CHAPTER-2

REVIEW OF LITERATURE

There can be no two opinions about the need for review of literature as it aids in a thorough and systematic perusal of the study at lead. It has immense practical utility as it broadens one's horizon and deepens one's understanding about the research in the related area. It ascertains that the same has not been put to scrutiny earlier and will not be replicated by none other than the investigator. The review cited in this Chapter has been helpful in imbibing a novel and in depth understanding of various methodologies available for conducting such a challenging and utilitarian research that profoundly contributed to the most rational and objective interpretation of the gathered data with utmost effort. In the treacherous pathway of conducting this study, the researcher was bound to be meticulous, consistent and zealous which led to throwing light on the most intricate, sensitive and peripheral issues that undoubtedly aided her in forming scientific reference.

The review of literature enlisted in this chapter was based on a number of sources viz-a-viz journals, books, periodicals, encyclopedias, newspapers, unpublished thesis etc- available in various libraries which the scholar had consulted. The authentic literature pertaining to the present study has been abstracted in this Chapter to provide the background material to evaluate the importance of this study and to scientifically validate and interpret its findings.

MENTAL TOUGHNESS

Kobasa (1979) examined the personality characteristic known as ‘hardiness’ and suggested that hardiness incorporate three key elements: Control – the perceived ability of the individual to exert influence rather than to experience helplessness; Commitment – a refusal to give up easily; Challenge – involving a person's ability to grow and develop rather than remain static, and to view the change rather than the stability as the norm.
Gould et al (1987) designed their study to assess the psychological principles including mental toughness used by coaches and to determine if various categories of coaches differed in the psychological skills and strategies they employed. Intercollegiate wrestling coaches (N= 101) completed an extensive survey that assessed their opinions concerning the importance of, use of, frequency of problems arising with, and degree of success they feel they have had in changing or developing 21 psychological skills. Descriptive statistics revealed that the psychological attributes of mental toughness, positive attitude, individual motivation, and attention-concentration were judged to be most important for success in wrestling. Anxiety-stress control, attention-concentration, lack of confidence, and mental toughness were reported as the areas in which wrestlers most frequently experienced problems. The coaches indicated that the strategies most easily developed with their athletes were goal setting, team cohesion, and mental practice-imagery. Finally, the coaches felt they were most successful in enhancing team cohesion and communication, and developing sportsmanship and goal setting. Discriminant function analyses revealed that coaches who had attended USA wrestling sport science certification clinics significantly differed on several psychological principles from coaches who had not attended clinics.

Wienberg and Gould (1995) have examined mental toughness and mentioned that Rod Laver, the Australian tennis legend, used practice sessions to simulate 'tough' match conditions. Laver felt that fatigue placed great strain on the concentration which was crucial to success in long matches. To simulate these conditions, Laver forced himself to concentrate and work even harder during the latter stages of training sessions when he was tired, so that the became used to the mental strain of such conditions. He has cited this as one of the key factors in his long-lasting success.

Fourie and Potgieter (2001) investigated the components of mental toughness as reported by 131 experts coaches and 160 elite athletes from 31 sport codes. The written statements of coaches and athletes were analysed by means of an inductive content analysis. This resulted in the identification of 12 components of mental toughness. These are: motivation level, coping skills,
confidence maintenance, cognitive skill, discipline and goal-directedness, competitiveness, possession of prerequisite physical and mental requirements, team unity, preparation skills, psychological hardiness, religious convictions and ethics. The coaches regarded concentration as the most important characteristic, while the athletes regarded perseverance as most important. The coaches rated the effectiveness of coaches and sport psychologists in strengthening the characteristics of mental toughness more highly than athletes did.

Cockerill (2002) has observed that a team of researchers at Hull University have taken the idea of hardiness a step further by proposing a model of mental toughness in sport. A key development has been the development of a questionnaire to assess mental toughness that can be used to assess its influence in experimental studies. The Hull researchers carried out two studies to show how mental toughness was related to performance and cognitive appraisal. In the first study, 23 volunteers performed 30-minute static cycling trials at three different intensities of 30, 50 and 70% of their maximum oxygen uptake, rating the physical demands of the trials at five minute intervals. Participants were classified as having either high or low mental toughness based on their responses to the above mentioned questionnaire and, as predicted, those with higher levels of mental toughness reported significantly lower perceived exertion at 70% of maximum. No significant differences were noted at lower levels of exertion which, as the researchers acknowledged, is consistent with the cliché that ‘when the going gets tough, the tough get going’. The observed differences at higher levels of exertion could reflect a tendency of the more tough minded to somehow act on the incoming stimuli before it reaches the level of perception, to reduce the perception of strain. Mentally tough exercisers might perceive themselves as having greater control during such conditions, or interpret the higher intensity as a challenge rather than a threat. The second study on 79 participants, considered the influence of mental toughness on resilience in adverse situations. Participants were given either positive or negative feedback completing a variety of motor tasks, and then asked to perform a planning task which was used as the objective performance.
Jones (2002) addressed two fundamental issues surrounding mental toughness: how can it be defined? And what are the essential attributes required to be a mentally tough performer? Ten international performers participated in either a focus group or one to one interviews, from which a definition of mental toughness and the attributes of the ideal mentally tough performer emerged. The resulting definition emphasized both general and specific dimensions, while the 12 attributes covered self-belief, desire/motivation, dealing with pressure and anxiety, focus (performance-related), focus (lifestyle-relate), and pain/hardship factors.

Fabre et al (2002) compared the effects of aerobic and mental training on cognitive function and to determine if the association of the two techniques shows better result. Thirty-two healthy elderly subjects (60 – 76 years) were assigned to one of four groups: aerobic training, mental training, combined aerobic and mental training and a control group. All subjects took two cognitive tests and an incremental exercise test before and after the training period. The intensity of exercise was individualized at the heart rate corresponding to the ventilator threshold of each subject. After two months, the control group showed no alteration in physiological and cognitive variables. After the training period, the results showed a significant improvement in V' O2 max (F =4.45, DF = 1, p <0.05) of 12% and 11% in aerobic training and combined aerobic and mental training groups, respectively. Logical memory (F = 4.31, DF = 1, p < 0.05), as well as paired associates learning scores (F = 5.47, DF = 1, p < 0.05) and memory quotient (F = 6.52, DF = 1, p < 0.01) were significantly improved in the three trained groups. The mean difference in memory quotient pre and post training was significantly higher in the combined aerobic and mental training group compared to aerobic training or mental training groups (F = 11.60, DF = 3, p < 0.001). We conclude that the specific aerobic training and mental training used in this study could induce the same degree of improvement in cognitive function and that combined training seemed to lead to greater effects than either technique alone.

Jones (2002) explained that mental toughness is characterized by a general lack of conceptual clarity and consensus as to its definition, as well as
a general failure to operationalize the construct in a consistent manner. This study addressed two fundamental issues surrounding mental toughness: how can it be defined? and what are the essential attributes required to be a mentally tough performer? Ten international performers participated in either a focus group or one-to-one interviews, from which a definition of mental toughness and the attributes of the ideal mentally tough performer emerged. The resulting definition emphasized both general and specific dimensions, while the 12 attributes covered self-belief, desire/motivation, dealing with pressure and anxiety, focus (performance-related), focus (lifestyle-related), and pain/hardship factors.

Golby, and Sheard (2004) examined the potency of measures of personality style and mental skills in predicting success in the criterion sport of professional rugby league. Mental toughness was assessed by questionnaire using the Psychological Performance Inventory. Hardiness was assessed by questionnaire using the Personal Views Survey III-R. Subjects in this study were 115 professional rugby league footballers representing the top three playing levels in the game in Great Britain (International, Super League, and Division One). Findings demonstrated that performers playing at the highest standard (International players) scored significantly higher in all three hardiness subscales (commitment, control and challenge) and in two of the seven mental toughness subscales (negative energy control and attention control).

Bull et al (2005) observed that mental toughness is a critical element in contemporary international cricket. However, little is known beyond the obvious basics of what constitutes mental toughness in an English cricketer. This study addressed two main objectives: 1) develop a greater understanding of what mental toughness is within cricket, and 2) identify how existing mentally tough English cricketers developed their mental toughness. Twelve English cricketers identified as being among the mentally toughest during the previous 20 years were interviewed. Analysis of the focused interview transcripts identified the critical role of the player's environment in influencing 'Tough Character,' 'Tough Attitudes,' and 'Tough Thinking.' The global themes are presented in a mental toughness framework that has been used to disseminate the findings to the
cricket coaching and playing population in England. The contrasting and complementary nature of the global themes are used to help provide a structural appreciation of the need for consistent interaction between environment, character, attitudes, and thinking in order that a performer can consistently be considered as mentally tough in cricket.

Creasy (2005) identified the components of mental toughness as perceived by National Collegiate Athletic Association (NCAA) coaches and was guided by two fundamental questions: what are the essential components of mental toughness? And to what degree are these components teachable (trainable). Twenty-two NCAA coaches were selected to participate from a mix of Division I, II, and III male sports teams. The procedures for this study were divided into a two-phase approach. Phase One consisted of each participant completing a questionnaire for the purpose of evaluating the importance and class=Spell E> teachability (trainability) of 20 separate components of mental toughness. Phase two consisted of follow-up, semi-structured interviews that provided further insight into the perspectives of the participants. The result of this study indicated the essential components of mental toughness based on their importance to the construct. The result also indicated the degree of class = Spell E> teachability and trainability was also revealed in this study. These findings provide a better understanding of the components of mental toughness and support the need for its development in sport.

Crust & Clough (2005) tested the criterion validity of the inventory, mental toughness 48, by assessing the correlation between mental toughness and physical endurance for 41 male undergraduate sports student. A significant correlation of 34 was found between scores for overall mental toughness and the time a relative weight could be held suspended. Results support the criterion-related validity of the Mental Toughness Questionnaire 48.

Bhambri et al (2005) examined the effect of psychological interventions such as General relaxation , Imagery and combination of both on the mental toughness dimensions of Table-Tennis players. The study was carried out on 32 national level table -tennis players in the age group of 12-17 years. Loehr psychological performance inventory was administered to assess their mental
toughness on seven variables viz. self confidence, negative–energy, Attentional control, visual and Imagery control, motivational level, positive energy and attitude control. The data obtained was analyzed using ANOVA, t test and percentage distribution. The results indicate that all the 3 psychological interventions enhanced mental toughness dimensions of sports persons. However combined intervention consisting of both relaxation and imagery therapies showed the maximum effect on mental toughness dimensions.

Jones et al (2007) conducted an investigation of mental toughness in a sample population of athletes who have achieved ultimate sporting success. Eight Olympic or world champions, 3 coaches, and 4 sport psychologists agreed to participate. Qualitative methods addressed 3 fundamental issues: the definition of mental toughness, the identification of its essential attributes, and the development of a framework of mental toughness. Results verified the authors’ earlier definition of mental toughness and identified 30 attributes that were essential to being mentally tough. These attributes clustered under 4 separate dimensions (attitude/mindset, training, competition, postcompetition) within an overall framework of mental toughness.

Crust (2008) in his paper provides a review of mental toughness research and examines the major conceptual concerns that are evident in current mental toughness literature. Despite more rigorous scientific approaches to the study of mental toughness, a number of limitations are apparent: these include the assumption that elite or super elite performers are mentally tough (failure to provide objective measures), focusing research solely on elite or super elite performers, appearing to conceptualise mental toughness in absolute rather than relative terms, and ignoring contextual differences. Comparisons are made with research developments in the related concept of hardiness. It is argued that more innovative approaches to research are required to further develop knowledge. This should include more experimental studies, longitudinal research, psychophysiological approaches, and testing the influence of mental toughness in contexts outside sport performance. Further efforts to understand how mental toughness develops are encouraged. With recent advances in instruments to measure mental toughness, further
quantitative research is deemed appropriate. The efficacy of proposed methods of enhancing mental toughness such as environmental manipulations, and mental skills training approaches need to be evaluated if the gap between theoretical research and practice is to be bridged.

Gucciardi et al (2008) used Kelly’s personal construct psychology framework in an attempt to reveal a holistic understanding of mental toughness in the context of Australian Football. Eleven male coaches ($M_{age} = 42$, $SD = 9.62$) with considerable playing and coaching experience at the elite level were interviewed using a PCP-based interview protocol. Transcribed verbatim data were analyzed using grounded theory procedures. Three independent categories (characteristics, situations, behaviors) were inductively derived and integrated into a model in which the importance of understanding each component individually was emphasized. The relationship between these three central categories was also highlighted. Results identified the key mental characteristics and their contrasts together with those situations that demand mental toughness, and the behaviors commonly displayed by mentally tough footballers. Conceptualized in the context of these three categories, mental toughness in Australian Football can be considered as a buffer against adversity but also as a collection of enabling factors that promote and maintain adaptation to other challenging situations.

Connaughton et al (2008) conducted study in which seven participants from a previous study (Jones, Hanton, & Connaughton, 2002) had agreed to be interviewed about the development of mental toughness. We also aimed to determine whether mental toughness requires maintenance. Semi-structured interviews were conducted to elicit the participants’ perceptions of how mental toughness is cultivated and retained. Findings indicated that the development of mental toughness is a long-term process that encompasses a multitude of underlying mechanisms that operate in a combined, rather than independent, fashion. In general, these perceived underlying mechanisms related to many features associated with a motivational climate (e.g. enjoyment, mastery), various individuals (i.e. coaches, peers, parents, grandparents, siblings, senior athletes, sport psychologists, team-mates), experiences in and outside sport,
psychological skills and strategies, and an insatiable desire and internalized motives to succeed. It was also reported that once mental toughness had been developed, three perceived underlying mechanisms were required to maintain this construct: a desire and motivation to succeed that was insatiable and internalized, a support network that included sporting and non-sporting personnel, and effective use of basic and advanced psychological skills.

Nicholls et al (2008) observed that the concept of mental toughness is widely used, but empirical evidence is required to fully understand this construct and its related variables. The purpose of this paper was to explore the relationship between: (a) mental toughness and coping, (b) mental toughness and optimism, and (c) coping and optimism. Participants were 677 athletes (male 454; female 223) aged between 15 and 58 years (M age = 22.66 years, SD = 7.20). Mental toughness correlated significantly with 8 of the 10 coping subscales and optimism. In particular, higher levels of mental toughness were associated with more problem or approach coping strategies (mental imagery, effort expenditure, thought control, and logical analysis) but less use of avoidance coping strategies (distancing, mental distraction, and resignation). Eight coping subscales were significantly correlated with optimism and pessimism. In conclusion, the relationships observed in this study emphasize the need for the inclusion of coping and optimism training in mental toughness interventions.

Kaiseler and Nicholls (2008) conducted research to explore the relationship between mental toughness and (a) achievement level; (b) type of sport (team vs. individual and contact vs. non-contact sports); (c) gender; (d) age; and (e) sporting experience of the sample. Participants were 677 athletes (male 454; female 223) aged between 15 to 58 years (mean age 22.66 years, SD = 7.20). The sample consisted of sports performers competing at international (60), national (99), county (198), club/university (289), and beginner (31) levels. Participants completed a demographic section and the 48-item Mental Toughness Questionnaire (MTQ48). The MTQ48 assesses total mental toughness (MT) and six subcomponents: challenge, commitment, interpersonal confidence, confidence in own abilities, emotional control, and life control.
Multivariate analysis of variance revealed a significant relationship between mental toughness and gender, age, and sporting experience. Achievement level and the type of sport an athlete participates in appear to be less important factors in predicting mental toughness. Males scored significantly higher than females on all six subscales on mental toughness. More experience in sport was associated with more commitment and life control but less emotional control in male athletes and higher challenge and emotional control in female athletes. Older male athletes scored higher on commitment and life control whereas older female athletes scored higher on challenge and emotional control. There were no significant differences among athletes who participate in team or individual sports and athletes who participate in contact or non-contact sports. Conclusions: This study supports the notion that males are more mentally tough than females. Such a finding supports observations in the hardiness literature. Furthermore, it is suggested that sport psychology researchers could provide mental toughness training to young and inexperienced athletes in an attempt to accelerate the development of mental toughness.

Horsburgh et al (2009) conducted study on behavioural genetic (BG) investigation of mental toughness, as measured by the 48-item mental toughness (MT48) questionnaire, and the first BG investigation of relationships between mental toughness and the Big-5 factors of personality. Participants were 219 pairs of adult monozygotic and dizygotic twins from across North America. Twin study methodology was used to determine the extent to which genes and/or environmental factors contributed to individual differences in mental toughness and also to determine the genetic and/or environmental basis of any relationship between mental toughness and personality. Univariate BG analyses revealed that individual differences in mental toughness (as well as in personality) were largely attributable to genetic and nonshared environmental factors. Bivariate BG analyses revealed that phenotypic correlations between mental toughness and personality were largely attributable to common genetic and common nonshared environmental factors.
Gucciardi et al (2009) conducted a review designed to advance current conceptualizations of mental toughness in sport as well as identify avenues for future research by offering a fresh perspective using Kelly’s personal construct psychology (PCP). After reviewing sport-general and sport-specific research contributing to current perspectives on mental toughness, we highlight the need for theoretically driven research in the area. Following this, we provide an overview PCP and offer a conceptual model grounded in PCP which attempts to organize the knowledge base as well as provide a platform for future research. In integrating previous research with PCP, we propose a construct definition in which the multidimensional nature of mental toughness, its usefulness for dealing with and thriving through both positively and negatively construed situations, and the processes by which this occurs are highlighted. Specifically, mental toughness is defined as a collection of values, attitudes, emotions, and cognitions that influence the way in which an individual approaches, responds to, and appraises demanding events to consistently achieve his or her goals.

Nicholls et al (2009) hypothesized that there would be significant differences in mental toughness among athletes of different: (a) achievement level, (b) gender, (c) age, (d) sporting experience, and (e) sport type (team vs. individual and contact vs. non-contact sports). Participants were 677 athletes and consisted of sports performers competing at international \( (n = 60) \), national \( (n = 99) \), county \( (n = 198) \), club/university \( (n = 289) \), and beginner \( (n = 31) \) levels. Results revealed a significant relationship between mental toughness and gender, age, and sporting experience. However, achievement level and the type of sport an athlete participated in was not significantly associated with mental toughness.

Crust and Azadi (2009) examined the leadership preferences of mentally tough athletes. A sample of 103 athletes \( (M \text{ age} = 22.06 \text{ years}, SD = 4.37) \) participated and ranged from club/university level to county standard in a variety of team sports. Participants completed the Leadership Scale for Sport – Preference Version to measure preferred leadership, and the Mental Toughness Questionnaire (MTQ48) to measure mental toughness. Mental
toughness was predicted to be significantly and positively related to a preference for training and instructive behaviours, and negatively related to a preference for social support. Linear regression analysis and Pearson correlations were used to analyse the data. Consistent with theoretical predictions, mental toughness was found to be significantly related to a preference for training and instructive behaviours ($r = 0.40, P < .01$). Results of linear regression analysis revealed the MTQ48 subscales of commitment and challenge were significant predictors of preference for training and instructive behaviours. Total mental toughness was not found to be significantly related to preference for social support, democratic behaviours, autocratic behaviours or positive feedback ($P > .05$). This suggests that coaches working with mentally tough athletes should consider emphasising training and instructive behaviours if they wish to attain congruence between actual and preferred leadership behaviours.

**EMOTIONAL INTELLIGENCE**

Salovey et al (1993) have stated that emotional intelligence can be described in three primary domains: (i) the accurate appraisal and expression of emotions (in self and in other people), (ii) the adaptive regulation of emotions (in self and in other people), and (iii) the utilization of emotions to plan, create and motivate action.

Bar-on (1997) describes the development of the concept of emotional intelligence, its operationalization, quantitative description and standardization as an emotional intelligence test. He proposes that the EQ-I presents a different definition for the concept of psychological well-being and the personality factors involved in it. The EQ-I was administered to an Argentinean sample and compared to those obtained in other countries, in order to examine the various personality factors regarded as components of mental health. Small differences between American, German, and Argentine, populations, in both male and female samples, demonstrate the similarity of those cultures in comparison to samples from other African and Asian countries, where a larger difference was found. In general, it was suggested that a better ability for problem solving and for managing stress, more impulse control and a more
positive attitude towards oneself and others imply greater enjoyment of life, resulting in psychological well-being.

Weisinger (1998) states that emotional intelligence has the following elements: Self-Awareness: High self-awareness refers to having an accurate understanding of how you behave, how other people perceive you, recognizing how you respond to others, being sensitive to your attitudes, feelings, emotions, intents and general communication style at any given moment and being able to accurately disclose this awareness to others. Managing Emotions: The capacity to soothe oneself, to shake off rampant anxiety, gloom, despair, or irritability. The ability to be able to keep an emotional perspective. Motivation: Be able to channel emotions to achieve a goal; to postpone immediate gratification for future gratification, to be productive in low interest, low enjoyment activities; to persist in the face of frustration and generate initiative without external pressure. Empathy: The ability to exchange information on a meaningful level. Adapt in skills necessary for organizing groups and building teams, negotiating solutions, mediating conflicts among others, building consensus, and making personal connections. Social skill: being able to listen to their feelings; being able to help others deal with their feeling and emotions in productive ways and assist them in increasing their awareness about their own impact on others.

Sitarenios (1998) in his preliminary analyses investigate whether emotional intelligence (as measured by the EQ-I) contributes to the ability to identify “star” hockey prospects from other prospects. The sample was small (n=15) and therefore the results are highly preliminary. The largest differences were found in the areas of Problem Solving, the General Mood composite, and the General Mood subscales of Happiness and Optimism. Differences between the groups when skill rating is taken into account suggest that EQ-I scores can be used in combination with other ratings to refine player assessment and to help identify the star performers.

Sosik and Megerian (1999) conducted a study the purpose of which was to examine whether self-awareness of managers (defined as agreement self and other leadership ratings) would moderate relationships between (a)
aspects of emotional intelligence and transformational leadership behavior, and (b) transformational leadership behavior and managerial performance. Multi-source data were collected from 63 managers (who responded about their emotional intelligence and transformational leadership behavior), 192 subordinates (who rated their manager’s transformational leadership behavior and performance outcomes), and 63 superiors of focal managers (who rated managerial performance). Results indicated that correlations between emotional intelligence aspects, leader behavior, and performance varied as a function of self-awareness of managers.

Malck (2000) investigated the relationship between emotional intelligence and collaborative conflict management style using the Emotional Quotient Inventory (EQ-I) and the Thomas-Kilmann Management of Differences Exercises (MODE) Instrument. Participants were 98 employed individuals (the majority in management or professional positions) from metropolitan areas of California. A statistically significant relationship was found between scores on the EQ-I and scores on collaborative conflict management style (r=.207, p<.005).

Dawda and Hart (2000) evaluated the reliability and validity of the EQ-I in a sample of university students in the context of a larger program of research examining association between emotion and personality. The EQ-I scores were correlated against the NEOFFI (which measures Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness), the Beck Depression Inventory, Intensity of Affective Experience, the Symptom Checklist Somatization scale, and Alexythymia. The convergent and discriminant validities suggested that the EQ-I taps a fairly broad range of related emotional constructs. The Interpersonal Scale, however, had relatively small correlations with the other EQ composite scales, as well as a different pattern of convergent and discriminant validities. In general, the EQ-I scales show a similar pattern of validity results for men and women, providing preliminary evidence for a lack of gender bias. Based on these results, it is suggested that the EQ Total score may be a good overall index of emotional intelligence.
Mayer (2001) examined the psychological activities of the past century and defined the emergence of EI into five periods. Separate Narrow Fields, Precursors to EI, Emergence of EI, Popularization and Broadening of EI, and Research and Institutionalization of EI. It can be noted that the two concepts, emotions and intelligence, were contained in separate domains, and that the convergence of the two is a recent activity. Examination of the interaction did not begin until the 1970s.

Rahim et al (2002) investigated the relationships of the five dimensions of emotional intelligence: self-awareness, self-regulation, motivation, empathy, and social skills of supervisors to subordinates’ strategies of handling conflict: problem solving and bargaining. Data (N=1,395) for this study were collected with questionnaire from MBA students in seven countries (U.S., Greece, China, Bangladesh, Hong Kong and Macau, South Africa, and Portugal). Psychometric properties of the measures were tested and improved with exploratory and confirmatory factor analysis and analysis of indicator and internal consistency reliabilities, and the hypotheses were tested with a structural equations model for each country. Results in the U.S. and in the combined sample provided support for the model which suggests that self awareness is positively associated with self-regulation, empathy, and social skills; self regulation is positively associated with empathy and social skills; empathy and social skills are positively associated with motivation; which in turn, is positively associated with problem solving strategy and negatively associated with bargaining strategy.

Wolff and Pescosolido (2002) present and test a theory on leader emergence in self-managing teams that highlights the emotional and cognitive skills underlying selection as an informal team leader. They build on current theory by hypothesizing that 1) specific cognitive processes and skills precede an informal leader’s appropriate enactment of constructive task and team management behavior by facilitating an accurate analysis of the task situation and skills by providing an accurate understanding of team and member emotions and needs. In a longitudinal study of teams, the authors found partial support for their theory.
Zeidner et al (2002) examined the development of emotional intelligence (EI) in childhood. It is proposed that ambiguities in conceptualizing EI may be resolved by distinguishing multiple levels of emotion-regulation processes. Temperament, rule-based skill acquisition, and self-awareness regulation are differentiated as potential sources of individual differences. They reviewed empirical studies that demonstrate multiple mechanisms linked to these levels. Temperament is shaped by genes, interacting with environmental influences such as pattern of infant-caregiver interaction. Early, language-dependent skill learning is governed by reinforcement and modeling process. Subsequent, insightful learning is influenced by emotional discourse with parents and others, and cultural factors. Cognitive abilities may also influence individual differences in emotional function. At the same time, the biological and socio-cultural factors that influence EI interact in complex and interrelated ways. They concluded by proposing a tentative “investment mode” for emotional competencies in children that accommodates the multifaceted nature of EI. Lower level competencies may provide a platform for developing more sophisticated emotion-regulation skills, with competencies.

Crick (2002) in his study explored the relationship between emotional intelligence, social competence and success in 31 male and 89 female 14 to 17 years old, using EQ-1: YV, and the Social Skills Rating System – Secondary Student Form (SSRS). Students were categorized as Leaders, Joiners or Non-Joiners of school clubs or organisations. Female leaders exhibited higher Total EQ, Interpersonal, Interpersonal and Adaptability scores in comparison to the normative sample, while male leaders exhibited higher Adaptability scores than the normative sample. Significant mean score differences existed between the emotional intelligence scores of Leaders, Joiners, and Non-Joiners. Emotional intelligence was not shown to increase with age. Teachers ratings of social skills were significantly higher for leaders than for Joiners and Non-Joiners.

Gohm (2003) conducted studies to examine the difference as to how individuals (Ns = 250, 83, 236) experience their emotions (meta-emotion traits of clarity, attention, and intensity) which led to the identification of 4 distinct types (overwhelmed, hot, cerebral, and cool). When mood was manipulated,
the types differed in how they initially reacted to the emotional situation, how they regulated their mood, and how they made judgments. In particular, one type of individual (the hot type) was more reactive to emotional situations than the others. Another type of individual (the overwhelmed type) regulated mood differently than the others, which led these individuals to make judgements that were also different. Overwhelmed individuals appeared unable or unwilling to avail themselves of critical affective information.

Petrides (2004) few constructs have grabbed attention with the intensity of EI. Scientific research still lags behind popular quasi-academic and commercial speculations. It roots go back to Thorndyke’s ‘Social Intelligence’ and Gardner’s Intra and Intern personal intelligences. Various descriptive models are composed of different components and many apparently conflicting findings. Measurement methods have varied – asking someone if they are good at abstract reasoning is very different from testing their abstract reasoning powers. Much of the early work investigated this personality trait as if it were a cognitive ability. Most of the instruments reported for measuring EI show a lack of a clear theoretical framework and usually fail to cover the whole range of the construct’s domain. Many questions have no clear right or wrong answers making scoring extremely difficult. EI scores do, as expected, consistently show very low correlations with IQ. It was observed that the most concrete progress in study of EI is that trait EI is implicated in academic performance and behaviour at school with particular relevance to vulnerable or disadvantaged children and college students. He showed that low IQ pupils with high EQs did better at school than low IQ peers with low EQs. Low EI pupils were more often truants and excluded from school. But it must be understood that Trait EI and Ability EI are two distinct constructs, conceptually, methodologically and empirically.

Stubbs (2005) in dissertation examined the relationship between team leader EI competencies, team level EI, and team performance. In studying teams in a military organisation, the author found that the EI or team leaders was significantly related to the presence of emotional competent group norms on the team they lead, and that emotionally competent group norms are related
to team performance. The author suggested that her findings support both the notion that leader’s EI affects the teams they lead and that team level EI affects team performance.

Rathee (2005) in her research study explored the inter-relationship between Emotional Intelligence and Adjustment among sports and non-sportspersons. She had observed that emotional intelligence and adjustment were two such socio-psychological constructs which not only influence performance in sports and in the life itself, but in turn are also influenced by sports participation. To find out the inter-relationship between these two constructs, 100 female college students (50 sportspersons and 50 non-sportspersons) were administered the Sevenfold Emotional Intelligence Scale and the Adjustment Inventory for College Students. The results not only revealed a significant correlation between these two constructs but it was also found that sportspersons were significantly better than non-sportspersons on these two variables.

Locke (2005) in his study opined that EI does not meet the requirements to be considered an intelligence at all as he draws distinctions between cognition and emotion. He argued that the concept of EI is invalid both because it is not a form of intelligence and because it is defined so broadly and inclusively that it has no intelligible meaning. He distinguished the so-called concept EI from actual intelligence and from rationally, identified the actual relation between reason and emotion, and then revealed the fundamental inadequacy of the concept of EI when applied to leadership. Finally, the author also suggested alternatives to the EI concept.

Hooda (2006) conducted a study to examine cognitive vigilance as related to emotional maturity among the participants of mass and class games. The subjects (N=120) were players from three mass games (i.e. football, cricket and volleyball) and three class games (lawn tennis, shooting and archery). The subjects were administered Cognitive Vigilance Test and Emotional Maturity Scale. She had found significant differences between mass and class games sportspersons with regard to cognitive vigilance. Within the mass male sports group she had found significant differences between the three sports
disciplines on cognitive vigilance and emotional maturity. She had also found significant positive correlation between these two variables regarding the mass sports group.

Ziegelmann (2006) applying socio-emotional selectivity theory to the domain of health, examined the interplay of socio-emotional and socio-cognitive predictors of physical exercise in two groups of people who perceived their remaining lifetime as either expansive or limited (based on subjective longevity ratings). Individuals (N=370) who were prescribed physical exercise were assessed after 6 and 12 months. Multigroup structural equation modeling showed differences in latent means, inter-relations of predictors, and amount of explained variance. Individuals who perceived their time as limited reported a less favorable profile on socio-emotional and socio-cognitive variables and less exercise goal attainment. This study provides insights on how health self-regulation differs in these groups, and avenues for intervention based on socio-emotional selectivity theory.

Perlina and Halverson (2006) conducted study on emotional intelligence. The purpose of the present study was threefold: a) to evaluate the standing on emotional intelligence of National Hockey League players, relative to the general population, b) to evaluate the relationship of draft rank and emotional intelligence (EI) measures to hockey performance, and c) to evaluate the relative predictive value of these measures to performance indices: total NHL points and NHL games played. During the 2003-04 hockey season, 79 players across 24 NHL teams completed the Bar-On EQ-i. The findings indicated that years-since-draft was the strongest predictor of performance and draft rank was the weakest predictor of performance. With respect to EI, both intrapersonal competency and general mood added significant variance to predictions of number of NHL points and games played.

Chan & Shatin (2006) explained the relationships among four components of emotional intelligence (emotional appraisal, positive regulation, empathic sensitivity, and positive utilization) and three components of teacher burnout (emotional exhaustion, depersonalization, and reduced personal accomplishment) were investigated in a sample of 167 Chinese secondary
school teachers in Hong Kong. One hypothesized and five competing models were constructed and tested using structural equation modeling procedures. The hypothesized model provided an adequate and moderately good fit, suggesting that emotional exhaustion, influenced by emotional appraisal and positive regulation, was causally prior to depersonalization and personal accomplishment, but personal accomplishment could develop relatively independently from the burnout components through the influence of positive utilization of emotions.

Elizabeth et al. (2007) examined whether people who are high in emotional intelligence (EI) make more accurate forecasts about their own affective responses to future events. All participants completed a performance measure of EI (the Mayer-Salovey-Caruso Emotional Intelligence Test) as well as a self-report measure of EI. Affective forecasting ability was assessed using a longitudinal design in which participants were asked to predict how they would feel and report their actual feelings following three events in three different domains: politics and academics (Study 1) and sports (Study 2). Across these events, individual differences in forecasting ability were predicted by participants' scores on the performance measure, but not the self-report measure, of EI; high-EI individuals exhibited greater affective forecasting accuracy. Emotion Management, a subcomponent of EI, emerged as the strongest predictor of forecasting ability.

Nioola (2007) studied a meta-analysis of 44 effect sizes based on the responses of 7898 participants found that higher emotional intelligence was associated with better health. Emotional intelligence had a weighted average association of \( r = .29 \) with mental health, \( r = .31 \) with psychosomatic health, and \( r = .22 \) with physical health. Emotional intelligence measured as a trait was more strongly associated with mental health than emotional intelligence measured as an ability. Comparison of three measures of perceived trait emotional intelligence, the EQ-i, the Assessing Emotions Scale, and the Trait Meta Mood Scale, showed that the EQ-i had a significantly stronger association with mental health than the other measures. The findings provide a basis for research aimed at determining the causal relationship between trait emotional intelligence and health.
Saklofske et al. (2007) investigated the associations of personality and self-report emotional intelligence (EI) with attitudes to exercise and self-reported exercise behaviour in a sample of 497 Canadian undergraduates. A positive attitude to exercise was negatively associated with Neuroticism and uncorrelated with other personality traits and EI. Exercise behaviour was positively associated with Extraversion and EI and negatively associated with Neuroticism. Structural equation modeling indicated that EI mediated the relationship between personality and exercise behaviour. The interpretation of results in terms of EI have some properties of a coping style.

Thelwell et al (2008) examined the relationship between emotional intelligence and coaching efficacy. Ninety-nine coaches completed the Emotional Intelligence Scale and the Coaching Efficacy Scale with the results of the canonical correlation suggesting significant relationships between the two sets of variables. Regression analyses suggested motivation efficacy to be significantly associated with the regulation of emotions, and social skills, whereas character-building efficacy was associated with optimism. Teaching technique efficacy was significantly associated with appraisal of own emotions with no significant predictors for game strategy efficacy. When viewed collectively, results provide an insight to how emotional intelligence relates to coaching efficacy and gives an indication to where applied work with coaches may be directed.

Freedman and Smith (2008) observed that recently some NFL players have been making news, not just for their athletic prowess, but for destructive behavior off the field. Emotional intelligence has been highly correlated with health, positive relationships, and pro-social behavior: Is this true for professional athletes? If so, these skills could be a key to help professional athletes overcome a range of challenges. This study assesses 30 retired NFL players with a survey on life success (including good health and relationships, avoiding drug/alcohol use and violence, doing well at work, and creating a high quality of life) and an emotional intelligence assessment. Over 60% in the variation of the life success factors are predicted by emotional intelligence scores. Athletes with greater emotional intelligence are likely to be more successful in life.
Xu and Lei (2009) were of the opinion that Professional Sports University Students are rather special group, their emotional intelligence and the existence of significant differences in ordinary college students. Professional Sports University Students emotional intelligence scores much higher than ordinary college students, but in all the main factors on the development imbalances exist. From the students, the University Students from rural areas score higher than students from the city, and significant differences exist. From a gender perspective, male college students emotional intelligence scores than female students, and significant difference:. Watch nature from the School, focusing on undergraduate professional sports scores than the general undergraduate college students, but there was no significant difference. From the grade, the higher grades than lower grades, emotional intelligence, and have significant differences. Direction from a professional point of view, the highest exercise of human emotional intelligence, the minimum exercise training, professional significant difference. Professional Sports University Students as an important component of emotional intelligence of their research is no doubt an important reference and referential significance.

Christie et al (2009) observed the emotional intelligence construct is still the focus of substantial controversy. In this paper they contribute to the current debate regarding the factors that comprise the emotional intelligence construct. While some authors argue that emotional intelligence consists of a number of social and emotional competencies including self-motivation (Goleman 1995, 1998), others maintain emotional intelligence abilities are restricted to abilities that directly link emotions to cognition (Mayer & Salovey 1997). This latter view does not include motivation as a factor, but acknowledges it as a separate, related function. They conducted an empirical study to test these two different conceptualisations. One hundred and thirteen individuals completed measures of emotional intelligence and three motivational needs. Structural equation analyses clearly supported Mayer and Salovey's (1997) conceptualisation that motivation is a factor related to emotional intelligence but is not a component part of the emotional intelligence construct.
SELF ESTEEM

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 and a high level of performance effectiveness have a high self-image, are either sensible or reckless, and reveal a tendency to submit.

Bednar et al (1989) define self-esteem “as a subjective and realistic self-approval.” They point out that “self-esteem reflects how the individual views and values the self at the most fundamental levels of psychological experiencing “and that different aspects of the self create a “profile of emotions associated with the various roles in which the person operates and (that self-esteem) is an enduring and affective sense of personal value based on accurate self-perceptions”. According to this definition, low self-esteem would be characterized by negative emotions associated with the various roles in which a person operates and by either low personal value or inaccurate self-perceptions. Furthermore, describe paradoxical examples of individuals of substantial achievement who report deep feelings of low self-esteem. The authors suggest that a theory of self-esteem must take into account the important role of an individual’s “self-talk and self-esteem must take into account the important role of an individual’s “self-talk and self-thoughts” as well as the perceived appraisal of others. They conclude that “high or low levels of self-esteem - are the result and the reflection of the internal, affective feedback the organism most commonly experience.” They point out that all individuals must experience some negative feedback from their social environment, some of which is bound to be valid. Thus a significant aspect of the development and maintenance of self-esteem must address how individuals cope with negative feedback.
McIntyre (1989) in his study examined the sex differences in the dimensions of self-esteem and body esteem, and the relationship of these differences to the cultural standard of body shape for college age men and women. Male (N=121) and female (N=109) students from two universities completed surveys in summer school classes. Results indicated that male students emphasized physical abilities and muscular size and strength in self-whereas female students were concerned with their aesthetic appearance and focused particular attention on their weight.

Kamal et al (1992) compared the self-esteem of male and female competitive athletes after each was provided either positive or negative (verbal) informational feedback on a nonathletic task, a series of single-solution anagrams. 50 men and 50 women (aged 18-25 yrs) were tested on The Semantic Differential to estimate athletes’ self-esteem before and after receiving the informational feedback. Overall, female athletes responded more strongly to both feedback conditions, with both groups being more influenced by negative rather than by positive feedback.

Finkenberg et al (1993) studied the effects of participation in Taekwondo on college women's self-concept. The experimental group contained 51 women enrolled in Taekwondo classes, and the control group contained 49 women enrolled in 4 sections of general health courses. Pretests and posttests were administered in the first week of a semester and the last week of the semester. The Tennessee Self-Concept measuring self-concept was used as the instrument in this study. The questionnaire was used to assess perceptions of physical self, moral-ethical self, personal self, family self, social self, identity, self-satisfaction, and behavior. Support the test's reliability and validity. An analysis of Covariance was used to control statistically for initial differences in self-concept among subjects with the pretest scores as the covariant. The results indicated that significant differences were found on total self-concept and on sub-scale scores in physical, personal, social, identity, and satisfaction. Insignificant differences were found on moral-ethical, family, behavior and self-criticism scales. The authors concluded that the total self-concept and certain sub-scales were influenced by participation in an 8 weeks course in
Taekwondo. This study supports the findings of who showed that students of martial arts were more self-confident than those without training. It also supports the conclusion that "it could be assumed that one or two months of karate training is sufficient to improve the typical student's level of general self-esteem."

Taylor (1994) compared the self-esteem of male and female competitive athletes after each was provided either positive or negative (verbal) informational feedback on a nonathletic task, a series of single-solution anagrams. 50 men and 50 women (aged 18-25 yrs) were tested on The Semantic Differential to estimate athletes' self-esteem before and after receiving the informational feedback. Overall, female athletes responded more strongly to both feedback conditions, with both groups being more influenced by negative rather than by positive feedback.

McAllister and Caltabiano (1994) examined in their study the self-esteem of 60 women attending weight loss centers in relation to attitudes towards body and weight, actual weight, number of diets undergone, and weight fluctuations. The results indicated that there was no association between self-esteem and either eating restraint or significant other's attitudes. However, the study found that women with stable weight had the highest self-esteem while as women on diets were indicated having low self-esteem.

Haney and Long (1995) examined a model of coping effectiveness, stress and coping theory and Bandura's (1986) social cognitive theory. Female athletes (n = 178) aged 16 to 28 were studied over two rounds of a sport event. Path analysis (LISREL VI) revealed that higher levels of self-efficacy and control appraisals were associated with better performance. As expected, performance and performance satisfaction in Round 1 influenced appraisals and coping during the second performance. In addition, control appraisal was associated with disengagement coping, and both engagement and disengagement coping were related to performance and performance satisfaction. Self-efficacy mediated the performance/control relationship for Round 1, but not the performance satisfaction relationship.
Taylor (1996) determined whether participating in intercollegiate athletics enhanced self-esteem in 230 athletic participant and 421 nonparticipant college students. A survey was conducted consisting of 4 parts: (1) demographic and background questions; (2) Rosenberg Self-Esteem Scale statements interspersed with statements about the quality of contact with faculty members and athletic coaches; (3) academic information, family income and quantity of contact with faculty members and athletic coaches; and (4) quality of athletic experience and perceptions of the status and prestige of the sport. College attendance was found to have a positive effect on Ss' self-esteem, but the effect only became significant in the senior year for athletic participants. College athletic participation appeared to be one of a number of college experiences that cumulatively contributed to increases in self-esteem.

Boyd and Hrycaiko (1997) examined relation more directly of pre-adolescent and adolescent females revealed that the pre-adolescent low self-esteem and low physical self-concept groups derived the greatest benefit from the physical activity intervention. The purpose of the study was to examine the effects of a physical activity intervention package which involved a six-week structured exercise program on the self-esteem of pre-adolescent and adolescent females. They hypothesized that a physical activity intervention would positively affect physical self-concepts and global self-esteem of low-esteem early and pre-adolescent subjects. Upon examination of the intervention package of self-esteem, ranked on the basis of total self-concept, the impact was significant only for the physical appearance of self-concept for the pre-adolescent girls. With respect to the pre-adolescents, partial support for the hypothesis was made since this group experienced significant changes in global self-esteem. However, the results for the early and middle adolescents did not support the hypothesis, as these groups did not have significant changes in self-esteem. Therefore, the hypothesis that a physical activity intervention would have a positive effect on physical self-concepts was only partially supported.

Kerr et al (1997) assessed the locus of control of young, elite, female gymnasts (30 11-17 yr olds) and investigated possible relationships between
locus of control, self-esteem, and trait anxiety. Ss were given the Nowicki-Strickland Locus of Control Scale for Children, the Coopersmith Self-Esteem Inventory, and the Spielberger State-Trait Anxiety Inventory for Children. Results showed that the Ss reported higher external locus of control and lower self-esteem scores than the published age- and gender-appropriate norms while the trait anxiety scores did not differ significantly from the norms. There was a significant negative relationship between locus of control and self-esteem, and a significant inverse relationship between self-esteem and trait anxiety. Conversely, a significant positive relationship was found between locus of control and trait anxiety. Implications are made for enhancing the sense of personal control of these young female athletes within the context of high performance sport.

Prapavessis and Grove (1998) investigated the potential mediating effect of self-esteem on the relationship between the trait of self-handicapping and impediments to competitive performance (potential self-handicaps). Competitive male golfers (N = 109) completed the Self-handicapping Scale the Rosenberg Self-esteem Scale and listed events that were disruptive to preparation for their next golf tournament. Results showed that self-esteem served as a potent negative mediator. These findings provide support for the suggestion that one reason individuals with a disposition to self-handicap perceive more impediments to performance (potential self-handicaps) is because they have less self-esteem.

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 discussed 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 recent comprehensive review of 37 randomised and 42 non-randomized controlled studies
investigating the effect of exercises in self-esteem and physical self perceptions and 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.

Kang (2003) investigated how self-esteem moderates decision-making processes for initiating physical activity in a consumption situation. Kang (2002) developed a structural model that integrates self-participant image congruency (SIC), attitudes, and intentions. This model was used to examine the moderating effects of self-esteem on individual decisions regarding consumption for physical activity. College students (N=215) completed a questionnaire that included measures of SIC, attitudes, and intentions for joining a private health club, as well as a self-esteem scale. Multiple group analyses using LISREL 8 were conducted between relatively high and low self-esteem participants for physical, performance, and social self-esteem dimensions. The results indicated that the direct influence of SIC on intentions is stronger for participants with high physical self-esteem than for those with low physical self-esteem, whereas the direct impact of attitudes on intentions is greater for low than for high physical self-esteem participants. Performance self-esteem and social self-esteem, however, did not moderate decision-making processes.

Furnham and Thomas (2004) in their study examined the role of parental gender and personality in self-estimations of their own overall and multiple intelligences and that of their children. Fathers rated their verbal, mathematical and spatial intelligence higher than mothers and parents tended to rate their children’s IQ higher than their own. Regression revealed specific personality dimensions such as Openness and Agreeableness to be relatively powerful predictors of estimated intelligence, more so than demographic variables. Results showed that personality had a greater predictive role for self-estimations of IQ compared to the estimations of the other members in the family. Findings not only provide insight into the role of personality, but also draw attention to other potentially influencing variables such as sex, age, actual IQ and attitudes towards IQ testing on self-estimations of IQ.
According to Salminen and Simo (2004) the aim of his study was to examine the question, do self-esteem predict physical activity stronger than physical activity predict self-esteem? Subjects were 438 girls and 439 boys, aged 10 to 16 years. They filled up a questionnaire including Coopersmith's Self-Esteem Inventory and questions of physical activity three times; 1985, 1987 and 1988. Preliminary results showed that self-esteem affects physical activity more than does physical activity to self-esteem. Only for boys, physical activity at the beginning of the study predicted self-esteem stronger than does self-esteem to physical activity. Two alternative interpretations were given for these results.

McAuley et al (2005) examined the structure of the expanded version of the Exercise and Self-Esteem Model in a sample of older adults ($N = 174$; age, $M = 66.7$ years) across a 4-year period. A panel analysis revealed support for the indirect effects of physical activity (PA) and self-efficacy (SE) on physical self-worth and global esteem through subdomain levels of esteem. These relationships were consistent across the 4-year period. Over time, older adults reporting greater reductions in SE and PA also reported greater reductions in subdomain esteem. This is one of the first studies to examine these relationships longitudinally in the PA domain and offers further support for the hierarchical and multidimensional nature of self-esteem at the physical level. They recommend further testing of the Exercise and Self-Esteem Model, with special attention being paid to assessing multiple aspects of PA and SE.

According to Luszczynska et al (2005) general self-efficacy is the belief in one's competence to cope with a broad range of stressful or challenging demands, whereas specific self-efficacy is constrained to a particular task at hand. Relations between general self-efficacy and social cognitive variables (intention, implementation intentions, outcome expectancies, and self-regulation), behavior-specific self-efficacy, health behaviors, well-being and coping strategies were examined among 1,935 respondents in three countries: Germany ($n=650$), Poland ($n=344$), and Korea ($n=941$). Participants were between 16 and 86 years old, and some were dealing with stressful situations such as recovery from myocardial events or tumor surgery. Perceived self-
efficacy was measured by means of the General Self-Efficacy Scale. Meta-analysis was used to determine population effect sizes for four sets of variables. Across countries and samples, there was consistent evidence for associations between perceived self-efficacy and the variables under study, confirming the validity of the psychometric scale. General self-efficacy appeared to be a universal construct that yields meaningful relations with other psychological constructs.

Anne (2006) explained the main purpose of the present study was to examine the links between sports participation and self-esteem, with particular interest in the possible mediating role of physical self-esteem. The participants in this study were 382 students (167 boys; 215 girls) in Grades 5-8. Participants completed a series of paper and pencil measures, detailing their sports participation, as well as their self-perceptions concerning physical and general self-esteem. Sports participation was related to all indices of self-esteem and this was equally true for boys and girls. Two distinct but related factors were identified as components of physical self-esteem (Physical appearance and Physical competence), differentially associated with self-esteem for boys and girls. Results supported a mediational model, with physical self-esteem mediating the relationship between sports participation and general self-esteem. Significant sex differences were noted with regard to specific indices of physical self-esteem.

Daniels and Leaper (2006) designed their investigation to explore the relations between sport participation, peer acceptance, and global self-esteem. Peer acceptance was considered as a possible mediator of the relationship between sport participation and global self-esteem. The sample included girls (N = 4,689) and boys (N = 5,811) between the ages of 12 and 21 (M = 15 years) who were part of the National Longitudinal Study of Adolescent Health. Analyses revealed that peer acceptance partially mediated the relation between sport participation and global self-esteem for girls as well as boys. Findings suggest the importance of considering how sport participation and self-evaluations in particular domains may contribute to global feelings of self-worth. The role of peers in this relationship is discussed in relation to changing social attitudes about girls' sport participation.
Birchall & Bissell (2007) analyzed competitive adolescent female athletes’ use and perceived influence of thin-ideal media, sports media, and the perceived influence of outside sources such as friends, parents and school on body self-esteem. We also examined the length of time participants reported competing in at least one sport and examined how or if this related to higher or lower body self-esteem. In this survey of 84 8-18-year-old female athletes, we found overall body self-esteem to be quite high, but found that athletes in specific sports (golf, volleyball, and soccer) were much more likely to have a more positive outlook on their body shape than athletes in other sports such as gymnastics. Thin-ideal television viewing was not related to body self-esteem at all; however, thin-ideal magazine reading was significantly related to lower body self-esteem. Participants who indicated the media were responsible for helping them become the girls they were today were much more likely to have lower body self-esteem than participants who felt parents or school.

Alvmyren (2007) study was twofold: (a) to develop and to test the Perceived Health & Sport Participation Profile (PHSPP) Questionnaire; (b) to examine the relationship between athletes’ perceived health, goal orientation, self-esteem, physical self perception and sport satisfaction. The main theoretical framework used in this study is the Perceived Health & Sport Participation model (PH&SP) A package of five questionnaires was completed by 139 competitive athletes representing different types and levels of sport. The data treatment involved descriptive statistics, correlation, factor, and regression analyses performed with the SPSS. A test-re-test was also performed on the PHSPP questionnaire with 30 subjects. The study confirmed major parts of the PH&SP-model and its link to some established concepts and theories, e.g., athletic identity and goal orientation. Factor analyses of the PHSPP resulted in eight extracted factors explaining 61.46% of the total variance of the questionnaire with alpha values between 0.71 and 0.89 for all the factors. Test-re-test reliability appeared as satisfactory. Regression analyses showed that social influences on athletes contribute more to unhealthy than to healthy sport participation. Analyses also confirmed that healthy sport participation contributes to satisfaction with health and sport participation, and unhealthy sport participation contributes to dissatisfaction with health and sport participation.
Wolke and Sapouna (2008) observed that muscle dysmorphia (MD) is a preoccupation with the idea that one's body is insufficiently lean and muscular and considered as a body image disorder in men. This study aimed to investigate the relationship of MD with childhood bullying victimization experiences and mental health problems in a nonclinical sample of male bodybuilders. A cross-sectional study was conducted with a sample of 100 male bodybuilders. Participants completed a questionnaire battery consisting of the muscle dysmorphic inventory (MDI), and scales on childhood bullying victimization, self-esteem, and psychological problems including depression, anxiety and obsessive-compulsive (OC) symptoms. High scores on the MDI and bullying victimization in childhood predicted global psychopathology and low self-esteem. Psychological functioning and self-esteem were most strongly adversely affected if the men were victims of bullying and scored high on the MDI (significant moderation effect). Structural equation modeling (SEM) analyses furthermore found an indirect linkage of victimization with global psychopathology and self-esteem via MDI (mediation effect). Childhood bullying victimization and MD are strongly associated with concurrent anxiety, depressive and obsessive-compulsive symptoms and low self-esteem.

Morales (2008) said that many studies have shown that sports participation can raise self-esteem. However, females who play sports embody masculine ideals, and are therefore going against the social norm. Social norm violators are often viewed negatively, which can lower self-esteem. There are theories that women experience sexual objectification as they progress through adolescence. They begin to view themselves as objects, and develop a negative body image. It has also been found that many women athletes subtly resist notions of idealized bodies and construct their own meanings about their bodies and experiences. The purpose of the present study is to determine how gender role stereotyping and sports participation influence self-esteem and objectified body consciousness. Approximately 75 high school and college students, athletes and non athletes, male and female, will answer complete the Personal Attributes Questionnaire, Nugent's Self Esteem Rating Scale, and McKinley and Hyde's Objectified Body Consciousness Scale, to determine how much they conform to gender role stereotypes, and to measure objectified body
consciousness, self esteem, and history of participation in sports. It is hypothesized that while all athletes will have higher levels of self esteem than non athletes, and lower levels of objectified body consciousness, athletes who do not conform to traditional gender role stereotypes will have lower self esteem and higher objectified body consciousness. Women are expected to have lower self-esteem and higher objectified body consciousness than men, and to conform less to gender role stereotypes.

**SPORTS PERSONALITY**

Powers and Frickson (1986) in their study examined the relationship among body image, body satisfaction, and self-image in 164 undergraduate women (aged 18-50 years). Subjects completed a body image silhouette Scale, verbal checklist, and body cathexis scale (child, adolescent, and current status), reported on their body size. Findings indicated that body image was not related to body satisfaction, but it was related to self-image. Subjects who perceived themselves as thin had the highest self-image scores. Findings suggest that young women have a tendency to view thinness, rather than arrange weight, as a goal to reach.

Mathew & Mathew (1991) administered cattels 16 PF inventory on 42 players of indigenous games of Kabbadi and Kho-Kho who belonged to the age group of 18-20 years. The result of the study revealed that the women kho-kho players were shy, conservative, group dependent and anxious where as women Kabbadi players were venturesome, critical self-sufficient, independent, aggressive and less anxious.

Singh and Khokhar (2000) sports performance, like any other type of human performance is a highly complex process and is a product of several internal and external factors encompassing all the aspects of human personality. It is highly erroneous to think that sports performance is only determine exclusively by the physique and physical qualities. Sports performance is a psychomotor performance and for its improvement through training as well for achieving it in a competition. A sportsperson depends heavily on his attitudes, personality trait cognitive and emotional abilities. The
authors emphasize the use and relevance of the least attended to but most important aspect of the improvement and psychological factors as an important component of improving performance of sports person.

Bala (2001) developed a 90-item scale on the basis of survey, related literature on the subject and opinions of the subject experts. The scale was administered to 100 male and female athletes from the major disciplines of sports from Chandigarh & Punjab. The subjects were aged between 16 to 24 years age who had played up to college, university, state & national level in their respective sports. The un-rotated factors do not generally represent useful scientific constructs are to be identified, it is necessary to carry and rotation of the factors. In light of this view point the unrotated factor matrix was subjected to Varimax rotation because of its popularity and usefulness. After the factor analysis a 37 items Sports Personality Scale was formulated. Using this scale the data was collected on 400 athletes. The validity & reliability of the scale was also established by using test and retest, and split-half technique.

Bawa and Randawa (2003) investigated Personality traits of sportsmen of individual, combative and Team Sports Disciplines. The study has been conducted on 60 National level sportsmen belonging to individual, combative and team sport disciplines. There were 20 subjects in each category. 16 PF Questionnaire was used to obtain data. The result of the study revealed that sportsmen of individual sports disciplines (Gymnastics and Swimming) were significantly more reserved, humble sober and relaxed as compere to sportsmen of combative sports disciplines (Boxing & Wrestling). Results also revealed that sportsmen belonging to individual sports disciplines were more reserve, sober tough minded, and forthright than the sportsmen of team sport disciplines (Hockey & Football). The results also revealed that sportsmen of combative sports discipline were significantly more reserve, tough minded and forth right when compared with sportsmen of team sports disciplines.

Rhodes et al (2004) conducted a study to replicate findings for a direct effect of the activity personality trait on exercise behaviour while controlling for the theory of planned Behaviour (TPB), and to investigate a possible moderating effect for gender. Undergraduate students (N = 298) completed
measures of the TPB, actually, trait, and a two week follow-up of exercise behaviour. The activity trait had a significant ($p<0.01$) direct effect on both exercise intention and behaviour while controlling for the TPB, with no moderating effect of gender ($p>0.05$). The actively traits predicts exercise intention and behaviour independent of social cognition even over a short two week period. The TPB may need to broaden its measurement domain in order to mediate the effect of personality on behaviour. Moreover, exercise practitioners may need to consider personality when developing intervention.

Watson and Pulford (2004) investigated the personality differences of 21 amateurs and 20 instructors who participated in the high risk sports of skydiving, hang-gliding, paragliding, scuba diving, microlighting, and rock climbing, versus those who did not. 38 men and 28 women (M age=32.6 yr., SD= 10.0) were assessed using the Eysenck Personality Questionnaire-Revised, the General Health Questionnaire, the Generalised Self-efficacy Scale, and a Type A/B personality measure. Instructors and Amateurs scored significantly higher on Extroversion and lower on Neuroticism than Nonparticipants; however, they differed from each other on the General Health Questionnaire and Type A/B personality scores. Amateurs scored significantly higher on Psychoticism and Self-efficacy than Instructors and Nonparticipants.

In conclusion, these test scores suggest that people who are attracted to high risk sports tend to be at the extroverted and emotionally stable end of the scale, with a tendency to exhibit Type A characteristics; however, Instructors’ scores on Psychoticism and Self-efficacy are more akin to those of Nonparticipants.

Lane et al (2005) conducted a study to investigate the influence of personality on exercise-induced mood changes. It was hypothesised that (a) exercise would be associated with significant mood enhancement across all personality types, (b) extroversion would be associated with positive mood and neuroticism with negative mood both pre- and post-exercise, and (c) personality measures would interact with exercise induced mood changes. Participants were 90 female exercisers (M = 25.8 yr, SD = 9.0 yr) who completed the Eysenck Personality Inventory (EPI) once and the Brunel Mood Scale (BRUMS) before and after a 60-minute exercise session. Median splits
were used to group participants into four personality types: stable introverts (n = 25), stable extroverts (n = 20), neurotic introverts (n = 26), and neurotic extroverts (n = 19). Repeated measures MANOVA showed significant mood enhancement following exercise across all personality types. Neuroticism was associated with negative mood scores pre- and post-exercise but the effect of extroversion on reported mood was relatively weak. There was no significant interaction effect between exercise-induced mood enhancement and personality. In conclusion, findings lend support to the notion that exercise is associated with improved mood. However, findings show that personality did not influence this effect, although neuroticism was associated with negative mood.

Muricio (2005) compared the personality profiles between Brazilian high-level athletes and non-athletes through psychological characteristics, verifying similarities and differences between them. Two Hundred and Nine athletes (108 men and 101 women) from four sports modalities (volleyball, basketball, judo and swimming) and 214 non-athletes (169 men and 45 women) composed the study sample. The FPI-R (Freiburg Personality Inventory) was used to evaluate personality. Significant differences (p <0.05) were found in eight out of the 12 FPI instrument variables: Inhibition, Irritability, Aggressiveness, Fatigability, Physical Complaints, Health concern, Frankness, and Emotionality between athletes and non-athletes. When subgroups of athletes and non-athletes men and women were compared, the data indicated more generalities and small specificities in the differences between them, presenting significant differences (p<0.05) in the eight variables previous mentioned, as well as in Self-satisfaction (p<0.05). Finally, when non-athletes and athletes of team sports (volleyball and basketball) and individual sports (swimming and judo) were compared, once again significant differences (p<0.05) were observed in the same variables and also in Self-satisfaction (p<0.000) and Social Orientation (p<0.01). It is concluded that there are specific and unique psychological characteristics of Brazilian high-level athletes as compare to non-athletes. The groups are distinguished significantly in the majority of variables, indicating that athletes present differentiated psychological characteristics.
Giacobbi et al (2005) conducted a study to assess within subject association between daily life events, positive and negative mood states, and exercise and the moderating role of personality for the exercise/mood relationship. College students (n=106) completed the NEO-FFI (The NEO-PI-R Personality Inventory : Professional Manual) and daily assessment of mood, exercise and appraisals of daily events for eight consecutive days. Results confirmed the hypothesis that increased levels of exercise would result in significant increases in positive mood states and reduction in negative mood. Even when positive and negative daily life events were controlled, significant association between exercise and positive mood were observed. Also observed were significant reduction in negative mood when participants exercised more. However, these association were not significant when daily events were controlled. Finally, aspects of personality were found to moderate the exercise/mood relationship, but these associations were generally small.

Kaur (2006) conducted a study to investigate personality differentials (including emotional instability – emotional stability) among the participants of yoga, athletics and aquatics. The subjects (N=90) who were college students studying in various colleges of Chandigarh were administered Bhargava’s Dimensional Personality Inventory. She reported significantly instability-emotional stability and the male swimmers were found to be significantly (p<0.01) more stable emotionally as compared to the female swimmers. No significant differences were found among the yoga and athletics groups.

Geron et al (2006) attempted to solve one of the methodological problems in personality research in sport, the sampling problem. Matching groups of athletes and non-athletes, chosen according to sex, age, ethnic origin, level of education and socioeconomic status were investigated. The group pairs were composed separately for 9 different sports: gymnastics, swimming, track and field, tennis, basketball, volleyball, team handball, water polo and soccer. The result of the study supported the assumption that the personality of athletes is different in the various sports. They differ also according to their sociodemographic characteristics, non-athletes differing more so than athletes. Athletes differ in fewer personality traits according to age and
ethnicity than non-athletes. An attempt was made to present a profile of the personality characteristics of athletes in the kinds of sport analyzed in this study.

Rhodes and Smith (2006) conducted review aimed to combine the literature on major personality traits and physical activity alongside providing some meta-analytic summaries of the findings. Overall, 33 studies containing 35 independent samples, ranging from 1969 to 2006, met the inclusion criteria. Extraversion \( (r = 0.23) \), neuroticism \( (r = -0.11) \) and conscientiousness \( (r = 0.20) \) were identified as correlates of physical activity using random effects meta-analytic procedures correcting for sampling bias and attenuation of measurement error. The five-factor model traits of openness to experience/intellect and agreeableness, as well as Eysenck’s psychoticism trait, were not associated with physical activity. Potential moderators of personality and physical activity relationships such as sex, age, culture/country, design and instrumentation were inconclusive given the small number of studies. Still, the existing evidence was suggestive that personality and physical activity relationships are relatively invariant to these factors. Studies examining personality and different physical activity modes suggested differences by traits such as extraversion, but more research is needed to make any conclusions. Future research using multivariate analyses, personality-channelled physical activity interventions, longitudinal designs and objective physical activity measurement is recommended.

Rutkowska (2007) conducted a research which covered 91 representatives from Poland – 44 female and 47 male athletes practising various sports; 30 representatives of team games and 61 representatives of individual sports. They were filling in ACL-37 adjective test and the questionnaire including questions concerning competitors’ career. Comparison of personality profiles of team games and of individual sports representatives showed statistically significant differences. The results indicate that representatives of individual sports are significantly more determined and concentrated on specific activities to satisfy their need of achievements. Team players show significantly higher tendency to avoid confrontation with reality. It
is related to disbelief in their own success and a fear for a broadly understood failure. Apart from the study report, the paper contains some suggestions for potential broader use of personality psychology issues and the psychology of inter-individual differences, being a part of sports psychology. The qualitative analysis may be a contribution to the discussion of psychological shaping of training effects.

Carlson et al (2009) investigated the relationships between the brand personality of a sports team and the related consumer outcomes of identification and retail spending. A field study was conducted with games watched and retail spending as outcomes. Structural equation modeling was used to explore the relationships among constructs. The two brand personality dimensions of wholesomeness and successfulness are mediated through prestige to predict the consumer's identification with the team. The two brand personality dimensions of imaginativeness and toughness positively influence identification with the team while successfulness has a negative influence on identification with the team. Once a consumer identifies with the team quasi-brand, retail spending and viewership increase. Sports teams can utilise information gleaned from this study to better promote an attractive image, thereby increasing the number of games watched and retail spending. This paper presents an original twist on personality research by looking at the influence of the brand personality of an intangible sport brand on consumer identification and retail spending.

Michel et al (2009) examined relations between emotional factors (anxiety and depression), normal and pathological personality, and risk-taking behavior in 11 BASE-jumpers comparing to a control group (n = 11). Method All the subjects have been evaluated with self-report questionnaires measuring their emotional states before and after the jump, their involvement in risk-taking behavior, sensation seeking, personality disorders, anxious and depressive symptomatology. Results show a significant effect of BASE-jump practice on emotional state. They have higher scores on the thrill and adventure seeking subscale, they show more drug consumption and more accidents than control group. We found also clinical elements of pathological personality solely from
cluster B of the DSM-IV-TR classification among BASE-jumpers. Emotional factors are correlated with borderline personality in this same group. They analyzed those results depending on emotional and behavioral dysregulation, and their specifics involvement in borderline personality, risk-taking behaviors, and also addiction. Sensation seeking could be especially reinforced on the base of a borderline personality with the possibility of a build-up of risk which may put individuals addict to it.

**CASE STUDY**

Carmow (1981) presented a biography of Jose De J Clarke Flores with emphasis on his leadership in sports and most important contributions at National and International levels. The dissertation deals with his early life, education, professional life as a military man and an engineer, during his twenty seven years involvement. In sports, first as a successful leader in Mexico, he then became top leader in the whole of American continent. Personal interviews, questionnaire and documentary evidence were employed in obtaining necessary data for the study.

Jonathan (1984) presented and interpreted significant data regarding the life of Eugene Lux Robert, yielding new meaning and conclusive interpretations about his personal and professional contributions. An extensive review of literature and the usage of data collecting methods, personal interview and biographical data comprise the primary source of data. An examination of text books, news papers and journal articles, and historical records, constituted the secondary source input. The data were complied, classified and interpreted according to the purpose of the study.

Sivaramakrishnan (1989) while studying Sunil Gavaskar's life, career and contributions to cricket has extensively used in his methodology. (a) Interview technique, (b) opinion questionnaire, (c) Cattell's 16 Personality Factor Questionnaire (A form), personal visits, reading from literacy sources, journal text books, research reports etc. This has been a source of great assistance to the investigated to follow the appropriate procedure in formulating this study.
Dhillon (2000) undertook a case study on Mr. Balbir Singh legendary hockey player. The purpose of the study was to high light the contributions and achievements of Sardar Balbir Singh towards Indian hockey. Secondary, to study his philosophy with regard to Indian hockey and professional leadership qualities. Researcher has followed interviews methods and studied the whole (playing) carrier of S. Balbir Singh. It was found that S. Balbir Singh as a Coach and manager show that he was a knowledgeable person, a committed profession and very hard worker. He had the natural ability of spotting talent and his approach towards sports is most scientific.

Shokeen (2000) conducted a case study on Dronacharya Awardee Professor Karan Singh. The information about the eminent physical educationist was obtained from family, school records, personal. Departmental and organizational files, personal interviews and questionnaire survey completed by a large number of persons throughout Indian. The collected data was analyzed interpret and organized in five major categories family, history, childhood, education, early teaching days The years at LNCPE –1993 and at Punjab University, Chandigarh 1963 – 1975 personality, philosophy, contributions, honors and awards.

Singh (2002) studied the sports career and professional career of Padma Shree S. Bahadur Singh. The main significance of the study is to know the contributions and achievements of S. Bahadur Singh in the fields of sports as a sports man, sports promoter, coach and physical educationist. Each subject was studied and researched in cooperation with AAHPERD. Personal interviews with relatives, friends and colleagues as well as thorough investigation of publications, magazines, journals, text books etc. were studied in order to validate their significant contributions to the profession.

Singh (2004) conducted a case study to investigate the contributions and achievements of Padma Shree Milkha Singh towards the promotion of sports in the country and also the administrative qualities, professional career, sports achievements as far as Athletics is concerned, as an athlete and sports promoter, important assignments and achievements as an administrator,
service experience, his viewpoint on sports in India and his observations on deteriorating standards of sports in India. Data/information, derived from the primary and the secondary sources. The conclusions of the study is that the Milkha Singh is the best athlete India has ever produced. He is a thoroughly committed professional. He contributed a lot for the promotion of sports in India. He equated work with religion.

Mann (2005) carried out case study to investigate the contributions made by Dr. Ajmer Singh. The main objectives of the study was to find out the training method to be used to excel in the field. Motivational factors that make him persist in sports. His leadership qualities as a sports person, teacher and administrator. Also studied the personal and social traits specific to him. A standardized opinion-rating questionnaire was developed and used to obtain responses and reactions from selected eminent physical educationists and sports persons from all over the country who could not be interviewed personality. Interviewed with Dr. Ajmer and leading physical educationists, eminent sports persons. On the basis of findings conclusions drawn that Dr. Ajmer Singh was the first eminent Physical Educationist in India who was also a sportsman of International standard. He was very knowledgeable and committed teacher. He was a coach par excellent. He contributed a tremendous for the development of physical education and promotion of sports in India.

HOCKEY

Dalen (1971) has stated that sports associations started appearing in the nineteenth century and field hockey in an organized form started in 1866. But the love of hockey must have been stronger than fear of prosecution, as ban had to be repeated several times. Implements used in the forbidden sport were not only to be confiscated but, to prevent their further abuse, had to be destroyed.

Singh (1980) in an article on Indian hockey wrote that there was a time for self-analysis. He explained the characteristics of Astroturf and stressed the need of Astroturf for the Indian team which is considered to be the villain of
peace. Apart from Astroturf he discussed some other factors responsible for dismal performance of Indian hockey players.

Singh (1996) stressed the need for improving skills. He says that unless you have skills you can not work out good combinations, you can not retain your hold on the ball for long. In his views our trapping, hitting and stopping is much below standard. He suggests that prize money competitions be introduced in hitting, stopping, pushing and trapping. Practicing skills individually may be monotonous. But once we make them competitive with prize money this will help in building the skills because of which we dominated the hockey scenario for almost four decades.

Naunheins et al (2000) carried out a study to compare acceleration forces to the head in high school – level football, hockey and soccer athletes. Acceleration of impact was measured within the helmet of high school hockey and football players during actual game play. A triaxial accelerometer was placed at the vertex of the helmet immediately adjacent to the players head. Peak acceleration (in g’s) was measured and the Gadd Severity Index and Head Injury Criterion score calculated during actual play periods in several games over four seasons. We also recorded acceleration of head impacts in high school- level soccer players who headed a soccer ball while equipped with a football helmet instrumented identically to the helmet used to record during football games. Result showed that Peak accelerations inside the helmet for football averaged 29.2 g compared with 35 g for hockey (p = 0.04). There were no incidents of concussion or other traumatic brain injury during the recorded periods. In contrast, the peak accelerations associated with heading a soccer ball was 54.7 g (p = 2 * 10 − 5 vs. hockey). Conclusion showed that Peak accelerations as measured at the surface of the head were 160 to 180% greater from heading a soccer ball than from routine (no injurious) impacts during hockey or football, respectively. The effect of cumulative impacts at this level may lead to neurologic sequelae.

Lemmink et al (2004) conducted a study to determine the reliability of two field hockey specific tests: the shuttle sprint and dribble test (Shuttle SDT) and the slalom sprint and dribble test (Slalom SDT). The shuttle sprint and
dribble performances of 22 young male and 12 young female field hockey players were assessed on two occasions within 4 weeks. Twenty one young female field hockey players took part in the slalom sprint and dribble test twice in a 4 week period. The Shuttle SDT required the players to perform three 30 m shuttle sprints while carrying a hockey stick alternated with short periods of rest and, after a 5 minute rest, three 30 m shuttle sprints alternated with rest while dribbling a hockey ball. The Slalom SDT required the players to run a slalom course and, after a 5 minute rest, to dribble the same slalom with a hockey ball. There were no differences in mean time scores between the two test sessions. The mean differences were small when compared with the means of both test sessions. With the exception of the slalom sprint time, zero lay within the 95% confidence interval of the mean differences indicating that no bias existed between the two measurements. With the exception of delta shuttle time (0.79), all intra-class correlation coefficient values for the Shuttle SDT, met the criterion for reliability of 0.80. Intra-class correlation coefficient values for Slalom SDT were 0.91 for slalom sprint time, 0.78 for slalom dribble time, and 0.80 for delta slalom time. Shuttle SDT and the Slalom SDT are reliable measures of sprint and dribble performances of young field hockey players.

Spencer et al (2005) mentioned that international field hockey tournaments may require teams to play three games within a period of four days. Therefore, there is potential for residual fatigue to affect the movement patterns of players during subsequent games. The purpose of this study was to document changes in time-motion analysis of 14 elite male field hockey players during three games within a period of four days during an international tournament. In addition, the nature of and any changes in repeated-sprint activity were investigated using a criteria of a minimum of three sprints with a mean recovery duration between sprints of < 21 s. The percent of total game time spent standing significantly increased across all three games (7.4+/-2, 11.2+/-2.7 and 15.6+/-5.6%, respectively, P<0.05). Conversely, the percent time spent jogging significantly decreased from game 1 to game 2 and from game 1 to game 3 (40.5+/-7.3, 34.8+/-7.4 and 29.4+/-5.7%, respectively, P<0.05). Furthermore, the percent time in striding significantly increased from game 1 to game 3 and from game 2 to game 3 (4.1+/-1.3, 5.1+/-0.9 and 5.8+/-
1.4%, respectively. P<0.05). Changes in mean motion frequency and duration were recorded across games for the motions of standing, striding and sprinting. The frequency of exercise bouts that met the criteria for 'repeated-sprint' decreased across the three games (17, 11 and 8, respectively). In summary, the results suggest that when elite field hockey players play three games within four days there are significant changes in time-motion analysis.

Elferink-Gemser et al (2006) conducted study to gain more insight into the mechanisms that underlie the development of interval endurance capacity in talented youth field hockey players in the 12-19 age band. A total of 377 measurements were taken over three years. A longitudinal model for interval endurance capacity was developed using the multilevel modelling program MLwiN. With the model, scores on the interval shuttle run test can be predicted for elite and sub-elite male and female field hockey players aged 12-19 years. A polynomial model of order 2 adequately represents development of the test scores over time. The fixed part of the model contains a different intercept and linear age term for boys and girls, and a common quadratic term; the random part of the model has a common level 2 variance and sex specific level 1 variances. The model was significantly improved by including differential effects of performance level for age and sex. A negative effect was found for percentage body fat, and positive effects for additional training and motivation. During adolescence, both male and female elite hockey players show a more promising development pattern of interval endurance capacity than sub-elite youth players. Percentage body fat, additional training hours, and motivation influence this development. However, differences between the individual players are still considerable.

Sunderland et al (2007) explained that high test retest reliability is essential in tests used for both scientific research and to monitor athletic performance. Thirty-nine (20 male and 19 female) well-trained university field hockey players volunteered to participate in the study. The reliability of the in house designed test was determined by repeating the test (3-14 days later) following full familiarisation. The validity was assessed by comparing coaches ranks of players with ranked performance on the skill test. The mean difference
and confidence limits in overall skill test performance was 0.0±1.0% and the standard error (confidence limits) was 2.1% (1.7 to 2.6%). The mean difference and confidence limits for the “decision making” time was 0.0±1.0% and the standard error (confidence limits) was 4.5% (3.6 to 6.2%). The validity correlation (Pearson) was r=0.83 and r=0.73 for female players and r=0.61 and r=0.70 for male players for overall time and “decision making” time respectively. We conclude that the field hockey skill test is a reliable measure of skill performance and that it is valid as a predictor of coach-assessed hockey performance, but the validity is greater for female players.

Dick et al (2007) conducted a study to review 15 years of National Collegiate Athletic Association (NCAA) injury surveillance data for women's field hockey and identify potential areas for injury prevention initiatives. Background: Field hockey is one of the most popular sports worldwide and is growing in participation in the United States, particularly among women. From 1988-1989 to 2002-2003, participation in NCAA women's field hockey increased 12%, with the largest growth among Division III programs. In 2002-2003, 253 colleges offered women's field hockey and 5385 women participated. Main Results: Game injury rates showed a significant average annual 2.5% decline over 15 years, most likely fueled by drops in ankle ligament sprain, knee internal derangement, and finger fracture injuries. Despite this, ankle ligament sprains were common (13.7% of game and 15.0% of practice injuries) and a frequent cause of severe injuries (resulting in 10+ days of time-loss activity). Concussion and head laceration injuries increased over this same time, and the risk of sustaining a concussion in a game was 6 times higher than the risk of sustaining one during practice. Overall, injury rates were twice as high in games as in practices (7.87 versus 3.70 injuries per 1000 athlete-exposures, rate ratio = 2.1, 95% confidence interval = 2.0, 2.3). Most head/neck/face (71%) and hand/finger/thumb (68%) injuries occurred when the player was near the goal or within the 25-yd line and were caused by contact with the stick or ball (greater than 77% for both body sites); for 34% of head/neck/face injuries, a penalty was called on the play. Recommendations: Equipment (requiring helmets and padded gloves) and rule changes (to decrease field congestion near the goal) as well as evidence-based injury
prevention interventions (eg, prophylactic ankle taping/bracing, neuromuscular balance exercise programs) may be viable prevention initiatives for reducing injury rates in women’s collegiate field hockey players.

Elferink-Gemser et al (2007) identified performance characteristics that could help predict future elite field hockey players, the authors measured the anthropometric, physiological, technical, tactical, and psychological characteristics of 30 elite and 35 sub-elite youth players at the end of three consecutive seasons. The mean age of the players at the end of the first season was 14.2 years (s = 1.1). Repeated-measures analyses of covariance, with standard of performance and measurement occasion as factors and age as a covariate, showed that the elite players fared better than the sub-elite players on technical and tactical variables. Female elite youth players also scored better on interval endurance capacity, motivation, and confidence. Future elite players appear to have excellent tactical skills by the age of 14. They also have good specific technical skills and develop these together with interval endurance capacity better than sub-elite youth players in the subsequent 2 years. To verify our conclusions, we will be tracking these players into adulthood.

Kaur et al (2008) observed that field hockey is one of the most popular team sport in the world and is thought to be the forerunners of all stick and ball games. Injuries in hockey are numerous and can be serious. Despite the sports apparent popularity, the data on injury rates among field hockey players are limited. Most of the research on field hockey was completed over 6 years ago, but the game has undergone significant changes since that time. To examine the injuries in field hockey players in relation to playing, district, state, university, national, international hockey players (N=407) completed the survey questionnaire. They reported personal characteristics (age, height, weight), field hockey information (level, years of experiences, surface), injury history (type, site, cause, severity), and back pain information In overall injuries, 64.87% injuries occurred in training on natural grass and 35.13% injuries occurred while training on artificial turf. There is increase in number of injuries in grass as compared to artificial turf.
Shamala et al (2008) presented the development of a wireless sensor network which is deployed for the purpose of analyzing the strategy for field hockey. The indoor cricket location system has been used to acquire the location of a particular sensor node known as the listener. A review of the existing strategic systems utilized by the national coach of the Malaysian women’s hockey team is provided to complement the design and motivation of this project. The review and analysis was done during the participation of the Malaysian women’s hockey team at the Olympic Qualifier in Victoria, Canada. The visualization of the application for the purpose of analyzing the wide-spectrum of probabilities in player movement has been done using OpenGL. As an initial stage of the experiment using the cricket indoor location system was used to acquire the pre-defined coordinate system. The obtained results have enabled a dynamic strategic planning to facilitate the strategy planning which captures the essence of the human tracking and cohesively harnesses the reconfiguration elements of wireless sensor networks.

MacLeod et al (2009) conducted study on nine games players (mean age 23.3 years, s = 2.8; height 1.73 m, s = 0.08; body mass 70.0 kg, s = 12.7) completed 14 laps of a measured circuit that incorporated intermittent running and directional changes, representative of the movements made by field hockey players during match-play. The distances and speeds recorded by a global positioning satellite (GPS) system (Spi Elite™) were compared statistically with speed measurements made using timing gates and distances measured using a calibrated trundle wheel, to establish the criterion validity of the GPS system. A validation of the speed of movement of each participant separately was also made, using data from each timing gate, over a range of speeds. The mean distance recorded by the GPS system was 6821 m (s = 7) and the mean speed was 7.0 km · h⁻¹ (s = 1.9), compared with the actual distance of 6818 m and recorded mean speed of 7.0 km · h⁻¹ (s = 1.9). Pearson correlations (r) among timing gate speed and GPS speed were ≥0.99 (P < 0.001) and the mean difference and 95% limits of agreement were 0.0 ± 0.9 km · h⁻¹. These results suggest that a GPS system (Spi Elite™) offers a valid tool for measuring speed and distance during match-play, and can
quickly provide the scientist, coach, and player with objective information about certain movement patterns during competitive games.

After going through the summary of relevant literature it was felt that there is dearth of literature with regard to case studies conducted on eminent sports personalities, more specifically on the hockey players of our country, although hockey is our national game. Further, hardly any efforts have been made to depict and describe the personality profiles of such prominent sportspersons in relation to their sports performance. Thus this study is an attempt to fill the gap in the existing literature.