Chapter I
Chapter 1

INTRODUCTION

Today’s world is so advanced that every aspect of life is dominated by science and technology, sports is not an exception to it. Technology has forever changed our world, and in the process significantly increased the importance of measuring and controlling performance relevant to psychological variables.

As one progresses up the chain of great athletic performers, it gets continually more difficult to beat the oppositions by raw physical talent and strength alone. The higher one gets, the more even the playing field becomes. Consequentially, sport performance is contingent upon mental preparation and psychological strength. As physical preparation for upcoming competitions begins so should mental preparation. This includes a commitment to setting clear short-term goals, building confidence by entertaining positive thoughts, concentrating on using self affirmations and imagery, and maintaining control through negative thought stopping.

The sport of track and field has its roots in human prehistory. Track and field style events are among the oldest of all sporting competitions, as running, jumping and throwing are natural and universal forms of human physical expression. The first recorded examples of organized track and field events at a sports festival are the Ancient Olympic Games in 776 BC in Olympia, Greece, only one event was contested; the stadion footrace. The scope of the Games expanded in later years to include further running competitions, but the introduction of the Ancient Olympic pentathlon marked a step towards track and field as it is recognized today- it comprised a five –event competition of the long jump, javelin throw discus throw the stadion footrace and wrestling.

Track and field events were also present at the Panhellenic Games in Greece around this period, and they spread to Rome in Italy around 200 BC. After the period of classical antiquity (in which the sport was largely Greco-Roman influenced) new track and field events began developing in parts of Northern Europe in the middle Ages. The stone put and weight throw competitions popular among Celtic societies in Ireland and Scotland were precursors to the modern shot put and hammer throw events. One of the last track and field events to develop was the pole vault, which stemmed from competitions such as the Fierljeppen contests in the Northern European Lowlands in the 18th century.
The profile of sport reached a new high in the 1980s, with a number of athletes becoming household names (such as Carl Lewis, Sergey Bubka, Sebastian Coe, Zola Budd, and Florence Griffith-Joyner). Many world records were broken in this period, and the added political elements between competitors of the United States, East Germany, and the Soviet Union, in reaction to the Cold War, only served to stoke the sport’s popularity. The increase in the commercial capacity of track and field was also met with developments in the application of sports sciences, and there were many changes to coaching methods, athlete’s diet regimes, training facilities and sports equipment. This was also accompanied by an increase in the use of performance enhancing drugs, and prominent cases, such as those of Olympic gold medalists Ben Johnson and Marian Jones, damaged the public image and marketability of the sport.

Researchers have invested substantial effort in identifying the psychological characteristics that elite athletes require to excel in different sport settings (Smith et al., 1995). According to the literature, people inherit predispositions and the outcomes in various life-endeavours are driven by behavioural choices (Rose, 1985). Constructivists in psychology believe that people with certain responsibilities and consequences are active participants in their own life. How a person views her or his life seems to depend on how her or his perceptions are constructed. These constructs depend on a variety of environmental and personal (genetic) factors.

In order to become a successful athlete, these constructs need to include persistence, dedication, motivation, hard work, and effort (Géczi et al. 2008). Studies comparing and contrasting elite and non-elite athletes have found that successful athletes are more committed to their sport (Davis & Mogk, 1994) and show stronger goal orientation than less successful athletes (Goudas, Theodorakis, & Karamousalidis, 1998; Orlick & Partington, 1988). Elite athletes also demonstrate higher concentration levels (Junge et al, 2000), higher confidence levels (Gould, Dieffenbach & Moffet, 2002), easier or better coachability (Bebestos & Antonious, 2003) and more stable anxiety levels (Kais & Raudsepp, 2005) than non-elite athletes. On the other hand, Williams and Reilly (2000) found no specific characteristics that would definitely differentiate elite athletes from the non-elite athletes.

It is generally accepted that poor performance is associated with a high level of stress and worry or anxiety, which prevent athletes from performing in their optimal zone.
(Hanin, 1989). Cognitive anxiety is negatively related to performance. Both, too low and too high levels of anxiety interfere with the optimal performance (Jones, 1995). There seems to be a meaningful association among anxiety, confidence, and coping skills (Cresswell & Hodge, 2004; Hammermeister & Burton, 2001). People with appropriate coping skills could manage stress and adversity with self-confidence, however, people with People with appropriate coping skills could manage stress and adversity with self-confidence, however, people with inadequate coping skills tend to perceive anxiety as a threatening factor (Dolbier, Soderstrom & Steinhardt, 2001).

Sport science has a significant role in identifying, monitoring, and developing young talented athletes. For best practices and success, coaches need to understand the complex processes in developing athletic expertise. Sport psychology researchers have postulated that excessive anxiety disrupts attentional functioning, and numerous investigations of this hypothesis have offered unequivocal support for their contention (Janelle, 2002). Thus, the conventional wisdom that has developed within the field is that much of the variance in performance can be attributed to the effects of heightened levels of pre-competition anxiety. Therefore, although negative emotions such as anxiety may be functionally necessary to spur motivation in a win–lose context such as competitive sport (Seligman, 2002), they may become a detriment as well.

Abilities determining motor and physical skills, cognitive and perceptual abilities, self-efficacy, affective experiences, and coping strategies, as well as the quality and amount of practice all may play crucial roles in the development process (Tenenbaum, 1999). A significant focus in sport psychology research is to find means that support coaches and scouts in talent development processes (Sands & McNeal, 2000) and to enhance athletic performance (Géczi et al, 2008). Such investigations are based on the assumption that psychological characteristics should be accepted as important determinants of athletic performance and success (Trzaskoma-Bicsérdeny et al. 2007).

Profiling is a scientific process in which a person’s behavior is recorded and the psychological characteristics are analyzed in order to assess the ability in certain sphere. Profiling can also be used for identifying a particular group of people (The free Dictionary, FARLEX, Internet). Profiling is one of the most common strategies for identifying contributors to skilled athletic performance (DeGaray et al. 1974). A player profile is an all-round picture of the individual player-looking at each attribute. Naturally, the relevant
properties for a badminton player are those, which the work load analysis has proved to be vital importance to the game of badminton. The drawing up of psychophysical profile of individual player gives crucial information about the training condition of the player and the physical ability to utilize the optimum technical and tactical properties of the player on court.

Most top athletes and coaches believe that apart from physical and physiological aspect, psychological factors play as crucial a role as physical attributes and learned skills in the make-up of champions. When physical skills are evenly matched – as they tend to be in competitive sport – the competitor with greater control over his or her mind will usually emerge as the victor. Mental strength is not going to compensate for lack of skill, but in close contests it can make the difference between winning and losing (Lee Crust, 2003).

Outstanding performance within elite sport competition often requires simultaneous information processing, decision making, and reaction that are dependent on acquisition of the most relevant visual data from the environment (Singer, 2000). Over the past 2 decades, sport psychology researchers have used sophisticated technology to identify and measure many of the components of visual attention associated with optimal performance by elite athletes in a variety of sports (Hatfield & Hillman, 2001; Singer & Janelle, 1999). However, within elite athlete populations, where physical talent and skill differences are often minute, inter-individual differences in performance are often great, and fluctuations within individual performances are common. Sport psychology deals with these discrepancies by seeking to answer the question of why talented athletes often fail to meet the achievement expectations warranted by their physical talent.

Achieving elite sport performance depends not only on perfecting the biomechanical efficiency of required movements but also on the efficient utilization of cognitive resources. However, the majority of coaches use instructional time to develop the physical talents and skills of their athletes. Although many implore their athletes to focus or concentrate, few fully understand the meaning of those concepts, and athletes are often left wondering, “How, exactly do I do that?” Although laboratory research has identified the attentional states critical to elite performance and how they are affected by anxiety, there is still a wide gulf between the lab and actual competition (Singer, 2000). Many applied practitioners have focused great effort on designing methods and protocols to reduce anxiety and its detrimental effects, yet few are prepared to offer coaches and
athletes meaningful interventions targeted specifically to enhance attention and alertness. In addition, there remains disagreement about the definitions, measurement, and effectiveness of the various protocols designed to improve performance (Carlstedt, 2001; Elchami, 2003).

According to Hatfield and Hillman (2001), quality performance associated with elite competition is typified by efficient attentional functioning, requiring very little conscious effort. Less skilled or poor performance is associated with inefficiency of attentional activity, characterized by more effortful and conscious processing, resulting in distortions of muscle sequencing and increased left hemispheric involvement prior to and during motor execution. Efficiency theories suggest that explicit control of motor movements (a rule-based, internal focus) is less efficient than implicit control (less rule-based, external focus) and results in increased anxiety and reduced performance (Janelle, 2002).

When athletes, even elite ones, experience increased anxiety, they often perform less than optimally. Processing efficiency theory (PET) provides an explanation of how heightened levels of anxiety may affect attention and subsequent motor performance. This theory asserts that attentional capacity is limited; therefore, the increased negative cognition associated with high anxiety conditions consumes processing resources available to working memory, leading to reductions in performance of high working memory tasks—unless the individual is somehow able to muster greater mental effort. The theory also asserts that state anxiety levels are a function of threat appraisal and trait anxiety. Highly trait anxious athletes are thus more likely to appraise situations as threatening and subsequently are more susceptible to decreases in processing efficiency and decrements in performance (Eysenck & Calvo, 1992, as cited in Janelle, 2002).

Three distinct studies provide support for the PET. Williams, Vickers, and Rodrigues (2002) determined that high levels of anxiety cause a reduction in performance of tasks requiring high working memory, and Murray and Janelle (2003) confirmed that high anxiety produces an increase in visual search rates during competition and a subsequent decline in performance. Also, Smith, Bellamy, Collins, and Newell (2001) demonstrated that higher levels of mental effort expended by highly trait-anxious performers during critical moments of competition do not necessarily lead to improvements in performance.
Sport psychologists and peak achievement trainers are continuously seeking cutting edge methods of achieving the most expedient route to confidence, trust in one's ability, appropriate focus, composure and explosive power with graceful, efficient movement patterns. This is characteristic of almost all high level performance including team and individual sports, as well as aesthetic performances in music, dance, artistry, etc. All are rewarded when graceful, yet powerful movements can be performed with seemingly effortless composure.

The domain of sport competition is developing every so the athletes nearly have the same physical abilities have different mental skills. Therefore, it is not possible to ignore the role of mental skills to achieve maximum performance. This subject indicates the necessity of engaging in psychological aspects of sport. It was observed in recent Olympic Games, some athletes who were considered to win medals failed in the competitions and stated the lack of mental preparedness one of the important reasons for their failure. Studies conducted in the field of sport psychology have made it evident that mental skills play an important role in achieving excellence in sport. Cox and Yoo (1995) indicated that success in professional sport not only self depends on the physique of players and technical aspects also on psychological skill.

A factor often associated with successful performance in competition is mental skill. Mental toughness can be considered as a mental skill factor. Some research findings has identified mental skills as a psychological construct that distinguishes between more and less successful performance across a number of sports; for example, golf (Thomas and Over, 1994), and equestrian, (Meyers et al., 1998). Mental toughness and its importance in competitive sports have been documented in Gould et al. (1987) indicated that coaches felt the importance of being mentally tough in achieving success in sports. Norris (1999) also emphasized the importance of mental toughness in the making of a champion athlete.

Mental toughness is a necessity in competitive sports. Competing against other athletes, or even against one’s own personal best, can be a stressful process. Competing, in general, can cause anxiety in some athletes. It’s one thing to enjoy playing basketball on a day off, but when one is playing a game of basketball against a rival team and all eyes are on you to perform, mental toughness is often needed to overcome any stress and anxiety.
Mental toughness as an important component of sports training, even before one gets to the competition stage in a sport, the act of training itself requires mental toughness. There may be times when one doesn’t feel like training and need the tenacity and toughness to carry on. At other times, he might be dealing with muscle soreness or a mild and irritating injury that doesn’t stop one from playing but does distract. In this case, one has to mentally push through the discomfort and complete training session. During training he might have doubts about his physical abilities. Watching others excel in physical activities that one have not yet mastered can be yet another distraction. Mental toughness in all of these scenarios entails staying focused on one’s own progress, ignoring distractions and pushing through all challenging moments.

Recent research has attempted to explore the concept of mental toughness in sport more thoroughly, and it appears that, while some people are naturally more tough-minded than others, people can be ‘toughened-up’ with the correct approach to training (Cockerill, 2002). Athletes are constantly under severe levels of stress and anxiety to perform well. They fight for every inch and often put their bodies through excruciating pain to secure a win. As the pressure to succeed and perform consistently over time increases, athletes continually add both physical and emotional stress to their bodies. Mental toughness, or the ability to perform at one’s optimal level regardless of circumstances, is consequently a vital tool in helping one cope with such strenuous situations. An important premise we understand from sport psychology is that, a change in an athlete’s mental state is consciously or unconsciously accompanied by a change in his physical state.

The ‘4Cs’ model of mental toughness

Building on the work of Kobasa, the Hull team proposed that confidence as well as control, commitment and challenge were a key element of mental toughness. This has given rise to the ‘4Cs’ model of mental toughness.

Research on mental toughness in sport and exercise has focused largely on individual differences, in which mental toughness is viewed as a relatively stable characteristic. However, classic previous research on animals has suggested that ‘toughening up’ can be achieved through exposure to stressful conditions. Weiss and colleagues observed a toughening phenomenon after exposing animals to cold-water
swimming, electric shock treatment or injections over a 14-day period (Crust, runnersweb, 2005). Specifically, the usual decrement in performance following aversive stimulation was not observed after the 14-day period. The intermittent exposure to aversive stimuli had apparently led to the animals becoming more tolerant of – and resilient to – such stimuli. Although this finding does not necessarily transfer to human subjects, there are distinct parallels with various techniques commonly used as interventions in sport and exercise environments.

Mental toughness is the ability to consistently sustain one’s ideal performance state during adversities in competition. Performing to one's potential requires good technique and mental skills. Ups and downs in performance are often directly traceable to psychological ups and downs. Players who create a special atmosphere within them perform consistently. Mental toughness is learnt, not inherited. The ultimate measure of mental toughness is consistency.

The concept of mental toughness has recently attracted significant attention from sport psychology researchers attempting to understand how psychological factors can underpin success in sport (Bull, Shambrook, James, & Brooks, 2005; Gucciardi, Gordon, & Dimmock, 2008; Jones, Hanton, & Connaughton, 2007). From the emerging knowledge base, mental toughness is considered to be multi-dimensional (comprising of cognitive, affective and behavioural components) and an important psychological construct that is related to successful sport performance (Bull et al., 2005; Crust & Clough, 2005; Clough, Earle, & Sewell, 2002; Connaughton, Wadey, Hanton, & Jones, 2008; Jones et al., 2007).

Despite widespread agreement on the importance and benefits of mental toughness and calls to identify psychological attributes that create champions, high quality research into mental toughness is limited. Jones, Hanton and Connaughton (2002) conducted a qualitative study of elite athletes, aiming to define mental toughness and to determine the essential attributes required to be a mentally tough performer. The definition that emerged from their analysis concluded that:

Mental toughness is having the natural or developed psychological edge that enables you to:

1. Generally, cope better than your opponents with the many demands (competition, training, lifestyle) that sport places on a performer; and,
2. Specifically, be more consistent and better than your opponents in remaining
determined, focused, confident, and in control under pressure.

They also identified twelve attributes as keys to mental toughness. These included
attributes such as self-belief, an unshakeable focus, high levels of desire and
determination (especially at times of distress), and overall consistency of effort and
technique despite life and sport stresses. In another qualitative study into mental
toughness, Fourie and Potgieter (2001) analysed written responses from 131 expert
coaches and 160 elite athletes. Their analysis identified twelve components of mental
toughness including: 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,
and ethics. In contrast to Jones et al. (2002), the researchers did not propose a definition
but instead suggested that further work was needed to finalize a working definition of
mental toughness.

Profiling can provide the tool for coaches to individualize interaction with their
athletes and also allow the athletes to obtain a more complete understanding of his or her
characteristics. Performance profiling is a simple way to help athletes and teams to identify
their physical and mental strengths and weaknesses. It has become an effective tool to
record and assess the psychological as well as physical strengths and weaknesses of
athletes. Performance profiling has three major proposes: to aid in identifying an
appropriate intervention, to maximize the athlete’s motivation and adherence to the
programme, and to monitor any changes over time.

According to Jackson effective mental preparation is necessary to achieve peak
performance and a lot of elite athletes believe that they can set the stage for flow through
strong physical and mental preparation (Jackson, 1995).

A major element of most applied sport psychology programmes is the
implementation of mental or psychological skill training techniques designed to enhance
performance and develop a positive attitude towards competition (Morris, 1997, p. 1).

In the past mental training was the term which was most commonly used to
describe the formal, structured application of psychological techniques to the enhancement
of sports performance. The term psychological skills training retain the implication that a training process is used to develop skills (Morris, 1997, p. 2).

Individual performers differ greatly in their capacities for coping with anxiety, concentrating on the important aspects during competition, and managing other aspects of their thoughts, feeling and behavior which relate to psychological skills. Mental skills are procedures that help athletes control their minds efficiently and consistently as they execute sport-related goals.

Physical skills alone cannot make a good athlete. It has often been seen that athletes with mental toughness strive and achieve while athletes with higher skills fail to do the same since they lack mental toughness. Mentally tough athletes have more than just physical skills; they also have tremendous ability to psych themselves up for competition, manage their stress and remain in control of their emotions, concentrate intensely and set challenging but realistic goals. They have the ability to visualize themselves being successful and then do what they visualize (Krane & Williams 2006).

Athletic performance is influenced not only physical skills but also by psychological ones. A total package, including physical skills, psychological skills, fitness and injury prevention, is needed for peak performance (Gould, 1991).

Mental skills also can be taught and learned much like the physical skills. Endless hours of practice are needed for peak performance. No great athlete, no matter how physically talented, ever achieved success without this training. There is a deep rooted belief that mental toughness is an innate characteristic that cannot be taught and the athletes are blessed with these strong mental skills or have learned them through experiences. Being motivated, staying calm under pressure and maintaining confidence in the face of adversity is not simply innate qualities. They are mental skills learned through experience or mental skill training. But mental skill training is the best method of developing these skills than waiting for athletes to pick them through the trial and error process of experience. The short period just before competition is not the time to work on mental game. It is ideal to begin MST in off season, atleast at the beginning of the season.

At the entry level integration of mental skills training is as important as physical, technical and tactical aspects of skill development. As many mental training technique as possible should be familiarized by the coaches so that they can introduce the entry level
children to the processes of self awareness; self regulation and self learning. It should be maintained that psychological training must be simple and yet convey the message that skills training is an integral part of the learning process and crucial to skill development.

Psychological skills play an important role in athletic performance. It is influenced not only by physical skills but also by psychological ones. Athletic performance could also be influenced by team or coaching variables and social support issues. It is very much true that an essential part of research in sport psychology is the assessment of athlete’s psychological skills. Recent studies examined the differences in terms of psychological skills which the athletes focused primarily on the differences in personality characteristics between successful and unsuccessful athletes.

It has been found out and explained by various researchers that athletes with high levels of psychological skills and mental toughness perform more consistently than athlete with low levels of psychological skills. It can be well explained with the fact that higher levels of psychological skills have been shown to have a positive correlation with better execution of general motor and cognitive tasks, (Hird et al, 1991.) especially when they are fatigued and under physical stress (Booras, 2011). The researches by Greenspan and Feltz in 1989 have confirmed that if the athletes are subjected to certain approaches inherent in various though processes will have a beneficial impact on motor skill performance. This concept automatically leads to a very pertinent question whether a selection of psychological skills would facilitate exceptional sports performance in all arenas when developed optimally. It should be taken into account that the type of sports that athletes compete in will determine the specific psychological skills that they will need in their quest for better performance (Martens, 1987).

Even though mental skill training works, advanced researchers reveal that consistent and systematic practice is necessary to maximize its effectiveness. It can be learnt by the trial and error method, but MST is a more efficient way of learning. It is the systematic application of mental training tools to improve the mental skills and toughness of athletes. It is an all – comprehensive, systematic and skill oriented approach which will lead to mental toughness and creates a flow frame mind. The development of life skills and the increased enjoyment of sport are other valuable benefits of mental skill training other than improvement in performance (Burton and Raedeke, 2008)
There is a misconception that only those athletes with deep rooted psychological problems need to work on their mental game. Some people and some athletes also believe that those who need to work on their mental game are weak and have some psychological problems. So, some of the athletes are reluctant to undergo psychological skill training because they feel that they may be chastised and labeled as head case. But it is a proven fact that psychological skill training and mental skill training can benefit all sports persons. Most often, many of the talented athletes use some form of mental skill training even though they do not have any psychological problems (Burton and Readeke, 2008).

One of the used and least understood terms used by sporting communities in general, globally, may be the term ‘mental toughness’. It is Loehr (1982, 1986) who, perhaps, popularized the term. We contended that at least 50% of better athletic performance could be attributable to mental skills. Mental toughness is now regarded as one of the most important psychological factors associated with achieving performance excellence in any sport. Recent psychological skill researches have addressed both definitional and development issues related to mental toughness.

Mental Toughness is a concept that has been given a lot of attention in sport psychology in the last few years. It tends to be associated with some kind of ability to cope with pressure, or resiliency. It is something that athletes, coaches and commentators seem to recognize, but seems to be quite difficult to pin down.

One of the reasons that mental toughness can be hard to pin down is that is contextual – it can be used to describe someone running an ultra marathon, a golfer on the final round of a major championships, a team that finds an extra level of performance in a “must win” game.

Mental toughness is the ability to think and feel strong and determined even in the face of setbacks, pain, failures and self-doubt. The better you are at dealing with these challenges, especially physical pain, the further you can push yourself to train and compete at your best. (Sportsmindskills.com 2008). Mental toughness is the ability to play one’s best in any situation, particularly when encountering problems, obstacles adversity, or failure. It brings out the best performers when they have the most at stake. Mental toughness revolves around creating and maintaining an ideal mental performance state, a flow mind-set (Burton and Raedeke, 2008).
Even though there are good literatures on mental toughness, they seem to ignore one point that some athletes not only cope with pressure situation, the pain of training, but also thrive on it. It seems that they enjoy pressure of the competition and pain of the training. It is not about managing something unpleasant, but actually gaining pleasure from tough situations.

The need of the athlete to learn more about their individual mental life has necessitated Mental Skills Training. It allows a degree of control in coordinating effective movement through various psychological states of performance (Martens, 1987; Rushall, 1992).

Every sport specialists agree one thing that athletic performance is very much influenced by psychological state of mind of the athlete rather not merely by the athletic skill. So it is clear that they need a total package of physical skills, psychological skills, fitness and injury prevention (Gould & Eklund, 1991). The tam, coaching variables and social support issues also influence athletic performance. It makes it a fact that becoming an elite athlete in any sport requires a very high level of persistence, dedication, commitment and also a supportive environment. Psychological training helps an athlete to be more committed to sport and training helps to make clear and measurable goals (Gould, et.al, 2002). Also elite athletes show a higher level of confidence, a stable anxiety level prior to competition, a high level of cognitive functioning, less expression and sensitivity, fatigue, confusion and neuroticism (Weinberg and Gould, 1995) than non-elite athletes.

The body has only a limited number of ways to show when athletes are worried and concerned. These responses are similar in all situations even though the cause may be quite different. We do not worry just in our heads, our whole body worries. As a result, when we worry, we experience some reaction in our body as well as in our mental state. This fact is critical regarding performance. Whenever we worry and become anxious we experience disruption and dysfunction to some degree. The more worried we become, the more anxiety we experience and the greater the degree of disruption of performance. In sports we call this “choking” or being “uptight”. Mental errors as well as tactical and execution errors occur (Harris & Harris, 1984, p 30).

**STATEMENT OF THE PROBLEM**
The purpose of the study is to assess the psychological profile of Indian track and field athletes.

The subordinate purpose of the investigation is to look into:

1. The psychological differences between the senior and junior track and field athletes for both female and male section.
2. The mental skills, mental toughness, state and trait anxiety of female and male track and field athletes of junior and senior sections.

**DELIMITATIONS**

1. The study was delimited to Indian Track and Field athletes (both male and female) whose level of achievements is minimum National level participation for 2/3 years.
2. The study was delimited to selected questionnaire in assessing the demographic parameters, mental skills, mental toughness and anxiety (State and Trait).
3. Further the study was delimited to psychological profiling, that includes demographic parameters, mental skills, mental toughness and anxiety (State and Trait).

**LIMITATIONS**

1. Questionnaire has its limitations, any bias that might have entered into the subject on this account may be considered as a limitation to this study.
2. Life style of the athletes is beyond the control of the researcher. Socio-economic and religious factors, which cannot be controlled by the scholar, might affect the responses of the subjects; these are considered as the limitations for this study.
3. The training and coaching style of coaches of various specialties is different, that might have an influence in the answers of the athletes may be considered as another limitation of the study.
4. Athletes perception towards own behavior may be different. It may be considered as another limitation of this study.


**HYPOTHESIS**

On the basis of literature gone through, research finding and the scholar’s understandings of the problem, following hypothesis are formulated.

**Hypothesis 1:** There would be significant difference between the senior and junior track and field athletes in their score of mental skill.

**Hypothesis 2:** There would be significant difference between the senior and junior track and field athletes in their score of mental toughness.

**Hypothesis 3:** There would be significant difference between the senior and junior track and field athletes in their score of anxiety (State and Trait)

**DEFINITION AND EXPLANATION OF THE TERMS**

**Mental Toughness**

“Mental toughness is doing whatever is necessary to get the job done including handling the demands of a tough workout, withstanding pain, or touching an opponent out at the end of a race” (Eberst, 2012).

A definition of mental toughness attempted by Jones et al (2002), which centres on being, determined resilient, staying in control and remaining focused in the face of pressure. They also listed some characteristics of mentally tough elite athletes, namely: Self-belief, Motivation, Focus and Composure, or ability to handle pressure.

"Mental toughness is not letting anyone break you." – (Mitchell, 2012)

Mental toughness is many things and rather difficult to explain. Its qualities are sacrifice and self-denial. Also, most importantly, it is combined with a perfectly disciplined will that refuses to give in. It's a state of mind-you could call it character in action.

The psychological construct of mental toughness is often associates with peak performance in sports. Gould, et al. (2002), identified the mental toughness as the mental
skill factor most frequently cited as a significant contributor to sports performance enhancement, in a study of the psychological characteristics of Olympic champions. The problem is that the term is highly elusive in nature. It is intuitively appealing and used equally, frequently and generously, by players, coaches and sports media and yet usually without an adequate definition or understanding. Many definitions have been put forwarded to address this lack of conceptual clarity. They are: an ability to cope with pressure (Goldberg, 1998), to rebound from failure (Woods, Hocton & Desmond, 1995) and the possession of superior mental skills (Bull, et al., 1996).

Loehr (1986) is of the view that mentally tough performers are disciplined thinkers who respond to pressure in ways which enable them to remain relaxed, calm and energized for, they have the ability to increase their flow of positive energy in crisis and adversity. They also have the right attitudes regarding problems, pressure, mistakes and competition.

Specifically the attributes of mental toughness include Self Confidence. Self confidence is most critical self-perception in sport psychology (Gill, 2002). Self confidence is defined as global and stable characteristics which, in reality bears little use within the sports domain (Gill, 2002).

Martin (2002) has distinguished between performance confidence, self-regulatory confidence, and outcome confidence. Self-regulatory confidence is athlete’s confidence that they can successfully perform in the face of obstacles or setbacks (Bandura 1997), whereas performance confidence is athletes confidence that they can achieve a certain level of performance (e.g., race times). Martin’s self-regulatory complex incorporates Vealey and Knight’s (2002) SC cognitive efficiency and Hays et al.’s (2007) psychological factors and tactical awareness. Martin’s performance confidence is similar to Hays et al.’s achievement confidence. Martin’s outcome confidence is athlete’s confidence that they can achieve performance outcomes, such as winning or placing high in a race compared with competitors. Outcome confidence has been also defined as comparative efficacy (Feltz & Chase, 1998), and is similar to Hays et al.’s superiority to opposition confidence.

Self confidence is uniquely multi dimensional based on the competitive demands on the athletes. Athletes need to believe in their abilities to execute physical skills, attain high levels of physical fitness, make correct decisions execute mental skills such as focusing attention and managing nervousness, bounce back from mistakes and overcome obstacles and setbacks, achieve mastery and personal performance standards, and win and
demonstrate superiority over opponents. Athletes develop and beliefs about their abilities to (a) win (outcome self confidence), (b) perform successfully in relation to certain standards (performance self confidence), (c) self regulate to manage their thoughts and emotions as well as bounce back in demonstrating resilience (self regulatory self confidence), and (d) execute physical skills achieve fitness or training levels, and learn new skills needed to be successful in their sports (physical self confidence) (Horn 2008).

**ANXIETY**

Anxiety may be defined as a subjective feeling of apprehension and heightened physiological arousal (Levitt, 1980). It is closely associated with our concept of fear. An athlete who manifests anxiety before and during competition may experience an elevated level of arousal and feelings of bodily tension and apprehension (Cox, 1994, p. 101)

Anxiety has been defined as a stimulus, as a trait, as a motive and as a drive (Endler, 1983). According to Speilberger (1996) much of the conceptual ambiguity in defining the concept was due to the lack of distinction between trait anxiety (A-trait) and (A-state).

**Trait anxiety**

According to Linden Centre, UK, trait anxiety is imagined in a person’s personality and this disorder makes the person to view the world as a dangerous and threatening place. It leads to unnatural worry. These individuals tend to worry than most of the others and are inappropriately threatened by several things in the environment. In a situation where most people would react in an overly, almost debilitating, anxious manner (linden Centre, UK). It can be thought of as a world view that an individual uses when coping with stress (Cristina and Fernandez, 2011)

Trait anxiety is a motive or acquired behavioral disposition that predisposes an individual to perceive a wide range of objectivity non-dangerous circumstances as threatening and to respond to these with state anxiety reactions disproportionate in intensity to the magnitude of the objective danger.

When we talk about anxiety as enduring personality characteristics, it is labeled trait anxiety (A-trait). Trait anxiety relates to both the frequency and intensity of person’s elevation in a state. More specifically, high trait anxious persons perceive more situations
as being threatening and tend to respond to such situation with higher degrees of physiological intensity (Bird, 1986, p 79).

**State Anxiety**

State anxiety is transitory in nature; it changes or varies over time. It is commonly referred to as A-state, which is the degree of anxiety a person experiences at a given moment. Spielberger (1996) was the first anxiety theorist to distinguish between such transitory fluctuations in level of anxiety and the concept of anxiety as a stable personality variable (Bird, 1986, p 79).

State anxiety is characterized as a temporary change in a person’s emotional state due to an outside factor. For example, a person may become worried, apprehensive or tensed if he sees a large threatening animal. In this case the autonomic nervous system becomes heightened. State anxiety can be regarded as a normal psychological response, it eventually subsides and the person will then become normal. State anxiety is situational stress induced by situations in the game. The autonomic nervous system is aroused in this state and a psychological response is formed.

Spielberger has developed State- Trait Anxiety Inventory (The STAI) to evaluate these two different types of anxieties. Each form has 20 items using four point Likert Scales, with total scale scores ranging from 20 to 80 (Spielberger, Gorsuch and Lushene, 1970).

**Competitive Anxiety**

Competitive anxiety is the anxiety generated in a sport competitive situation. Thus it is a specific form of anxiety that occurs as a function of the competitive situation. As we discussed previously in regard to anxiety responses in general, competitive anxiety can also be classified as being either trait or state in nature (Bird, 1986, p 79).

**Competitive Trait Anxiety**

Based on Spielberger’s (1996) conception of trait anxiety, Martens (1997) derived the notion of competitive trait anxiety as a situation-specific or sport-specific construct. He defined Competitive trait anxiety as “a tendency to perceive competitive situations as threatening and to respond to these situations with feeling of apprehension and tension”. Therefore persons characterized by high degrees of competitive trait anxiety would be
predicted to perceive more competitive situations as compared with persons who have low levels of competitive trait anxiety (Bird, 1986, p 79-80).

**Competitive State Anxiety**

The anxiety reaction triggered by a particular competitive situation is called competitive state anxiety. It is the same as general state anxiety except that the stimulus instigating the anxiety reaction is always a sport situation (Bird.A.M, 1986, p 79-80).

**MENTAL SKILLS**

The mental skills required to achieve excellence and flow are similar across sports although the key physical skills and attributes differ from sport to sport.

Different mental skills include Self Confidence, Imagery, Concentration, Relaxation ability etc.

**Self Confidence**

Self confidence is uniquely multi dimensional based on the competitive demands on the athletes. Athletes need to believe in their abilities to execute physical skills, attain high levels of physical fitness, make correct decisions execute mental skills such as focusing attention and managing nervousness, bounce back from mistakes and overcome obstacles and setbacks, achieve mastery and personal performance standards, and win and demonstrate superiority over opponents. Athletes develop and beliefs about their abilities to (a) win (outcome self confidence), (b) perform successfully in relation to certain standards (performance self confidence), (c) self regulate to manage their thoughts and emotions as well as bounce back in demonstrating resilience (self regulatory self confidence), and (d) execute physical skills achieve fitness or training levels, and learn new skills needed to be successful in their sports (physical self confidence) (Horn 2008).

**Imagery**

The process of creating or recreating an experience in the mind is known as imagery (Vealey & Greenleaf, 2006). Researchers and athletes alike have long been interested in imagery and its effect on sport performance. Some sport psychology researchers and consultants have gone so far as hailing it the “central pillar of applied sport
psychology” (Perry & Morris, 1995, p. 339). According to Munroe, Giacobbi, Hall and Weinberg (2000), athletes can use imagery for a number of functions and in different situations. Controlling one’s emotions is an area where imagery is useful.

Watt, Spittle and Morris (2005) defined imagery use as the manner in which people imagine themselves in ways that can lead to learning and developing skills and can facilitate performance of those skills. It is normally assessed in terms of its cognitive and motivational attributes. Overcome drops in performance (i.e., slumps), or even prevent a reduction in performance following a bad goal, due to interfering emotions.

**Concentration**

It is believed that effective concentration is a vital prerequisite of athletes achieving optimal performance (Moran, 2004). Wilson, Schmid and Peper (2006) defined concentration as the ability to focus on relevant tasks cues while ignoring distractions, and is considered to be an important component of attention. Researchers have found favorable performance outcomes as a result of manipulating athletes’ attentional focus in competitive situations (Mallet & Hanrahan, 1997; Morgan, 2000). Based on the principle that different sport situations require different attentional demands, Nideffer (1976) argued that attention varies along two dimensions of focus: width (broad and narrow) and direction (internal and external). Porter (2003) suggested that an individual’s concentration skills are dependent on the individual’s motivation to maintain them. As a result, one role of an athlete is to keep his/her mind focused on the game and to disregard other distracting cues or thoughts. Concentration exercises can be used to help develop the athlete’s ability to maintain focus during a game, practice, and stops in action, thus improving overall performance.

**Relaxation Ability**

Relaxation strategies elicit the relaxation response through muscle-to-mind technique (e.g., progressive muscle relaxation) and mind-to-muscle strategies (e.g., imagery). Total relaxation strategies include diaphragmatic breathing, imagery relaxation, progressive muscle relaxation, self-directed relaxation, and music. Cued relaxation associates a cue word with deep relaxation to stimulate optimal relaxation in 3 to 5 seconds. It works with any total relaxation strategy, is easy to master, and rapidly relaxes athletes in most sport setting (Burton and Raedeke, 2008).
SIGNIFICANCE OF THE STUDY

The proposed study will help to understand present status of Indian track and field athletes so far as their psychological attributes are concerned. The obtained result can very well be compared with other athletes of various advanced countries and to compare where Indian athletes do stand so far as the psychological qualities for competition is concerned. This will provide an insight to the coaches and athletes to understand the mental and psychological determinism for the performance enhancement and incorporate suitable psychological training programme to facilitate better performance.

Success in any sphere which includes sport requires considerable determination and an ability to persist despite difficulties and setbacks. In recent years, professional sport has embraced the contribution of psychological preparation to achieving goals.