Chapter III
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PROCEDURE

In a scientific study methodology is an important aspect which should be given due consideration. Methodology can give a clear picture of how the study is conducted; the nature of sample, tools used and the statistical techniques used for analysis. In this chapter the procedure which was adopted for the selection of the subjects, selection of variables, collection of data, description of tools, procedure for administration of test items and the methods employed for statistically treatment of data are described.

SELECTION OF SUBJECTS

For the purpose of the study 125 athletes in the age group of 13-25 years, from the sport discipline of track and field, having the playing experience of 3-12 years of national level competition were selected as subjects. Junior and senior athletes of Indian camp were the subjects. The mean and SD of age of International and National junior female athletes was 16.98± 1.52. The mean and SD of age of International and National senior female athletes was 22.05± 1.9. The mean and SD of age of International and National junior male athletes was 17.93± 1.2. The mean and SD of age of International and National senior male athletes was 23.79± 3.65.

SELECTION OF TEST ITEMS AND DESCRIPTION OF TOOLS

Demographic Information Questionnaire

The first section was demographic information sheet consisting of several questions used to describe the sample’s age, gender and number of years participating in sport.

The test item selected for psychological parameter to be assessed for this study was

1. Mental Skills Questionnaire

2. Mental Toughness Questionnaire

3. State and Trait Anxiety Inventory
Special care was taken while collecting the data from the samples as these were the National level athletes and who were in preparation for higher level competition. Also those who were willing to fill the questionnaire were considered because many of them thought it may affect them and did not agree to fill the questionnaire.

**MENTAL SKILLS QUESTIONNAIRE**

(Appendix-B)

Mental Skills questionnaire measures various aspects of mental skills such as imagery ability, mental preparation, self confidence, anxiety and worry management, concentration ability and relaxation ability. The MSQ contains 24 items describing six sport-specific subscales: Imagery Ability (4 items), Mental Preparation (4), Self-Confidence (4), Anxiety and Worry Management (4), Concentration Ability (4) and Relaxation Ability (4). The athletes were required to rate how often they experienced the situations presented in each of the related questions using a 6-point Likert-type scale.

The definitions associated with the sub-scales of the MSQ-24, are as follows:

- **Imagery Ability**
  
  According to Morris, Imagery Ability represents the capacity of the individual to create images and is typically evaluated in terms of generational, sensorial and emotional qualities (Morris, et. al, 2005).

- **Mental Preparation**
  
  Mental preparation, , is the key to preparing or "unlocking" the mind to achieve success.

- **Self-Confidence**
  
  Self-confidence is commonly defined as the sureness of feeling that you are equal to the task at hand. This sureness is characterised by absolute belief in ability.

- **Anxiety and Worry Management.**
  
  Anxiety is an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure. The athletes must be able to manage anxiety and worries.
• **Concentration ability**

Not easily distracted; able to focus on the task at hand in both practice and competitive situations, even when adverse or unexpected events occur.

• **Relaxation Ability**

The ability to relax is important in effectively managing stress and anxiety. When we feel stressed, our bodies react with what is called the "fight or flight" response. Our muscles become tense, our heart and respiration rates increase, and other physiological systems become taxed. Without the ability to relax, chronic stress or anxiety can lead to burnout, anger, irritability, depression, medical problems, and more.

MENTAL TOUGHNESS QUESTIONNAIRE (Alan Goldberg, 2004)

(APPENDIX-C)

This questionnaire measures various aspects of mental toughness such as:

1. **"Reboundability"**

It is the skill of mentally bouncing back from setbacks and mistakes. Mental toughness depends on your ability to quickly leave your mistakes and failures behind you. Hanging onto your mistakes will get you into big trouble, performance-wise. Athletes, who dwell on their mistakes while the competition continues, end up making more.

2. **To deal with the ability to handle pressure.**

Without the ability to stay calm in the clutch, an athlete will always underachieve. Peak performance demands that you are relaxed once the performance begins. While a little nervousness is critical for getting "up" for a game/match/race and performing at your best, ("good nervousness"), too much nerves ("bad nervousness") will tighten your muscles and send your performance down the tubes.

3. **To deal with your concentration ability.**

In every sport, your ability to focus on what's important and block out everything else is one of the primary keys to performance excellence. Poor
concentration is the major reason why athletes choke and get stuck in performance slumps. Getting psyched out or intimidated is a direct result of concentrating on the wrong things.

4. **To deal with your level of confidence and the factors that affect confidence.**

   One characteristic of the mentally tough athlete is he/she possesses a confidence level that seems to be unshaken by setbacks and failures. Under the pressure of competition, low confidence will neutralize natural ability, hard work and talent. Similarly, high confidence will enhance an athlete's training and God-given talents, lifting their performance to the next level.

5. **To deal with motivation.**

   Motivation is the fuel that will drive your training to a successful completion and the accomplishment of your goals. Without adequate motivation athletes get stuck having "permanent potential." Without motivation you won't put in the work necessary to become a winner. Your motivation allows you to pick yourself up after a setback and keep going.

**SCORING:**

Section 1, questions 1-6 deal with "Reboundability" or your skill at mentally bouncing back from setbacks and mistakes. Mental toughness depends on your ability to quickly leave your mistakes and failures behind you. Hanging onto your mistakes will get you into big trouble, performance-wise. Athletes, who dwell on their mistakes while the competition continues, end up making more. Score 1 point for each of the following answers:

1) F  2) F  3) T  4) F  5) F  6) T

Section 2, questions 7-12 deal with the ability to handle pressure. Without the ability to stay calm in the clutch, an athlete will always underachieve. Peak performance demands that you are relaxed once the performance begins. While a little nervousness is critical for getting "up" for a game/match/race and performing at your best, ("good nervousness") too much nerves ("bad nervousness") will tighten your muscles and send your performance down the tubes. Score 1 point for each of the following answers:

7) T  8) F  9) F  10) F  11) T  12) F

Section 3, questions 13-18 deal with your concentration ability. In every sport, your ability to focus on what's important and block out everything else is one
of the primary keys to performance excellence. Poor concentration is the major reason why athletes choke and get stuck in performance slumps. Getting psyched out or intimidated is a direct result of concentrating on the wrong things. Score 1 point for each of the following answers:


Section 4, questions 19-24 deal with your level of confidence and the factors that affect confidence. One characteristic of the mentally tough athlete is he/she possesses a confidence level that seems to be unshaken by setbacks and failures. Under the pressure of competition, low confidence will neutralize natural ability, hard work and talent. Similarly, high confidence will enhance an athlete's training and God-given talents, lifting their performance to the next level. Score 1 point for each of the following answers:

19) T  20) F  21) T  22) T  23) F  24) F

Section 5, questions 25-30 deal with motivation. Motivation is the fuel that will drive your training to a successful completion and the accomplishment of your goals. Without adequate motivation athletes get stuck having "permanent potential." Without motivation you won't put in the work necessary to become a winner. Your motivation allows you to pick yourself up after a setback and keep going. Score 1 point for each of the following answers:


**Interpretation:** A score of 6 in any one of the five sections indicates a special strength in that area. A 5 indicates solid skill and 4 or less highlights that particular area as a mental weakness that needs to be addressed. For example a "6" in "reboundability" indicates consistent ability to bounce back quickly from mistakes, failures and losses. A score of "2" or "3" in section #2, handling competitive pressure, indicates the need for arousal control/relaxation training. Low scores in each section highlight problem areas for that athlete.

**Overall Score:** A score of 26-30 indicates strength in overall mental toughness. Scores of 23-25 indicates average to moderate skill in mental toughness. Scores of 22 or below mean that you need to start putting more time into the mental training area.
The tool used for measuring the state and trait anxiety (STAI) was Charles. D. Spielberger’s State and Trait Anxiety Inventory. Y1 refers to State Anxiety and Y2 refers to Trait anxiety. Form Y1, has 20 items for assessing state anxiety and 20 for trait anxiety. State anxiety items include: “I am tense; I am worried” and “I feel calm; I feel secure.” Trait anxiety items include: “I worry too much over something that really doesn’t matter” and “I am content; I am a steady person.” All items are rated on a 4-point scale (e.g., from “Not at all” to “very much so” and “Almost Never” to “Almost Always”). Higher scores indicate greater anxiety.

Internal consistency coefficients for the scale have ranged from .86 to .95; test-retest reliability coefficients have ranged from .65 to .75 over a 2-month interval (Spielberger et al., 1983). Test-retest coefficients for this measure in the present study ranged from .69 to .89. Considerable evidence attests to the construct and concurrent validity of the scale (Spielberger, 1989).

Practical Features: The STAI, which is appropriate for those who have at least a sixth grade reading level, contains four-point Likert items. The instrument is divided into two sections, each having twenty questions. The number on the scale is positively correlated to the anxiety related to in the question.

General Type: The STAI Form Y serves as an indicator of two types of anxiety, the state and trait anxiety, and measure the severity of the overall anxiety level.

**Description of test, items and scoring:** the STAI Form Y is an administered analysis of reported anxiety symptoms. The first subscale measures state anxiety, the second measures trait anxiety.

The range of scores is 20-80, the higher the score indicating greater anxiety (Spielberger et al. 1989)
ADMINISTRATION OF TESTS AND COLLECTION OF DATA

For the said project the data were collected in person by the researcher from athletes of Indian Camp of Track and Field by administering the demographic information, mental skills questionnaire, mental toughness questionnaire and state and trait anxiety inventory. The objectives and purpose of the test were made clear to the subjects so that they were aware of what they are expected to do. The athletes were assured regarding the confidentiality of the answer they give. Also it was intimated that who wish to know their score could collect the same from the investigator either in person or through email.

Statistical Techniques

The role of statistics in research is to function as the tool in designing research analyzing the data and drawing conclusions there from. In order to examine the hypothesis of the study, descriptive statistics such as mean, standard deviation and comparative statistics such as multivariate and univariate analysis of variance was conducted and the level of significance was tested at 0.05 level. Scheffé’s post hoc test was applied to find out the differences among the sub scores of that variable at different groups of male and female track and field athletes. Scheffé’s test are multiple comparison tests and range tests. Once it is determined that differences exist among the means, post hoc range tests and pair wise multiple comparisons can determine which means differ. Pair wise multiple comparisons test the difference between each pair of means, and yield a matrix where asterisks indicate significantly different group means at an alpha level of 0.05.

SPSS package (19.0 Version) was used for different statistical tools analyzed.