Chapter-III

PROCEDURE

The primary objectives of the study were to determine the stress recovery response of telic and paratelic dominant Football players to different endurance training intensities and to determine the stress recovery pattern of Football players. To attain the objectives a complete methodical research procedure was followed. This chapter includes the detail procedure in selection of the subjects, selection of variables, collection of data, description of tools, procedure for administration of test items and the methods employed for statistical treatment of data.

SELECTION OF SUBJECTS

For the purpose of present investigation the sample were drawn from Lakshmibai National Institute of Physical Education, Gwalior, India. In total, 49 male Football players, having at least one year of playing experience at Inter-University, National or State level Football tournaments, were chosen as the subjects for the study. The consecutive sampling method was implemented to draw the samples. The Paratelic Dominance Scale (PDS; Cook & Gerkovich, 1993; see appendix E) was used to classify the subjects into telic and paratelic dominant groups. All the subjects were classified into Telic dominant (n=27) and Paratelic dominant (n=22) groups on the basis of their responses to PDS i.e. the person who scored more than 15 (out of 30) was classified as paratelic dominant and person who scored less than 15 (out of 30) was classified as telic dominant. Though, the PDS was distributed among 72 Football players, only 51 of them were responded. Among those 51 questionnaires, 2 questionnaires were dropped because of incomplete responses and hence, only 49 questionnaires were considered for the study. A written consent (appendix B) was obtained from each subject prior to participation in the study.

SELECTION OF VARIABLES

On the basis of the objectives certain dependent and independent variables were formed. All the variables of the study are mentioned below in detail.
Dependent variables (DV)

The stress recovery response to the various work loads [i.e. low (60%-65%), medium (70%-75%) and high (80%-85%)] was considered to be the dependent variable for the study. The total recovery stress response of the Football players were assessed in two aspects i.e. General and Sport specific. In total, there were 19 dependent variables. All the general sub scales and sport sub scales are mentioned bellow (Serial number 1-12 are general and 13-19 are sport specific subscales).

1. General Stress: Subjects with high values describes themselves as being frequently mentally stressed, depressed, unbalanced and listless.

2. Emotional Stress: Subject with high values experience frequent irritation, aggression, anxiety and inhibition.

3. Social Stress: High values match subject with frequent arguments, fights, irritation concerning others, general upset and lack of humour.

4. Conflict/stress: High values are reached if in the preceding few days the conflicts were settled, unpleasant things had to be done, goals could not be reached and certain thoughts could not be dismissed.

5. Fatigue: Time pressure in job, training, school and life being constantly disturbed during important work, over fatigue, and lack of sleep characterise this area of stress.

6. Lack of Energy: This scale matches ineffective work behaviour like inability to concentrate and lack of energy and decision making.

7. Physical complaints: Physical indispositions and physical complaints related to the whole body are characterised by this scale.

8. Success: Success, pleasure at work and creativity during the past few days are assessed in this area.

9. Social Recovery: High values are shown by the athletes who have frequent pleasurable social contacts and change combined with relaxation and amusement.
10. **Physical Recovery:** Physical recovery, Physical wellbeing and fitness are characterised in this area.

11. **General wellbeing:** Beside frequent good moods and high wellbeing, general relaxation and contentment are also in this scale.

12. **Sleep Quality:** An absence of sleeping disorder while falling asleep and sleeping through night characterise recovery sleep.

13. **Disturbed Breaks:** This scale deals with recovery deficit, interrupted recovery and the situational response that get in the way during periods of rest. (Ex. Coach, teammates)

14. **Burnout/Emotional Exhaustion:** High scores are shown by the athlete who feel burned out and want quit the sport.

15. **Fitness/Injury:** High score signals an acute injury or vulnerable to an injury.

16. **Fitness/Being in shape:** Athletes with high score describe themselves as fit and, physically efficient and vital.

17. **Burnout/Personal accomplishment:** High scores are reached by the athletes who feel integrated in their team, communicate well with their team mates and enjoy their sport.

18. **Self Efficacy:** This scale is concerned with how convinced the athlete is that he/she has trained well and optimally prepared

19. **Self Regulation:** The use of mental skill for athletes to prepare, push, motivate and set goals for themselves is assessed by this scale.

**Independent Variables (IV)**

These are the variables which the scholar wished to manipulate and see their effect on the dependent variables. Keeping the objectives in mind, two independent variables were formed. The independent variables were Metamotivational Dominance (i.e. Telic and Paratelic) and the endurance training intensity [i.e. low (60%-65% of HR\(_{\text{Max}}\)], medium (70%-75% of HR\(_{\text{Max}}\)) and high (80%-85% of HR\(_{\text{Max}}\)) intensity]. It is worth mentioning at this context, among two independent variables, endurance
descriptors ranging from “Never” [0] to “Always” [6] indicating how often the respondent participated in various activities during the past three days/night.

Nineteen subscale scores were derived, which were further grouped into the following four major subscale groups:

- **General Stress Subscale** (General Stress, Emotional Stress, Social Stress Conflicts/Pressure, Fatigue, Lack of Energy and Physical Complaints).

- **General Recovery Activity Subscale** (Success, Social Recovery, Physical Recovery, General Well-being and Sleep Quality).

- **Sport-specific Stress Subscale** (Disturbed Breaks, Burnout/Emotional Exhaustion and Fitness/Injury).

- **Sport-specific Recovery Activity Subscale** (Fitness/Being in Shape, Personal Accomplishments, Self-efficacy and Self-regulation).

**Psychometric Properties of RESTQ-52**

Construct validity has been reported for this instrument (Kellmann & Kallus, 2001). Due to the small sample size validity will not be determined. In the present survey, acceptable Cronbach alphas (ranging from 0.58 - 0.88) were calculated for 15 of the 19 subscales. Four of the subscales yielded poor reliability scores (Lack of Energy = 0.34; Physical Complaints = -0.02; Social Recovery = 0.39; Physical Recovery = 0.42). As a result, these four subscales were removed from the data set and substituted by the two items from which they were each derived. Thereafter, the four major subscale groups were found to be reliable (General Stress major subscale group = 0.81; General Recovery Activity major subscale group = 0.68; Sport-specific Stress major subscale group = 0.67; Sport-specific Recovery Activity major subscale group = 0.86).

2. **Paratelic Dominance Scale (PDS)**

Paratelic dominance Scale (PDS, See Appendix - D) developed by Cook & Gerkovich, (1993) determines the telic and par atelic dominance of an individual. There are 30 items in the PDS, which are split into three theoretically based subscales: playfulness, spontaneous and arousal seeking. Each subscale is represented by 10 items within a true/false answer format. Responses are scored with 0 = telic option and 1 = paratelic option, resulting in a scoring range of 0-30 (0 being extremely telic
The Suunto t6c heart rate monitor was used to observe and have a control on the heart rate of the individuals, more scientifically. Suunto t6c is an innovative training tool which has proved its efficiency in measurement of training effect and rest and recovery. Based on accurate measurement of the time interval between heartbeats and the detected variation the Suunto Training Manager Software calculates information about the performance of your body as you run and displays the data in a user friendly format for analysis. The analysis engine used to analyse heart beat data and beat to beat variation has been developed by First beat Technologies Ltd. for use with the Suunto Training Manager Software. There is also available an optional PC POD which allows you to display your Heart Rate Data in Real Time on a PC screen (for instance if running on a treadmill) and an optional Foot POD which measures running speed and distance.

**EXPERIMENTAL/STATISTICAL DESIGN**

Both the group of subjects, i.e. telic dominants and paratelic dominants, were exposed to all the three different training conditions [low (60%-65%), medium (70%-75%) and high (80%-85%)]. A repeated measures design consists of testing the same individuals under all treatment conditions. In this study each subject was repeatedly exposed to all training conditions. The training was given on 3 days per week basis for 2 weeks, 3rd week was intended for testing their stress recovery responses and followed by a week of rest to nullify the carryover effect of training in one intensity to training in other intensity. The scholar was interested to analyse the effect of metamotivational dominance and different training load changes on the stress recovery pattern of Football players, this in turn took the repeated measure design into a next level. In this scenario the design becomes between-within repeated measure design, wherein there are two factors. Each subject contributes a score on the DV for every level of both factors Metamotivational Dominance (2); Intensity (3).

In this design there was no “within cell” variance, there was only a single score for each condition per subject. Variance within a condition exists only due to the fact that there were scores from different subjects.
MODIFICATION OF THE QUESTIONNAIRES

For the purpose of the collection of data Recovery Stress Questionnaire for sports (RESTQ 52), by Michael Kellman and the paratelic Dominance Scale (PDS) by Cook & Gerkovich, 1993. Both the questionnaires were developed on the English population who were native speaker of English. After going through the statements, and on the basis of the suggestion of the RDC Committee, scholar felt a need for the modification of the statements and translation of the statements to Hindi language, so that it is easily understood by the Indian population.

Football players (N=58) of Lakshmibai National University of physical Education, Gwalior, India were selected for pilot test sample. At the very beginning both the questionnaires were supplied to the Football players and they were asked to fill it up, any kind of help or clarification of doubts were totally denied by the scholar, rather subjects were asked to encircle the statements which they could not understand or found very difficult to understand. After the data were collected, the scholar went through the response of each and every subject meticulously. Certain questions, which were marked (encircled) as not understood were listed down and then those questions were sent to experts in English for their comments and further simplification of the statements. The statements which were sent to the experts for modification was accompanied by a letter in which, a brief detail of the problem and a very detailed and clear direction, on what is expected of them, was given to the experts. All the communication was done through electronic mails only. The letter to the experts is available in the appendix-A of this thesis.

Modification of the questionnaires

The main part of the overall questionnaire was originally in English. All parts with an English origin were translated to Hindi by following guidelines:

- The “difficult to understand” statements were replaced by the respective modified statements.
- The questionnaires were translated into Hindi by experts in the Hindi Language.
- The Hindi version of the questionnaires was sent to experts in English for translation of the questionnaire back into English.
• The back translated statements of the Hindi version of the questionnaire in to English was tallied with the original statements and it was found that the statements were almost similar to that of the original statements.

• Then both the questionnaires were rearranged with certain modifications in the original statements of the questionnaire. For the entire questionnaire, the Hindi statements were subscripted below each of the English statements.

• Then the questionnaires were distributed again among the subjects and they were asked to fill it up and encircle the questions/ statements which they did not understand or felt difficult to understand.

• On analyzing, the scholar found out that no questions were encircled and hence considered the questionnaire as final and appropriate and proceeded further in the research.

ADMINISTRATION OF THE QUESTIONNAIRE AND COLLECTION OF DATA

To begin with, the scholar had conducted various meetings with the Football coaches and team members, to have a general understanding about the kind of schedule they had. During the meetings there were various doubts and queries regarding the research study, which were clarified. In the beginning the scholar had faced difficulty in gathering the subjects because the training program was in odds with their preparation for All India Inter University Football Championship, owing to which the commencement of the training was delayed until January 2012.

To begin with, the subjects signed a consent form and filled up a demographic information questionnaire. After the questionnaires were finalized, the subjects' responses in paratelic Dominance Scale (PDS) were collected. On the basis of their responses the subjects were divided in to two groups namely telic and paratelic dominant groups. The basic objective of the research was to find out the stress-recovery pattern of these two groups after exposing them to an interval training module with different load intensities, thereby inducing different level of stress. As the training was basically interval training for endurance, heart rate was considered to be the best indicator of the load intensity.
To form a base line the resting heart rate (RHR) of each of the subjects indulged in training was recorded by the scholar himself, by visiting personally to the hostels of the subjects, early in the morning around 5 AM. For training, three different intensities were chosen i.e. 60-65% of maximum heart rate (Low), 70-75% of maximum heart rate (Medium), 80-85% of maximum heart rate (High). Prior to the commencement of training, target heart rate for low intensity, of each and every individual was established by using the Karvonen formula i.e. **Target Heart Rate = ((max HR – resting HR) × %Intensity) + resting HR.**

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**Fig. 5 The training circuit for the development of soccer specific endurance**

For training purpose the Hoff's dribbling track was used (Figure 5). The soccer players dribbled the ball through the cones and lifted the ball over the 30 cm high hurdles. Between point A and B the players moved backwards while controlling the ball, before turning and starting on a new round. In an average, the total distance covered is about 290m. Prior to the training the subjects were given proper warm-up. Players were instructed to increase running intensity gradually to a level that brought them to their targeted heart rate during the first repetition of the circuit, which was exclusive of the training periodization. The players carried out adequate repetitions of the circuit (different for different intensities), separated by adequate and active rest.
All the exercises prescribed, the distance covered and all the patterns remained same as that of the original Hoff's dribbling track, but the intensity and the volume were manipulated. The training was scheduled in the evening session (4:30 PM onwards). Subjects were exposed to soccer specific interval training for two weeks in continuation, on three days per week basis, for two weeks. The third week after two weeks of training was meant for the testing their stress-recovery responses. On the fourth day of the third week subjects were supplied with the modified Recovery Stress Questionnaire for Sport (RESTQ-S) and were asked to fill that up on the basis of their behavioral experiences after the cessation of the training.

In fourth week subjects were given complete rest, with an intention to reduce or nullify any effect, which might have had resulted due to the exposure of the subjects to the training itself. This complete four week procedure was followed for all the three training intensities, so the total duration of each treatment lasted a month, approx. To further nullify the contribution of the previous training in the treatment training, the base line was again formed by taking the heart rate of each of the subjects over again, following the same procedure. Before proceeding to a new training module the target heart rates were again calculated individually on the basis of their RHR and Maximum Heart rate (HR Max).

The heart rate of the subjects was monitored with the help of Sunnto t6c heart rate monitor. The monitor had a wrist display and a chest strap. The chest strap was wrapped around the chest just above the nipple of the individual and then his training intensity was set in the monitor. The monitor was programmed to give “single blip” sound when the subject running under the training intensity and “double blip” sound when running beyond the set intensity. This facilitated the ease of administration of the training. As only four monitors were available, four subjects were made to run in the circuit, at a time.
A very specific care was taken by the scholar to balance the volume intensity and interval of the training program. Among all only four subjects could be given training at a time and remaining subjects were kept engaged in a modified game of Football under strict supervision of the assistants assigned by the scholar. Well anticipated by the scholar, there had been subject dropouts during the training, so taking more than the required number of the subjects (well in advance) acted handy in this scenario. There were certain other difficulties during the training procedure, but timely consultation with the supervisors paved the way with ease.

**STATISTICAL TECHNIQUES**

To determine the effect of different training loads (Low, Moderate and high) on the stress recovery pattern of telic and paratelic Football players, a 2 (Telic vs. Paratelic metamotivational state) X 3 (Low Vs. Medium Vs. High training loads) factorial repeated measure MANOVA was conducted, with the stress recovery responses considered as the dependent variables. In addition, descriptive statistics such as Mean, Standard deviation and coefficient of variation were also calculated. The SPSS-17.0 software was used for the analysis.

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1 SPSS PASW 17.0, IBM corporation Ltd, 2011