between high and low CTA athletes on 60 male and 60 female junior high schoolers, age group 12 to 15 years. Seventy (70%) percent of the subjects (N=84) attended a public school at New York, while 30 percent attended parochial school in Taledo, Ohio (N=36). Subjects were treated in accordance with the ethical standard of American Psychological Association (APA, 1981). High-CTA athletes reported more frequent evaluation and performance worries and anticipated more negative
feelings when playing poorly than low-CTAs. These groups did not differ in perceived importances of success in sport, satisfaction with sport experiences, or perceptions of their success/ failure in sport. Males and females differed significantly on only team performance experiences. These results provide support for the hypothesized relationship of fear of failure and fear of evaluation to CTA.

Davids and Gill (1995) focused investigation on the association between competitive state anxiety and the outcome of cognitive and somatic criterion tasks simulating components of hockey performance under different competitive conditions. Previous hockey research, utilizing the CSAI-2 in a time-to-event paradigm, had suggested no effects of cognitive anxiety on performance of a cognitive working memory task. However, in the current study, the digit span verbal test of working memory was eschewed for a visuo-spatial version argued to be more ecologically valid in the context of a team ball game. The results indicated that, contrary to previous findings, elevated cognitive anxiety, accompanied by lower self-confidence and stabilizing somatic anxiety, was associated with decrements in working memory prior to competition. Conversely, heightening somatic anxiety, coupled with decreasing self-confidence and cognitive anxiety, was related to enhanced perceptuo-motor performance. These findings are discussed in relation to recent work on the antecedents of performance.

Imlay et al (1995) zone of the optimal function (ZOF) theory contends that each individual has a pre-composition anxiety (PCA) level associated with optimal athletic performance. The goals of this study were to: (1) test ZOF theory using repeated assessments of
PCA during a competitive season, and (2) examine athletes’ ability to recall their anxiety state prior to a personal best (BEST) performance. State anxiety (STAI) was measured 30 min prior to competition in 16 college track and field athletes across 7 meets comprising an indoor season. All athletes achieved a BEST during this season. The theoretically optimal anxiety zone was defined as recommended by Hanin (1978) as each individual’s anxiety level measured prior to their BEST ± 4 anxiety units. A two-way ANOVA revealed no differences in PCA scores across the BEST, second best (GOOD) and worst (WORST) performance during the season or across three different types of events. A Wilcoxon test showed that a greater (Z=2.6, P<.05) percentage of athletes possessed PCA scores within their ZOF for GOOD (63%) as compared to WORST (31%) performance conditions. Three and 7 months after the season 11 athletes completed the STAI with instructions to recall their level of PCA prior to their best performance of the indoor season. A significant (P<0.05) correlation was found between the actual pre-BEST anxiety level and recalled anxiety at the 3-month (r=.85) but not the 7-month (r=.25) interval. It is concluded that college track and field athletes: (1) perform better when PCA scores within a theoretically optimal anxiety zone; and (2) can be accurate in recalling their general level of PCA prior to a personal best, but the accuracy of recalled PCA is influenced by the passage of time.

Weinberg and Gould (1995) have stated that there is a direct relationship between a person’s level of trait anxiety and state anxiety. Research has consistently shown that those who score high on trait anxiety measures, experience more state anxiety in highly competitive and evaluative situations. This relationship is not perfect, however, according to them one of the compelling relationship that sports and
exercise psychologist study, is how arousal or anxiety affect performance positively and negatively.

O’Connor et al (2000) presented a selective overview of recent research concerning physical activity, anxiety and anxiety disorders. Background information about neurobiology had been emphasized because of the recent growth in knowledge about the neurobiology of anxiety, its potential heuristic value for learning about the extent to which physical activity influences anxiety, and the fact that psychobiological constructs such as anxiety ultimately reflect functioning of the brain. The second section of the study reviews and attempts to integrate into the extant literatures selected, recently published investigations concerning the influence of physical activity on anxiety and anxiety disorders. Major conclusions include: (1) that most of the research concerning physical activity and clinical anxiety disorders has involved patients with panic disorder; accordingly, it is recommended that future studies be conducted examining the effects of exercise training on other anxiety disorders, such as generalized anxiety disorder, (2) that not all panic disorder patients phobically avoid physical activity; however, methodological weakness of this work lead to the recommendation that large scale studies with better methods be conducted to provide a conclusive answer as to whether individuals with panic disorder are more sedentary than normal, (3) that acute and chronic exercise is safe for panic disorder patients (4) that exercise training is associated with a reduction of anxiety symptoms in patients with panic disorder, and (5) that when groups without a clinical anxiety disorder perform an acute exercise bout, post-exercise anxiety reduction are larger than usual if methods are used to minimize the problem of low pre-exercise anxiety scores.
Tieman et al (2002) found that the assumption that acute exercise reduces state anxiety in an intensity-dependent manner has not been established. Most studies that have examined the question have not controlled for physical activity history, trait anxiety or participant's expectancy of psychological benefits of physical activity. This study addressed those issues. We examined changes in self-rated anxiety after 20 min of cycling at light and hard intensities (40% and 75% VO_{2peak}), compared with 20 min of quiet rest. Young men were classified by fitness (VO_{2peak}) and a standardized interview as high (n=13) or low (n=13) active, and were statistically equated on trait anxiety (STAI-Y2) and psychological outcome-expectancy for exercise. Ratings of anxiety were obtained 20 and 5 min before and 5 and 25 min after conditions using a counterbalanced 2 (Group) x 3 (Conditions) x 4 (Time) design. Anxiety ratings also were obtained 5 min after a maximal exercise test and were compared with ratings taken 60 and 5 min before the test. The low active group reported less anxiety after light cycling, but higher anxiety immediately after maximal exercise. Future studies should control for trait anxiety, expectations of psychological benefits, and the interactions of activity history with exercise intensity in order to help resolve the current confusion regarding the circumstances in which anxiety is altered by acute exercise.

Bhushan (2002) conducted a study on 240 male and female athletes of college and university level, who participated in different team games with the purpose to examine the variable anxiety, aggression and team cohesion. The subjects were in age group of 18 to 25 years. To measured the state and trait anxiety, Spielberger,
Gorsuch, and Lushene’s (1970) State Trait Anxiety Inventory (STAI) and to measure sports competition anxiety, Marten’s (1977) inventory were used. The hockey group did not demonstrate any significant differences among the college and the university athletes on the variable state, trait and sports competitive anxiety. However, college and university athletes of volleyball group demonstrated significant results ($p<0.05$) on the variable state anxiety whereas the same sports group did not indicate any significant differences on trait and sports competitive anxiety. As like the Hockey group, the group of basketball and handball sports group on the variable state, trait and sport competitive anxiety with regard to college and university athletes also did not demonstrate any significant difference.

Singh (2002) conducted a survey type study on athletes from selected disciplines of sports on the dependent variable Motivation, Anxiety, Aggression and Cohesion in relation to the independent variable of individual and team sports. Subjects were drawn from the affiliated colleges of Panjab University, Chandigarh and P.U. Campus by using systematic cluster sampling technique. The sample consisted of 165 subjects in age group of $22 \pm 3$ years 45 were from individual sports and (120) from team sports. He observed significant differences between athletes of individual and team sports on number of dimensions of participation motivation. No significant differences were found between the athletes of individual and team sports in either ‘State’ or ‘Trait Anxiety’. It has also been observed that two of the six teams sports there was balance of aggression involved between team as well as individual sports. Cohesion was better developed in group of people on the other hand there was no scope for individual to
develop any type of cohesion because his / her performance was not dependent on others.

Kumar (2004) conducted a study to examine anxiety among players (N=120) of contact games (Judo and wrestling) and non-contact games (badminton and volleyball). The subjects who had participated in Inter College Competitions in their respective games, were administered Sinha’s Comprehensive Anxiety Test (SCAT). He found that the male participants belonging to contact sports group differed significantly from those of non-contact sports group. Similarly, the female players of contact sports group differed significantly from non-contact sports group. Within the contact sports category, the two gender groups did not exhibit any significant differences. As the two gender groups within the non-contact sports category also did not differ significantly from each other.

Singh (2004) conducted a study on 40 male and 40 female school students in the Union Territory Chandigarh with regard to the variable academic anxiety. To measure the academic anxiety among the subjects, the academic anxiety scale for children (A.A.S.C.) constructed by Singh and Sengupta (1984) was used. The result on overall sports and non-sports groups (i.e. both male and female subjects) on the variable academic anxiety did not reveal any significant differences. The two groups i.e. sports and non-sports groups belonging to both the genders also did not demonstrate any significant differences between them on the variable academic anxiety. However, the results pertaining to the overall gender groups demonstrated significant differences between them on the variable academic anxiety. The two gender groups belonging to both the
categories i.e. sports and non-sports did not evidenced any significant differences on the variable academic anxiety. The results regarding coefficient of correlation between sports and non-sports groups on the variable academic anxiety also did not evidence significant correlation.

Kaur, (2004) conducted the study on variable sports competitive anxiety. Subjects were inter-college female Kabaddi players (N=20) and inter-university level female Kabaddi players (N=20). Martens (1977). Sports competitive Anxiety Test was used to collect the data she found that university female players were significantly better as compared to the college female players on the variable sports competitive anxiety.

Kumar (2004), conducted a study on 40 hockey players from inter-university and 40 hockey players from inter-colleges, affiliated to Panjab University, Chandigarh on the variable sports competitive anxiety. The test to measure the sports competitive anxiety was sports competition Anxiety Test (SCAT) developed by Martens, (1977). ANOVA results indicated significant differences between university and college athletes on the variable sports competitive anxiety. The results did not show significant difference between male and female athletes on the variable sports competitive anxiety.

**MENTAL IMAGERY**

When psychology first began to emerge as an experimental science, in the philosophy departments of the German universities in the late 19th century, the central role of imagery in mental life was not in question. Wilhelm Wundt, acclaimed "the father of experimental
psychology", established the first psychological research and teaching laboratory in the Leipzig Philosophy Department in around 1876. He regarded his psychology as a branch of philosophy, an attempt to apply the experimental method of natural science (particularly, the physiology of Helmholtz) to essentially philosophical problems concerning the nature of mind and its metaphysical status. This view of the subject persisted in Germany at least until the Nazi era. Wundt's research program aimed to investigate the "elements of consciousness", and the laws governing the combination of these elements. Although his theoretical system made a place for emotional feelings as one class of element, in practice the main focus of Wundt's experimentally based research program was on the elements of sensation and their compounding into ideas. As has been the case in the empiricist philosophical tradition, these ideas were conceived of as, to all intents and purposes, mental images. Indeed, Wundt insists that there is no fundamental difference in kind between the ideas arising directly from perception and "memory images" (Wundt, 1912). Thus, Wundtian experimental psychology was largely a study of cognitive process, and, for him (and most of his numerous students and imitators), the mental image (under the rubric idea) played essentially the same crucial, representational role in cognition that it had played for most of his philosophical predecessors.

In a series of psychological experiments done in the 1970s (summarized in Kosslyn 1980 and Shepard and Cooper 1982), subjects' response time in tasks involving mental manipulation and examination of presented figures was found to vary in proportion to the spatial properties (size, orientation, etc) of the figures presented. The
question of how these experimental results are best explained has kindled a lively debate on the question of imagery.

There is every reason to believe that other modes of quasi-perceptual experience are just as common and important (Newton, 1982), and “imagery” has come to be the accepted scientific term for referring to them too: interesting studies of “auditory imagery”, “kinaesthetic imagery”, “haptic (touch) imagery”, and so forth, can be found in the contemporary psychological literature.

The phenomenon of ideomotor reactions were noticed by Sheveril (1854) and Faradi (1858). According to this phenomenon formation of an image of a movement calls for the tendency for its realization. In the past century, P.F. Lesgaft wrote about ideomotor reactions in the investigations about the genetical connections of facial expression and activity of the mimimal muscles.

Although the phenomenon of ideomotor reactions was noticed by much earlier but Carpenter (1894) postulated an “ideo-motor principle” which posited that any movement related idea that dominated the mind, finds its expression in the muscle. Jacobson (1930) confirmed the ideo-motor principle and further specified relationship between the nature of imagery modality and concomitant response. He carried out experiments to confirm the Ideo-motor principle as postulated by Carpenter (1894). He inserted bipolar needle electrodes into the biceps bracil muscle and a monopolar needle electrode into the vecti muscles of the isolateral eye. Amplitude measurements were made by a skin galvanometer. When subjects were requested to “visualize bending their right arm”, increased action
potential (over baseline) occurred in the ocular muscles, but were absent in biceps in almost all trails. Conversely, when subjects were asked to “imagine bending the right arm” muscular activity appeared in biceps in more than 90% of the trails, whereas ocular activity was only generated in a third of the trials. The results suggested that the predominantly modality / perspective of the image seemed to be a crucial factor in determining the location of the concomitant efferent response. The reported modality specific response pattern remained unrelated to sports research until Mahoney and Avener (1977) categorized visual and kinesthetic images into an “internal-external” classification based on an individual’s visual and somatic perceptual experience during image generation.

Dunlap (1914) observed that there is indeed a present content essentially connected with imagination or thought, but this present content is in each case a muscle sensation, or a complex of muscle sensations. We are therefore, in investigating images, dealing not with copies, or pale ghosts, of former sensations but with actual present sensations (Dunlop, 1914).

Jacobson (1932) made several investigations with more astounding and revealing facts. A general outline of these, is found in his article “Electro Physiology of the mental activity.” With the help of galvanometer which he himself developed and prepared, Jacobson successfully measured neuromuscular reaction to certain exercises imagined by subjects specifically trained in keeping their muscles relaxed. His experiments further showed (i) That mental images of movements or actions do affect the working muscles which, in their turn, betray real, although weak, corresponding contraction. Muscular
stress is undoubtedly left but the movements are not perceived. (ii) That the hand of a sports person would experience micro movements corresponding to a particular image in the mind such as the throw of a ball or the pumping of air into a bicycle wheel or the plying of a car etc., etc. The mechanogram would depict only single muscular contraction in the first case while in other rhythmical contractions of muscles would be recorded. (iii) Visual image of movements does not excite the contraction of muscles of the extremities alone, it also contracts the motor muscles of the visual apparatus. (iv) in other cases where the “working” muscles do not react to the imagined work the visual image of the object remains although it is found deficient with regard to the motor aspect.

Richardson (1967) proposed the neuromuscular feedback theory which suggested that a vivid, well controlled image produces an identical, minute innervation in localized muscles activated during the same overt movement. This covertly generated motor efference, in turn, provides kinesthetic feedback for future movement schema correction in the premotor cortex.

Powell (1973) described the imagery while performing a skill-successfully and that it makes sense to have athletes focus on positive end. There is benefit in using imagery as a self awareness tool to look at mistakes being made. When athletes are having difficulty with a skill and keep making an error, ask them to do this: imagine themselves making the mistake, seeing and feeling the error. Then think about what it would take to make the correct response. They immediately imagine performing the skill correctly. Now repeat the correct image several times, perhaps switching back and forth between practice and
the actual observations of a skilled performer. He then finally recommend that athletes should immediately follow several repetition in imagery with physical practice. He said that imagery can be valuable to correct errors, evidence indicates that imagery can be very helpful to strengthen the blueprint of those skills performed well. He recommend that after a contest, athletes find a quiet place and think about their good performance.

Landers (1975) demonstrated the effectiveness of observational learning of key cognitive elements of the task when these were enhanced if the learner observed the demonstrations early as well as again later in their performance trials.

Sweigard (1975) explained how imaging of a movement develops the movement patterns. He stated that when a person imagines movement without engaging in any voluntary muscular activity, the coordinated action of the muscles which produce the imagined movement will be patterned sub cortically. Sweigard's posture improvement technique called ideokinesis or imagined movement, was based on the rationale that "... all voluntary contribution to a movement must be kept to a minimum to lessen interference by established neuromuscular habits which may not be efficient or appropriate". Although some of the recommended techniques for teaching neuro-muscular recoordination combined voluntary movement with imagined action in the body, Sweigard did not advance any theory as to the processes involved, adding that these are ... invariably too extensive and complex to permit accurate analysis.
Nideffer (1976) studied those athletes who had a narrowed attentional focus and who had a tendency to "choke". They make mistakes in complex, rapidly changing situations because they fail to react quickly enough. In basketball they have difficulty finding the open man, or deciding if they should drive or take a jump-shot. In football they don't adjust to shifts by the opposing team. Individuals with this profile would have difficulty trying to function as a wishbone quarterback especially in the complex wishbone formation of today, or as the play maker on a basketball or hockey team. There is a need of mental rehearsal, attention, concentration in basketball or football and in other games.

Mahoney and Avenor (1977) revealed that elite male gymnasts qualifying for the Olympic team employed internal images more frequently than external. This finding is confirmed by another study conducted by Harris et al (1986) that suggested that advanced students produced more muscular efference during imagery. They concluded that the better the skill of learners, the more internalized his perspective, as most of the advanced students switched to an internal imagery perspective that might have been desirable.

Lang (1979) has proposed a "Live-informational theory of emotional imagery". This view maintains that the image in the brain is an organized, finite set of propositions about relationships, descriptions, and so on, which function as a preparatory set to respond. An emotional image contains two fundamental categories of statements; stimulus proportions and response propositions – the pattern of effector activity is determined by the response pattern that are included in the image structure.
Feltz and Landers (1983) observed that an internal orientation for imagery, called kinesthetic imagery, products more muscle innervation than an external or strictly visual type of imagery. This involves the person from his / her own internal perspective actually seeing and feeling those situations which might be expected while participating in actual situations. However, in tasks which are highly cognitive in nature, visual imagery has an edge over kinesthetic imagery.

Feltz and Landers (1983) analysed numerous studies and confirmed that improvement in cognitive tasks due to mental practice seemed to take a very few trials, usually fewer than size, whereas motor and strength tasks generally required more practice trials and more minutes of practice to achieve results. Motor skills performance in this meta-analysis was most marked when practice sessions were long than 15 minutes and consisted of from 36 to 46 trials per practice session. They said that simple expressions of strength often contain opportunities to plan how to stabilize other body parts and how to exert force. Other tasks involving accuracy often contain mental elements that are important in various phases of the learning process.

Highlen and Bennett (1983) paid attention to the mental practice of the “open” skills. Traditionally mental research has focused on invariant, well-established, consistently performed “closed skills” such as free throw shooting in basketball, shot-put and the like. But the potential for improving open skills in which the performer must react in a variety of ways to unexpected conditions and to an opponent, may also be improved with various types of mental practice. Magic Johnson
of the Los Angeles Lakers Basketball team is said to have enhanced his performance by imagining numerous possible situations that might occur during opportunities to execute a fast break. Mental activity of the athlete, therefore, has purposes that goes beyond mere skill enhancement.

Cratty (1984) suggests that reduction of errors may be carried out in at least two ways: (a) Correct skill, or series of skills may be over-learned mentally; practiced to the point of boredom. A difficult portion of the skill may likewise be “over practiced” mentally. (b) A second way to enhance a performance flow involves “bringing out” and making more vivid the nature of the flow-itself. Any practice to the point of “absuredity” leads to the removal of an error and helps internalize the sequence of actions required for the perfect execution of the skill.

Weinberg (1984) observed that to create reality in the mind, athletes must concentrate on imaging the behaviour perfectly. If the image created is not exact, athlete will have to reattempt the behaviour until he gets it right in his mind. This is simply an extension of the perfect practice rule that athletes adhere to when practicing physically. Woolfolk et. al (1985) have suggested that for an image to be effective, it is necessary that the outcome matches that the athlete wishes to achieve. It is important to image not only the entire performance associated with a skill, but also a specific positive outcome.

An investigation was carried out concerning the Imagery instructions on a simple motor skill accuracy tasks (putting a golfball)
by Woolfolk, Murpely, Gottesfeld, and Aitken (1985) in their study of the effects of mental rehearsal of Task Motor activity and mental depiction of Task outcome on motor skill performance. Male college students (N=50) were randomly assigned to one of six experimental conditions in a design that allowed the presence or absence of mental rehearsal of the physical movements involved in the task to be completely crossed with the imaginal depiction of task outcome (successful, unsuccessful or no outcome component). A significant outcome by trials interaction was found on tasks performance. This finding reflected the degradation of performance in the conditions employing negative outcome imagery rather than any enhancement of performance by positive outcome imagery. Self-efficacy was found to be correlated with performance, but this association seemed to be a by-product of the strong relationship between these variables and performance on the previous trial.

A study on mental imagery training and its effects on running speed performance was conducted by Burhans, Richman and Bergey, (1986) to assess the effects of single and combined cognitive strategies on long-distance running speed over a 12 week training period. Thirty six (36) male and twenty-nine (29) female students between the age of 17 and 22 years were enrolled in a physical conditioning course at Wake Forest University, voluntarily participated as subjects. Two different sections of the course (taught by the same instructors) were taught and tested. The subjects were matched with in each class on gender and initial time to run a 1.5 mile race on a standard metric outdoor track with an asphalt base surface. Subsequently, each subject was randomly assigned to one of four different conditions visual Imagery of specific skills (group skills),
Visual Imagery of the end result of successful competitive performance (group results), visual Imagery of both specific skills and the end result (results / skills), and a lecture control group control). Four large open rooms were used to initially train the four different groups, and to give a «booster shot» of the instructions eight weeks subsequent to initiate training. The Sports Competition Anxiety Test (Martens, 1977) was used to measure trait anxiety for competitive situations, and the life stress scale (a state index) was used to measure stress (Forbes, 1979). In addition, a questionnaire designed for this study was presented to subjects prior to running a 1.5 mile race 8 weeks after the initial instructions were given. This questionnaire was used to assess the efficacy of the training procedures, and to discover if, and to what extent, they were used. As a result running speeds were found to be superior over the initial four weeks of training for the internal (skills) imagery group relative to controls; whereas, no significant differences were evident for the motivational, psyching-up (results) group or the combined Results / skills group. All groups (skills, results, results / skills, control) showed the same level of improvement by the end of the 12 weeks of training.

Orlick (1986) says that focusing on technique is no good, the advanced players must focus on tactics. One of the major functions of imagery is to alert the mechanisms to be at work while dealing with specific situations during the competition. The performers at higher level are supposed to be more selective to be able to concentrate on crucial aspects of the competition. However, in closed skills, experienced athletes may need to rehearse subtle refinements of skills, whereas less experienced athletes may need to be led, as
pointed out by Cratty (1984), through entire skills and skill sequences in a more formal manner.

Weinberg, Seabourne and Jackson (1987) conducted a study on arousal and relaxation instructions prior to the use of imagery (Effects on image controllability, Vividness and Performance) was to determine if Imagery preceded by arousal or relaxation was more effective in terms of the quality of the Imagery as well as performances on a variety of motor tasks. Subjects (N=42) were students enrolled in self-defence classes which met three times a week for 16 weeks. The first six weeks of class served as a baseline period for the performance tests which included three karate measure (skill, combinations and sparing) and muscular endurance. Starting on week seven, subjects were matched based on their baseline ability measures and then randomly assign to one of the following conditions (1) arousal / imagery, (2) relaxation / imagery, (3) placebo control. During the next four weeks the experimenter met all subjects individually and helped train them in their specific technique. Subjects were tested on weeks 12 and 16 and told to utilize their mental preparation strategy just prior to each performance test. Results indicated that the relaxation / Imagery condition produced significantly better performance on the karate measure of skill than all other conditions. No other main effects or interactions reached significance level. In addition, no significant differences between groups were found for any of the Imagery measures with subjects generally reporting clear, vivid, controllable images. Similar to the performance measures, a series of oneway ANOVA’s on the baseline trails were conducted to test for any initial between-groups differences on any of the anxiety or imagery measures. Results revealed no significant
differences and thus a series of 3x2 (Treatment x trials) ANOVA’s were conducted. Once again results produced no significant between-group differences or interaction effects.

Burhans et al (1988) conducted a study to assess the effects of single and combined cognitive strategies on long distance running speed. 36 male and 29 female students between the age group of 17 to 22 years enrolled in a physical conditioning course of Wake Forest University who were subjected to 12 week training programme. Running speeds were found to be superior over the initial four weeks of training for the internal imagery group as compared to the control group. The results indicated that mental imagery benefited students running performance when the specific skills and movements involved in a successful performance are the objects of focus. They suggested that when using visual imagery as a supplemental training strategy, athletes should be encouraged to focus on performing the specific skills and movements necessary for successful performance in their event in order to more quickly achieve one’s maximum performance level.

Orlick’s (1988) conducted a study pertaining to Mental links to Excellence, included 235 Canadian Olympic athletes who participated in the 1984 Olympic Games in Sarajevo and Los Angeles. The athlete interview guide and the athlete readiness form, two assignment measures were developed for the purpose of this study. Individual interviews were carried out with 75 athletes and questionnaire was completed by another 160 to assess their mental readiness for the Olympic Games and factors related to mental readiness. Interviews were conducted from 4 to 10 months following the Los Angeles
Olympics. The following conclusions may be drawn from an integration of the interview and questionnaire survey findings. In fact, of the three major readiness factors rated by the athletes—mentally, physical, technical—mental readiness provided the only statistically significant link with final Olympic ranking. (i) Mental readiness is an extremely important factor influencing an athletic performance. (ii) A large percentage of Olympic athletes did not perform to their potential at the Olympic Games because they were not prepared well enough for the distractions they faced. (iii) Mental readying is derived from a number of learned mental skills that must be continually practiced and refined for an athlete to perform to his potential level and on a consistent basis. (iv) Attentional focus and the quality and control of performance imagery were the most important statistically significant athlete skills directly related to high level performance at the Olympic Games. (v) The following common elements of success were operational for the best athletes (i.e., Olympic medallists and world champions) in virtually all sports; (a) total commitment to pursuing excellence, (b) quality training that included setting daily goals and engaging in regular competition simulation and imagery training, and (c) quality mental preparation for completion. Which included a refined competition plan, a competition focus plan, an ongoing post competition evaluating procedure, and a plan for dealing with distractions. (vi) The three major performance blocks that interfered with high level performance at the Olympic Games were (a) changing patterns that work, (b) late selection, and (c) an inability to refocus in the face of distractions. (vii) Coaches could play a more meaningful role in helping athletes with their mental readiness for major events. This study gives a clear indication of the mental components of
excellence that are necessary for performing the potential at high profile events such as the Olympic Games. It pin points the mental skills that need to be developed and refined for consistent high level performance.

Thomas (1989), a related, and perhaps a more serious problem with the term “imagery” and with most of the colloquial alternatives is that they strongly suggest that the phenomenon involves some sort of picture (the image) entering into or being created in the mind. Indeed, this theoretical story seems to have gone virtually unquestioned during past ages (which may explain how the terminology in question became entrenched), and probably remains the majority, lay and expert, view today. Nevertheless, during this century it has come under strong challenge, and can no longer be regarded as uncontroversial. The confusions arising from this (as well as the other ambiguities of the term “imagery” that we have mentioned) continue to bedevil discussions of the topic. In particular, people who deny the existence of mental pictures seem frequently to be misunderstood as (implausibly) denying the occurrence of quasi-perceptual experiences, and in some cases they may themselves come to believe that the first denial commits them to the second. Indeed, there is some reason to think (although it is certainly not established) (Thomas, 1989) that minority of people (about 10% of the population by some estimates) who deny ever experiencing imagery, or who deny that it plays any significant role in their mental lives, may simply be understanding the terminology in a somewhat idiosyncratic fashion: what they intend to deny may not be so much that they have quasi-perceptual experience, but, rather, that what they do have is predominantly visual, or that it involves inner pictures, or that it resembles perceptual experience to
the extent that they (perhaps wrongly) understand other people to be claiming for their imagery (or some combination of these claims). This is a theoretically important issue because if it is true that some people really do not experience any imagery then imagery (understood as experience rather than representation) cannot play the vital role in mental life that has very often been attributed to its.

Hall, Buckolz and Fishburne (1989) observed that the recall as either high or low imagers was examined. Imagery ability was determined by the Movement Imagery Questionnaire. The movements were initially presented to the subjects on a computer monitor. Following the presentation of each movement, the subjects produced a movement using a pantograph, imagined the movement, and then produced the movement a second time. Once all movements had been presented using this procedure, subjects performed a distracter task and then were asked to recall as many of the movements as possible. Recall and recognition performance were also measured one week later. There proved to be no differences between the high and low imagers for either of the recall tests or for recognition performance. When the physical accuracy with which the movements were recalled was assessed, however, high imagers were more accurate than low imagers. These results suggest that high imagers can be expected to have little advantage over low imagers on standard movement recall and recognition tests, but individual differences in imagery ability can influence motor task performance.

Lee (1990) conducted a study regarding psyching up for a Muscular Endurance task. Effects of image content on performance and mood state. This study included two experiments. In the first
experiment, the participants were fifty two (52) male undergraduate psychology students between 18 and 30 years of age (M age = 20 years). Students with a history of back problems or other physical problems were excluded. The muscular task consisted of two sets of sit-ups 30 seconds each. The students used task relevant imagery, task irrelevant imagery or a distraction control procedure before performing an analogue task. A two-way analysis of variance with one repeated measure (time of testing by psych-up condition) was conducted. There was a significant main effect of time of testing and a significant interaction between time and condition. Post-hoc analysis indicated there was an overall improvement in performance between the two testing occasions, but that the improvement for the relevant image group was significantly greater than that for the other two groups. The irrelevant-image and distraction-control groups were not significantly different from each other in degree of improvement. To confirm this result an analysis of covariance was also conducted on the subjects second performance, using baseline performance as a covariate. There was a significant effect for psych-up conditions which corresponded with the findings of the first analysis. The improvement over baseline performance for the relevant image group was 13.9% compared with 6.7% for the irrelevant image group and 1.1% for the control group. However, a major limitation of this experiment was that mood state was not actually assessed, it was assumed that both psych-up conditions would have equivalent effects on mood. For this reason second experiment was conducted, to replicate the findings of the first, and second to investigate the role played by mood state in the psych-up effect. The second experiment involved 142 males between 15 and 30 years of age (M age = 21 years). None had participated in
experiment = 1 and students with history of back problems or other physical problems were excluded. The task and procedure were those used in experiment=1, with minor modifications. The groups did not differ significantly in baseline-performance. A two way analysis of variance with one repeated measure (time of testing by psych-up condition) was conducted. There was a significant main effect for time of testing and a significant interaction between time and condition. Post-hoc analysis indicated that the relevant image groups improved significantly more over baseline than did the other two groups. The irrelevant-image and distraction-control groups were not significantly different from each other in degree of improvement. To confirm this results an analysis of covariance was again conducted on the subjects second performance, using baseline performance as a covariate. There was a significant effect for psych-up condition, again corresponding with the findings of the first analysis. The improvement over baseline performance for the relevant-image groups was 13.9% for the control group. These findings suggest that the specific content of mental imagery is crucial in determining its effect on performance. The effect does not appear to depend on alterations of mood state and may operate through cognitive preparation.

Kendall, Hrycaiko, and Martin (1990) investigated the effects of an Imagery rehearsal, relaxation and self-talk package on the performance of a specific defensive basketball skill during competition in their study. “The effect of an Imagery Rehearsal, Relaxation, and self-Talk package on basketball Game performance”. Subjects were four female, inter collegiate basketball players. A single subject multiple baseline individuals design was employed to evaluate the intervention package. The intervention was clearly effective in
enhancing a basketball skill during games, and social validity measures were very positive.

Murphy and Jowdy (1992) found that in terms of relationship between imagery and performance, the evidence suggesting that motor imagery can result in improvement in sports performance is equivocal. They suggested that one reason may be the insufficient imagery training that the subjects experienced in the studies undertaken.

Barr and Hall (1992) assessed the use of mental imagery by rowers by administering the Imagery Use Questionnaire (IUQ) to 348 rowers at high school, college and national team levels. Most rowers reported using imagery and indicated they also had been exposed to and used other mental training techniques. They reported using imagery most just prior to competition. They indicated using more internal than external imagery, and reported that incorporating “feel” into their images was an important aspect of their imagery sessions. However, their imagery sessions were not very structured or regular and varied in duration. A discriminant function analysis conducted to determine which of the imagery use items best distinguished between novice and elite rowers showed that elite rowers had more structure and regularity to their imagery sessions. Novices indicated seeing themselves rowing incorrectly more often than the elite rowers, while experienced rowers more often saw themselves executing a prerace routine. Elite rowers reported feeling their blade, muscles, parts of the stroke, body swing, boat swing and shell run more often than the novice rowers.
O’Halloran and Gauvin (1994) observed that in light of recommendations proposed in the mental imagery literature (Feltz and Landers, 1983), the purpose of this study was to examine the role of one individual difference variable in the effectiveness of imagery training for the improvement of motor performance and imagery vividness. Specifically, the variable of preferred cognitive style (Isaacs, 1982), which classifies people according to their preference for imagic versus verbal thinking, was examined using a pre-test, post-test control group design. It was hypothesized that imagic subjects would benefit more from imagery training than Verbal subjects because mental imagery constitutes a mode of thinking that image subjects prefer and use more often. Forty-eight (48) female undergraduate students were classified as Imagic (N=24) or Verbal (N=24) according to the Preferred Imagic Cognitive Style questionnaire (PICS, Isaacs, 1982) and randomly assigned to a treatment or attention control group. Results indicated that both the treatment and control conditions had a significant impact on the motor performance of the Imagic subjects but not on the motor performance of the Verbal subjects. In addition, Imagic subjects demonstrated superior vividness of mental imagery and ability. While not directly in line with the hypothesis, these results do support the importance of Preferred Cognitive Style as an individual difference variable which might mediate the effects of mental imagery training. Suggestions for future research are proposed.

Khan, Handa and Singh (1994) conducted a study on basic differential cognitive and conative functioning of individual and team game athletes, aimed at probing into cognitive and conative differences between individual and team games on Reaction Time (Visual and auditory). Visual Concentration, Two-arm Co-ordination
and Steadiness. Subjects (N=123) belonging to sports disciplines of Athletics (N=13), Boxing (N=14), Judo (N=12), Wrestling (N=16), Basketball (N=21), Football (N=22), Hockey (N=13) and Volleyball (N=12), were tested by using reaction timer Knox Cube Imitation test, Two-arm co-ordination test and gardeners steadiness tester. The ‘t’ test was applied to find out differences between team and individual game players and ANOVA was applied game wise separately. Results revealed that individual that team games significantly differed from each other on Visual Concentration and Visual Reaction time and inter-group differences occurred on steadiness for both individual Games and Team Games separately.

Hanrahan et al (1995) conducted a study to evaluate the effect of mental imagery when used during performance of three different dance movement tasks. Three groups of 65 dance students performed the battlement, d’eveloppe’ and arabesque in the same pre-and post-test conditions. Analysis of variance and Scheffe post-hoc tests on the angle scores, for each movement pattern separately, revealed significant improvement for two of these, the battlement, p>0.1, and arabesque, p>0.05. These results suggested that directional whole-body image can be used successfully during certain dance movements. Ballistic battlement and the sustained arabesque improved significantly as a result of imagery, which indicated that the characteristics of the movement patterns may have less impact than has been suggested by Hanrahan and Salmela (1986).

Savoy and Beitel (1996) conducted a study to determine the relative effect of physical practice only and a combined physical practice and imagery intervention programme on foul shot
percentages of a highly skilled women's basketball team. The subjects were 10 members of a National Collegiate Athletic Association women's basketball team within the age group of 18-21 years. Five players were starting players and five came off the bench as substitutes. The study of encompassed a 35 game period during regular and post season play. The results of the interventions employed in this study indicate that foul shooting improved when the interventions were employed across 35 years and there were negative effects when interventions were removed. The findings of this study indicate: (a) that coaches can create an environment for their players to improve their foul shooting percentage by incorporating imagery during practice time in addition to their regular physical foul shooting practice, and (b) that one initiated, imagery intervention programmes should be consistently maintained.

Mckenzie and Howe (1997) employed multiple baseline across subjects design to investigate the effect of mental imagery training on the magnitude of an individual's self-efficacy for a dart throwing task. Six subjects were administered a 15 session mental imagery training programme following baseline sessions of varying lengths. Each imagery session included a relaxation component, followed by specific imagery training. Subjects were then asked to stand, perform a one minute entering exercise, and to image successful performance of the task. This was immediately followed by the completion of a self-efficacy and imagery rating scale, and actual performance of the task while blind folded. Two subjects showed that their self-efficacy magnitude for the task had increased as a result of the imagery training. All subjects reported an improvement in their overall ability to image the task as a result of the intervention. It was concluded that
imagery was able to enhance self-efficacy magnitude for the dart throwing task in subjects who were high ability imagers, had previous experience at throwing darts, believed in the performance-enhancing capabilities of mental imagery training, and had been exposed to relaxation and imagery procedures prior to the study.

Rushall and Lippman (1998) stated, mental practice is a recognised and often effective method for influencing the proficiency of physical performance. It is suggested, however, that <<mental practice>> and <<imagery>> are general labels applied to a variety of procedures that have different goals and uses for influencing human physical performance. This commentary argues that imagery usually is implemented for two different intentions in physical performance endeavours – skill development / learning and competition performance preparation – and that different procedures and elements are associated with each purpose. It is suggest that separation of these two functions will aid interpretation of the research and identification of issues that need empirical clarification.

Hall, et al (1998) observed that the Sports Imagery Questionnaire (SIQ) was developed to assess the motivational and cognitive functions of imagery proposed by Paivio’s Analytic Framework of Imagery Effects (1985). The present article reports three experiments designed to validate the content and construct properties of the SIQ. Initially, items were developed through a thorough literature review, other imagery questionnaire, and the expert evaluations of research professionals and elite athletes. In Experiments 1 and 2, the items, on the SIQ were found to separate into distinct factors. These factors corresponded well with the functions of imagery proposed by
Paivio. Experiment 3 was designed to assess construct and predictive validity in a sample of 271 athletes competing in individual and team sports. Again results revealed the existence of five distinct factors corresponding with the motivational and cognitive functions of imagery proposed. Predictive validity of the SIQ was supported in that greater imagery use was associated with successful performance. Finally, differences between individual and team sport athletes were observed with respect to the functions of imagery use. Overall, the results of these experiments indicate that the SIQ may be a useful tool for helping understand how athletes use different types of imagery.

Rathee (2000) observed that mental imagery has been recognized as an effective method in the realm of performance preparation. It also serves a useful function from the very outset of learning a physical skill. The degree to which an athlete can manage his thoughts and meal strategies pertaining to the activity, determines the chances of his success. Mental practice of skills by an athlete can result in better performance. Imagery is also useful in the adjustment of pre-competition arousal and the overall improvement of the performance. By resorting to mental imagery, an athlete can strengthen his skills or correct the improperly executed ones. Sports Psychology immensely benefit from determining what form of mental practices are appropriate for particular purposes and activities. Appropriate models verified in practice would allow guidelines to be developed, helping the athletes to utilize the same for enhancing their performance.

Gupta (2003) conducted a study to explore the mental imagery abilities among elite national level basketball players both male and
female. She administered MIQ (Mental Imagery Questionnaire) to the subjects (N=80) she reported that the female basketball players were found to have better visual auditory, fact as compared to male players. The two gender groups differed significantly from each other on assessing overall mental imagery among them. As female basketball players had better overall or total imagery.

Kaur, (2003) conducted a study on 390 college athletes from different sports disciplines in the age group 16 to 22 years. The study has focused test construction on the variables mental imagery. Norms for sports imagery scale were prepared by using Hull Scale and Percentile Scale. This inventory was applicable to the sports population of the state of Punjab and Union Territory of Chandigarh as the subjects were drawn from these regions of country.

**SELF-ESTEEM**

Neale, Somstorm and Metz (1969) in their study conducted on 165 boys enrolled in five physical education classes measured the physical fitness, self-esteem, level of voluntary physical activity and attitude towards physical activity reported that significant correlations were observed between self-estimate of physical activity and attraction to physical activity and between attraction and voluntary participation in activity.

Graf (1971) explored behavioural predictions generated from cognitive consistency theory in terms of behaviour expectancies resulting from induced self-esteem and induced guilt. The hypothesis of this study was that a decrease in self-esteem leads to behaviour that has the aim of disconfirming the negative self-image: i.e. raising
self-esteem back to the preinduction level. To test the hypothesis, high and low self-esteem were induced, then subjects were given an opportunity to engage in dishonest behaviour in a non-competitive situation. The subjects were 90 undergraduates enrolled in introductory psychology courses at San Diego State College. Three groups of 30 subjects were given an abbreviated form of the California Psychological Inventory. After completing the test, each subject was given a “clinical evaluation” of his performance. After giving the subject time to read his evaluation, the subject was asked to rate himself on a 10-item list of bipolar adjectives. His scores on this test was used to check the effectiveness of the self-esteem induction. An analysis of variance on responses to the self-rating scale confirmed the success of the self-esteem inductions (F=3.39, df = 2/87, p<.05). Scores for the high self-esteem group were significantly more positive than were scores for the neutral self-esteem subjects. Scores for the low self-esteem subjects were significantly lower. More subjects in the low self-esteem group engaged in dishonest behaviour than did subjects in the other two self-esteem groups.

Orpen and Lisus (1974) to test the prediction that there should be a positive relationship between self-ratings of need fulfillment and job satisfaction among high self-esteem individuals but not among low self-esteem individuals. 70 English-speaking white South Africans drawn from professional occupations (lawyers, engineers, accountants) were given two measures of self-esteem, two measures of overall job satisfaction, and a measure of the extent to which they felt their major needs were being fulfilled in their job situation. Self-esteem was measured by (a) the Coopersmith self-esteem inventory and (b) the self-social inventory developed by Ziller et al. Job
satisfaction was measured by (a) the Brayfield-Rothe index of job satisfaction and (b) a seven-point graphic self-rating scale, ranging from 7 (extremely satisfied) to 1 (extremely dissatisfied). Need-fulfillment was measured by the Porter need-fulfillment questionnaire. The correlation between the two measures of self-esteem was highly significant ($r = .63, p<.001$), as was that between the two measures of job satisfaction ($r = .74, p<.001$). These results suggest that self-esteem is not as crucial a variable in the relation between need-fulfillment and job satisfaction.

Bekanan et al (1975) in their study appraised the effects of four independent variables – nationality, age of verbal model, sex of verbal model, and age of subject – on changes in level of self-esteem. Two hundred and forty institutionalized adolescents, 120 Thai and 120 American, served as Ss. Treatment implementation involved exposing the Ss to positive self-descriptive paragraphs and a positively scored Self-esteem scale purportedly completed by an imaginary pen pal Ss then wrote a self-descriptive paragraph for the pen pal. Pretest-posttest scores were analyzed in a 2x3x2x2 ANOVA. Thai Ss gained significantly more than American Ss, and significant interaction for nationality by age of model, and sex of verbal model by age of S were obtained.

Kaplan (1975) conducted extensive studies into the causes of violence, including a study of 7,000 7th graders, and underscores the significance of self-esteem as a factor in crime and violence. He, too, found that violations to self-esteem serve as a major source of hostility and aggression. This conclusion is borne out in the study of those incarcerated for the most violent acts.
Mahoney and Finch (1976) examine the relationship between body-cathexis and self-esteem, research has frequently been directed toward the question of the differential contribution of cathexis for specific body aspects. Current conclusions in this area are based upon erroneous data analysis procedures and are thus suspect. A sample of 98 males and 129 females enrolled in sociology courses responded to a standard self-esteem instrument in addition to a body-cathexis questionnaire. The differential contribution of cathexis for specific body aspects to self-esteem was examined with the use of a stepwise regression procedure. The results indicate that body aspects previously considered most important to self-esteem are largely a function of the failure of previous studies to examine the role of suppressor variables. Further, body aspects stereotypically considered important contribute minimally to self-esteem level, and the total proportion of variance in self-esteem accounted for by body-cathexis is contributed by a small number of body aspects.

Ramirez and Lasater (1977) conducted a study on 159 Anglo-American and 45 Mexican-American students. The study investigated the effects of ethnicity of communicator (Chicano Vs. Anglo-American), self-esteem (high vs. low), ethnicity of (Chicano Vs. Anglo,) and fear-arousing communications (high fear Vs. low fear) on a number of behavioural and attitudinal measures of persuasion. Ethnicity of communicator, self-esteem of the S, and level of fear communication significantly influenced persuasion. There were no significant effects of ethnicity of S. Communicator ethnicity also interacted with the other two factors. Evaluations of the Chicano communicator were equally positive across the two levels of fear
communications, while evaluations of the Anglo communicator were associated with fear level of message. High self-esteem Ss rated the Chicano communicator more positively, while the Anglo communicator was evaluated more positively by the low self-esteem Ss. Possible interpretations of these results are discussed.

Momberg and Page (1977) conducted a study in South Africa on four hundred and twenty-six Ss who were tested on Coopersmith’s Self-esteem Inventory in six groups – English, Afrikaner, and Colored South Africans each contributing a school (grade 6) and a university sample. Only difference recorded was between the grade 6 Afrikaner pupils and their coloured counterparts (p<.05), but it was concluded that generally white and coloured self-esteem is the same.

Kelley (1978) reported a direct correlation between delinquency and low self-esteem. He found evidence of a link between increased self-esteem and a reduction of delinquent behaviour. He found that as programs were implemented to raise the level of self-esteem, the incidence of delinquent behaviour was reduced.

Jackson (1979) randomly selected fifty-six female and 40 male racially mixed college students to comprise the sample (total n= 96). Each S completed a material goods questionnaire concerning 19 material good items such as a car, T.V. etc) for every item listed on the questionnaire the respondent was asked YES/ NO questions relating to (a) item need, (b) item ownership (c) item satisfaction. Material good need fulfillment sample values were correlated with total scores on the Tennessee Self-Concept Scale (TSCS), a self-report scale utilized to assess level of self-esteem. The results indicated a
significant positive product-moment correlation existing between material good need fulfillment values and TSCS scores for both the male and female samples, as well as for the total sample population.

According to Konoske et al. (1979) two explanations for the consistent finding that compliant behaviour increases following experimentally induced guilt were explored. Sixty male and female at San Diego State University undergraduates psychology students classified as either guilt-induced or control Ss were asked to comply to a request to make phone calls to prospective Ss. In one condition, they were asked to tell prospective Ss a lie, while in the other condition they were merely asked to remind the Ss about the time and place of the experiment. The dependent measure was the number of phone calls an S was willing to make. It was hypothesized that guilty Ss would comply equally to both requests if the compliant behaviour was a form of self-punishment, since punishment is a reasonable expectation following a transgression. If compliance were aimed at raising self-esteem, then guilty Ss should comply more to the nondeceptive request. Results indicated that guilt induced Ss were more willing to make nondeceptive phone calls than deceptive phone calls. Controls were equally willing to make either type of call. It was concluded that compliant behaviour following induced guilt may be aimed at raising one’s self-esteem back to some chronic, preinduction level.

Heaven (1980) administered a measure of self-esteem and a measure sensitive to authoritarian behaviour to 111 Afrikaans-speaking students (mean age 19.73 years, SD=2.37). All respondents classified themselves as “rural”. Analysis of the data showed a low
but positive and significant relationship between self-esteem and authoritarian behaviour ($r= .24, p<.05$). The results of this study suggested that, in a large city such as Johannesburg, Afrikaners may feel threatened. This could result in low self-esteem; and in order to compensate for these feelings of inadequacy they manifest authoritarian behaviour. In the rural environment, the students, being numerically superior and politically dominant, do not feel threatened, a condition that could explain their high self-esteem.

Hendrix (1980) conducted a study as to whether external control is positively related to self-esteem for black children and negatively related to self-esteem for white children. (Ss were 240 seniors from schools in South Louisiana representative of low, middle, and upper-middle income ranges. There were 56 black males, 60 white males, 79 black females, and 45 white females. The instruments administered included Rotter’s Internal-External Control Scale, Gurin Personal Control Scale, Bachman’s self-esteem scale. The self-determined socioeconomic status was determined by use of the Duncan Socioeconomic Index. A Pearson product-moment correlation matrix was computed between self-esteem and external control, and the personal control variables. A positive correlation ($r=.350, p<.001$) between self-esteem and external control was found for the black Ss. There was no significant relationship between I-E control and self-esteem for the white Ss. Closeness to family and socioeconomic variables have been reported to have some positive correlation with self-esteem but did not affect the findings. A positive correlation between personal control, and self-esteem was found for both black and white youth.
Halpin et al (1980) investigated perceived parental antecedents of locus of control and self-esteem for American Indian (N=59) and white (N=141) males and females ranging in age from 12 to 18 years. Test instruments were the Perceived Parenting Questionnaire, Intellectual Achievement Responsibility Questionnaire, and Coopersmith Self-Esteem Inventory. Positively related to internal locus of control were instrumental companionship, nurturance, principled discipline, and achievement pressure while negatively related was external punishment. Positively related to high self-esteem were instrumental companionship, nurturance, principled discipline, and achievement reward, while negatively related were protectiveness, external punishment, achievement pressure, deprivation of privileges, and affective punishment. In general, parental antecedents of locus of control and self-esteem were not significantly different for Indians and whites.

Hines and Berg-Cross (1981) administered study on a mulitest design to investigate the current state of racial differences in global self-esteem. The relationship between self-esteem and racial evaluation was also addressed. Fewer than 18% of 180 Ss (black and white seventh-grade boys and girls) were consistently classified in global self-esteem across three self-esteem indices. Nevertheless, the data were consistent in refuting the popular notion that blacks are more negative in self-esteem than whites. The association revealed between self-esteem and racial evaluation was not sufficient to justify the common practice of predicting one variable from the other.

Srivastava (1981) conducted the study aimed at testing certain predictions of the self-esteem and the consistency theory regarding
the effects of Indian students self-esteem and their academic performance on the experience of alienation. The Ss were classified according to a 2 (high /low self-esteem) x 2 (high / low academic performance) design of the ANOVA of alienation scores. Results revealed a significant main effect of self-esteem and an interaction effect of self-esteem and academic performance.

Rey and Sheppard (1981) in their study administered female athletes from three large universities the Personal Attributes Questionnaire (PAQ short form) and the Texas Social Behaviour Inventory (TSBI) in order to determine differential self-esteem of subjects in the four PAQ categories. The concept of psychological androgyny and masculine categories and those same subjects attained significantly higher self-esteem (P<.01) as compared with the feminine and undifferentiated. Therefore, as supported in the literature, it appeared that the presence or degree of masculine characteristics resulted in high self-esteem. It is not that characteristics associated with femininity inversely relate to self-esteem but that the absence of characteristics defined as masculine yields a relationship with self-esteem that approaches zero. The present results support that women who either possess the traditional female qualities and the qualities associated with masculinity (displaying psychological androgyny) or who describe themselves as possessing only characteristics defined as masculine do have higher self-esteem then stereotypic females. This leads us to conclude that androgynous women or self-descriptions as primarily masculine will more likely result in high self-esteem. Hence the adoption of a more androgynous models for women would seem to be indicated.
Olszewska, (1982) investigated 260 volleyball, handball and soccer players in order to determine a possible interdependence between their self-image, self-estimation, a tendency to dominate or submit, and their performance effectiveness. The procedures employed were: the Giessen Test, the assessment of the level of aspirations, the A-S Reactions Study Test and the practical assessment of performance effectiveness. Research results show that players who achieved a high level of performance effectiveness have a high self-image, are either sensible or reckless, and reveal a tendency to submit.

The relationships between self-evaluation, effort, and reevaluation of the self suggest a cyclic aspect to the dynamics of self-esteem. Harter (1983) asserts that the term self-worth is frequently used to refer to aspects of motivation and moods. High self-esteem is associated with a mood of cheerfulness, feelings of optimism, and relatively high energy. Low self-esteem is accompanied by feelings of doubt about one's worth and acceptability, and with feeling forlorn, morose, or even sad. Such feelings may be accompanied by relatively low energy and weak motivation, invariably resulting in low effort. In contrast, high self-esteem is associated with high energy, which increases effectiveness and competence, which in turn strengthen feelings of self-esteem and self-worth. In this way, feelings about oneself constitute a recursive cycle such that the feelings arising from self-appraisal tend to produce behaviour that strengthens those feelings – both positive and negative.
Richman, Rehberg (1986) Sixty martial artists were accused for levels of self-esteem prior to their competition at a karate tournament. Subjects were 60 karate students, randomly chosen from those participating in one of the largest karate tournaments in the United States, the 1985 Battle of Atlanta. The age range was 5-34 years, with a mean of 23.4 years and a standard deviation of 15.7. Of the 58 subjects reporting their age, 21 fell into the 5-15 year old bracket and 37 were 16-35 years old. Subjects were tested the day prior to the tournament. This questionnaire includes three sections. (1) Questions regarding the students involvement in karate and demographic information; (2) the 10 question Rosenberg Self-Esteem Scale; and (3), two questions concerned with the subjects own analysis of their martial arts skills. Dichotomize the sample into a group who earned a trophy and those who failed to earn a trophy. Self-esteem was found to be significantly lower for beginning belt level students; self-perception regarding their abilities revealed fighting ability and physical conditioning. Furthermore, prior to the tournament, self-esteem was found to be significantly higher for those competitors who would achieve a trophy relative to those who would not earn a trophy.

Utley and Rush (1986) made an attempt to investigate the effects of self-esteem and locus-of-control on academic achievement. Three hypotheses were used to test the data. Hypothesis (1) predicted that there would be a significant positive relationship between self-esteem and academic achievement as measured by the comprehensive tests of basic skills, reading vocabulary and comprehension and mathematics computation and application. Hypothesis 2 predicted that there would be a significant positive
relationship between locus-of-control and academic achievement as measured by the comprehensive test of basic skills, reading vocabulary and comprehension and mathematics computation and application. Hypothesis 3 confined the two variables self-esteem and locus-of-control, and predicted that there would be significant positive relationship between self-esteem / locus-of-control and academic achievement as measured by the comprehensive test of basic skills, reading vocabulary and comprehension, mathematic computation and application. The Cooper Smith Self-Esteem Inventory was used to determine self-esteem. The intellectual achievement responsibility questionnaire was used to determine internal-external locus-of-control scale scores form the comprehensive test of basic skills, reading vocabulary and comprehension and mathematics computation and application used to determine achievement. To test the hypotheses the following statistical procedures were used; an analysis of variance Tukey / B, Pearson Product-Moment Correlations, partial correlation analysis and regression analysis. The research population consisted of 282 in number of ninth grade students. They were 140 subjects and 142 subjects, females and males respectively. The conclusions included as (1) significant positive relationship between self-esteem and academic achievement, (2) a significant positive relationship between locus-of-control and academic achievement, (3) a significant positive relationship between self-esteem / locus-of-control and academic achievement, and (4) correlations for the other hypotheses were relatively weak but significantly correlated.

Cutolo and Antonio (1987) studied the inter-relationship of female competitive athletic participation, sex role, self-concept and
self-esteem. In order to explore this relationship, two hundred high school girls in the Leansan City Missouri Public School system were administered the sex role self concept inventory, the Coopersmith self-esteem inventory, and a questionnaire. One hundred of these girls were members of their high school inter scholastic Athletic teams, and were placed into 4 categories based on length of participation: up to 1 year, 1 to 2 years, 2 to 3 years, and 3 to 4 years of interscholastic athletic competition. Also one hundred subjects did not have any competitive experience who were chosen from high school gymnastic classes. Means and S.Ds of Bem scores and Coopersmith self-esteem scores were calculated for each level of competitive athletic participation. Level of athletic participation and sex role Self-concept was found to be correlated in a positive direction with athletic participation. The scores on the sub-scales were found to be correlated in a positive direction with level of athletic participation and self-esteem.

Holly (1987) compiled a summary of some 50 studies and indicated that most supported the idea that self-esteem was more likely the result than the cause of academic achievement. He did acknowledge that a certain level of self-esteem is required in order for a student to achieve academic success and that self-esteem and achievement go hand in hand. They feed each other.

Goldsmith and Matherly (1987) administered the Rosenberg Self-Esteem Scale (RSE), and 12 items from the Adjective Check List (ACL) The Crowne-Marlowe Social Desirability Scale was used to measure the effects of this response set. Study participants were 60 male and 67 female American business students (M age = 21.4 years,
SD = 1.9). The correlations of the KAI with the two self-esteem scales provided support for the generalization that innovators are more likely than adaptors to describe themselves as high in self-esteem. This relationship was strongest for the originally subscale. The ACL scale was positively correlated with the KAI (.21, p < .01) and with originality (.45, p < .001).

Orlick and Partington (1988) reported that although using imaging is often associated with learning new sport skills, athletes use imagery for several different purposes. Such other uses include building confidence, helping correct a skill, preparing to get the most out of practice or specific drill, assisting with psychological recovery and motivation (e.g. seeing yourself standing on the podium with the gold hanging around your neck).

Dunn’s (1988) view of the nature of self-esteem is that it is related to the extent to which one sees oneself as the cause of effects. She asserts that “the sense of cause (is) a crucial feature of the sense of self” and the essence of self-confidence is the feeling of having an effect on things and being able to cause or at least affect events and others. On the other hand, feeling loved by the significant others in one’s environment involves feeling and knowing that one’s behaviour and status really matter to them – matter enough to cause them to have real emotion and to provoke action and reaction from them, including anger and stress as well as pride and joy.

Covington (1989) reported that as the level of self-esteem increases, so do achievement scores; as self-esteem decreases, achievement scores decline. Furthermore, he concluded that self-
esteem can be modified through direct instruction and that such instruction can lead to achievement gains. Specifically, students' perceived efficacy to achieve, combined with personal goal setting has been found to have a major impact on academic achievement.

Foon, (1989) observed that a range of variables have been suggested to explain rates of participation in sport among adolescent females. She investigated the importance of self-esteem, affiliation patterns and attribution styles for sports involvement among Australian female adolescents. Employing a sample of 779 teenage girls, a model was developed which explained 38% of variance for the sports participation variable. The variable which proved significant in explaining participation in sport were peer affiliation, self-esteem, family affiliation, and locus of control.

In an examination of developmental considerations, Bednar et al (1989) suggest that feelings of competence and the self-esteem associated with them are enhanced in children when their parents provide an optimum mixture of acceptance, affection, rational limits and controls, and high expectations. In a similar way, teachers are likely to engender positive feelings when they provide such a combination of acceptance, limits, and meaningful and realistic expectations concerning behaviour and effort. Similarly, teachers can provide contexts for such an optimum mixture of acceptance, limits, and meaningful effort in the course of project work as described by Katz and Chard (1989). They state that there may be a “situated” as well as a “general” self identify, suggesting that self-esteem may vary from one interpersonal situation to another. In other words, although the overall context of experience may remain constant, changes in
interpersonal situations can cause real assessments of the self. For example, a teacher might have a fairly high estimation of herself in the context of teaching her own class, but when the interpersonal situation changes by the entrance of a colleague or the principal or parent, she may shift her estimation or self-rating—probably downward. Although the teacher is exactly the same person five minutes before the intrusion as she is five minutes afterwards, the change in self-esteem is created by the teacher herself when she attributes greater significance to the other’s assessment of herself than to her own assessment. On the other hand, if the other person’s assessment is based on greater knowledge, experience, and expertise, the teacher could consider herself informed or instructed by that assessment rather than simply accorded lower esteem.

The cyclic formulation of self-esteem is similar to Bandura’s (1989) conception of self-efficacy, namely, processes by which perceptions of one’s own capacities and effective action “affect each other bidirectionally”. In other words, effective action makes it possible to see oneself as competent, which in turn leads to effective action, and so forth. The same cycle applies to self-perceptions of incompetence. However, Bandura (1989) warns that a sense of personal efficacy does not arise simply from the incantation of capability. Saying something should not be confused with believing it to be so. Simply saying that one is capable is not necessarily self-convincing, especially when it contradicts preexisting firm beliefs. No amount of reiteration that I can fly will persuade me that I have the efficacy to get myself airborne and to propel myself through the air.
Katz and Chard (1989) addressed this issue in terms of the variety of dimensions of children's behaviour to which teachers assign importance in a classroom. They define classes in which a limited range of child behaviour is accepted, acknowledged, and rewarded as unidimensional. Multidimensional classes are those in which teachers provide a wide range of ways for children to contribute to and participate in the classroom life and in which a range of behaviour is accepted, rewarded, and acknowledged. Rosenholtz and Simpson suggest that the unidimensional classroom limits opportunity for self-enhancement, and the multidimensional classroom makes it possible for many if not all pupils to find way to enhance their feelings of self-esteem and self-worth. Multidimensionality in the classroom can be fostered when teachers include as part of the curriculum a wide range of activities of intellectual, social, aesthetic, and artistic value.

The distinctions between the Western independent and the non-western interdependent construal of the self indicate that the sources of self-esteem are also distinctive. For Westerners, independent self-esteem is achieved by actualizing one's own attributes, having one's accomplishments validated by others, and being able to compare oneself to others favourably. In Asian and other non-Western cultures, self-esteem is related to self-restraint, modesty, and connectedness with others. Lee (1990) have noted that American children appear to have more positive conceptions of their mathematical abilities than Asian children do, even though the latter actually perform much better than the former. Such findings must be interpreted in light of the cultural differences of the two groups. Asian children apparently learn early that pride in one's strengths is interpreted as gloating and is
unacceptable; American children are encouraged to be proud of their accomplishments. Frequent exhortations to “feel god about oneself” and to see oneself as “special” may contribute to the unrealistic self-appraisals reported by Stevenson and his colleagues.

Weiss at al (1990) explored the relationship between children's self-esteem and attributions for performance in both physical and social achievement domains. Children's physical and social self-esteem as well as participations of and attributions for performance and inter-personal success in a summer sports program were assessed. Multi-variate analysis revealed a significant relationship between self-esteem and causal attributions for both physical and social domains. For physical competence, children high in self-esteem made attributions that were more internal, stable, and higher in personal control than did low self-esteem children. For social competence, children high in self-esteem made the attributions that were more internal, stable, and higher in personal and lower in external control than did children low in self-esteem. These results provided support for a self-consistency approach to self-esteem.

Markus and Kitayama (1991) point out that the construal of the self-varies among cultures and that Americans and other Westerners typically construe the self as an independent, bounded, unitary, stable entity that is internal and private. On the other hand, they assert that in non-Western cultures such as those in Asia and Africa the self is construed as interdependent, connected with the social context, flexible, variable, external, and public. Westerners view the self as an autonomous entity consisting of a unique configuration of traits, motives, values, and behaviours. The Asian view is that the self exists
primarily in relation to others, and to specific social contexts, and is esteemed to the extent that it can adjust to others, maintain harmony, and exercise the kind of restraint that will minimize social disruption. According to Markus and Kitayama these contrasting culture-bound construals of the self have significant consequences for cognition, affect, and motivation. Asian children must learn that positive feelings about the self should derive from fulfilling tasks associated with the well-being of relevant others. On the other hand, Western children have to learn that the self consists of stable dispositions or traits and that “they must try to enhance themselves whenever possible... taking credit for success... explaining away their failures, and in various ways try to aggrandize themselves”. Eventually American children must learn that “maintaining self-esteem requires separating oneself from others and seeing oneself as different form and better than others”. According to this formulation, Americans cannot perceive themselves as better than others without describing the others as worse than themselves. When one’s own self-esteem is the result of comparison processes, its maintenance may contribute to constant wariness of the risk of coming out poorly in such comparative assessments of self-worth. At worst, such sources of self-esteem may contribute to a need to identify lesser or inferior others = either individuals or groups. At best, they may contribute to excessive competitiveness and may distract individuals from giving their full attention to the tasks at hand, thereby depressing their learning and effectiveness. Developmental studies reviewed by the authors indicate that self-enhancement and self-promotion are perceived negatively in Japan and that, although not apparent in the early year, by fifth grade Japanese children have learned that it is unwise to gloat over their
accomplishments or to express confidence in their own ability. Research indicates that as children are socialized in an interdependent cultural context, they begin to appreciate the cultural value of self-restraint and, furthermore, to believe in a positive association between self-restraint and other favourable attributes of the person not only in the social, emotional domains but also in the domains of ability and competence.

Baize and Sheila (1991) examined the relationship between high school inter-scholastic athletic team participation and self-esteem when considered three indexes of academic achievement. A self-report student survey was designed to elicit demographic and academic achievement information, including gender, ethnicity, grade point average, number of missed school days, and number of behavioural referrals during the last school year. Additionally the Rosenbarg (1965) self-esteem scale and a Demo and Savin-Williams (1983) self-esteem inventory were incorporated to measure levels of self-esteem. The sample included 477 seniors from two high schools in southwest horizons, evenly spread across gender and athletic status (participants and non-participants). The analysis of data indicated that both the above tests yielded similar results in that males scored significantly higher than females and students participating in athletic scored significantly higher than did non-participating in athletics scored significantly higher than did non-participating students. When considering the indexes of academic achievement, females on an average had higher GPA's than males, and athletes had significantly higher GPA's than the non-participating peers. Males missed fewer school days than females and athletic participants
missed significantly fewer school days compared to non-participants. Additionally, on average males received more behavioural referrals than females, and athletic participants scored significantly better than non-participants as they also received fewer behavioural referrals. Hence, students who participated in high school athletics had higher self-esteem scores, maintained higher grade point average, missed fewer school days and received fewer behavioural referrals.

Doganis, et al (1991) conducted a study the aims of this investigation were to test the factor structure and psychometric properties of the Exercise Objectives Locus of Control (EOLOC) scale in order to adapt it for use with Greek populations, and to examine its relationship with self-esteem. A total of 96 women, 18-40 years of age, participating in physical fitness programs, took part in this study. The factor analysis of the EOLOC scale explained 58.5% of the variance, considered satisfactory, and high reliability scores were revealed in the final form of the scale. The results also showed a positive relationship between Self-Esteem and EOLOC Internal subscale and negative relationships between Self-Esteem and EOLOC External and Chance subscales. These findings suggest that persons with positive attitudes toward the self are those who believe they are able to control the exercise outcomes. The results are discussed in relation to the usefulness of the Exercise Objectives Locus of Control scale as a specific Locus of Control measure in physical activity. An earlier study (Ryckna, Robbins, Thornton, & Cantrell, 1982) showed that subjects who perceived themselves as having excellent physical skill have higher self-esteem, an internal locus of control, a lack of social anxiety and self-consciousness. In another study (Lombardo,
Fantasia, & Solheim, 1975) the discrepancy between real and ideal-self was significantly larger in Externals than in Internals. Finally, persons having negative feelings about their bodies had low self-esteem, external locus of control and depression (Mable, Balance & Galgan, 1986).

Feng (1991) studied the relationship between self-esteem and educational outcomes with elementary and junior high school students in Taiwan. He conducted a study by taking 260 students who were enrolled in public school classes, grades three through six in elementary school and grades one to two in junior high school, were administered Piers-Harris self-concept scale. The educational customers were collected from the office of academic studies. The Piers-Harris, including the total and six clusters, was used to assess self-esteem levels, and the five educational records consisting of character, intellectual, physical training in group life, and aesthetic educations, were used as educational outcomes. By analysing the results he concluded that while self-esteem was an important indicator of educational outcomes for Chinese children and adolescents, there probably existed other variables yet to be identified, which account for the explanation of the variances in academic success and for some discrepancies in concept of self-esteem between American and Chinese students. These could be considered in future studies.

Reasoner (1992) observed that in studies where self-esteem programs have been introduced into the school setting, it has been found that such program can significantly reduce the incidence of anti-
social behaviour in schools, as well as reduce vandalism and the incidents of verbal or physical aggression by 40-50%.

Franken (1994) suggests that self-concept is related to self-esteem in that “People who have good self-esteem have a clearly differentiated self-concept… When people know themselves they can maximize outcomes because they know what they can and cannot do”. It would seem, ten, that one way to impact self-esteem is to obey the somewhat outworn cliché of “know thyself”.

Kamal (1995) stated that several studies have noted that athletes have higher overall self-esteem in comparison to non athletes of the same gender. This study tested 95 male university athletes and 90 male non athletes using the Semantic Differential Scale. It was hypothesized that differential social cognition would be linked to the athletes status as an experienced athlete in their sport which could then engender additional mood-congruent cognitions in the areas of optimism, attractiveness, aggressiveness and independence, resulting in overall greater self-esteem. A discriminant analysis of component self-esteem factors offered support to these hypotheses, in that the athletes showed higher self-esteem attributes in areas not normally associated with competitive sports.

Dekel & Tenenbaum (1996). This explorative study was designed to examine the association between the intensity in which adolescents engaged in physical activity (PA) and their body-image and general self-esteem. Furthermore, it was aimed at examining the hypothesis that adolescents with postural deformities who engage in PA will perceive their body (in particular) and the self-similarly to their
healthy counterparts and more positively than adolescents with postural deformities who do not engage in any PA. Two-hundred and eighty-six male and female adolescents (12-18 years) of whom 146 were healthy and 140 were diagnosed as suffering from structural and non-structural Adolescent Idiopathic Scoliosis (AIS) were administered a body-image (Secord and Jourard, 1953) and the Tennessee self-concept (Fitts, 1965) questionnaires. Subjects were also classified with respect to their level of engagement in PA (extensive, moderate, and low). A 2(postural status) x 2 (Gender) x 3 (PA level) ANOVAs indicated a significant 3-way interaction on body-image, but not on self-esteem. Adolescents with AIS, not engaged in PA, had lower body-image than their peers, particularly males. However, both males and females with AIS perceived their body positively when engaged in moderate or extensive PA. Being an exploratory prospective research, the results do not permit assigning any casual effect to PA on perception of the body and the self. The results support the specificity hypothesis of self-esteem and encourage investigation as to the particular physical activities which are most beneficial for adolescents who suffer from postural deformities.

Seligman’s (1996) work on explanatory style suggests that the intervening variable connecting self-esteem and achievement is the student’s level of “optimum” or the tendency to see the world as a benevolent (good things will probably happen) or malevolent (bad things will probably happen). Franken (1994) has developed a flow chart that provides a visual model of how some of the most important affect and conative (regulatory) variables are related to personal success.
Mckenzie and Howe (1997) employed a multiple-baseline-across-subjects design to investigate the effect of mental imagery training on the magnitude of individuals' self-efficacy for a dart throwing task. Six (n=6) subjects were administered a 15-sessions mental imagery training program following baseline sessions of varying lengths. Each imagery session included a relaxation component, followed by specific imagery training. Subjects were then asked to stand, perform a one minute centering exercise, and to image successful performance of the task. This was immediately followed by the completion of a self-efficacy and imagery rating scale, and actual performance of the task while blind folded. Two subjects showed that their self-efficacy magnitude for the task had increased as a result of the imagery training. All subjects reported an improvement in their overall ability to image the task as a result as a result of the intervention. It was concluded that imagery was able to enhance self-efficacy magnitude for the dart throwing in subjects who were high ability imagers, had previous experience at throwing darts, believed in the performance-enhancing capabilities of mental imagery training, and had been exposed to relaxation and imagery procedures prior to the study.

Fox (2000) observed that there was increasing interest in the contribution of exercise in both the promotion of mental well-being and the treatment and prevention of mental illness and disorders. Within this context, self-esteem has been regarded as an important element of well being and a construct that might be open to change through exercise. This paper discusses recent advances in the theory and measurement of self-esteem including the concepts of
multidimensionality, hierarchical structuring and the specific role of the physical self with a view to (a) informing critique of the exiting literature and (b) suggesting future research challenges. The results of a recent comprehensive review of 37 randomised and 42 non-randomised controlled studies investigating the effects of exercise on self-esteem and physical self-perceptions are summarized. This is followed by suggestions for advancing research in the field and practical pointers for those already involved in the promotion of exercise for mental health.