CHAPTER III

METHODS AND PROCEDURES

Method means an orderly procedure of processes or a set form of procedure adopted in an investigation whereas methodology is defined as the science of method of arrangement. Some refer to it as the logic of procedure (Best and Kahn, 1993). This chapter deals with detailed description of the design, tools and techniques, sample selection, data collection, procedure and statistical considerations.

3.1 Design

According to Ravi Chandra (1983), "A research design is a plan according to which observations are made and data is assembled. It provides the empirical and logical basis for drawing conclusions and gaining knowledge."

Experimental designs vary in complexity and adequacy, depending on such factors as the nature of the data, the facilities for carrying out the study and especially the research sophistication and competence of the investigator.

The present study is experimental in nature. A pretest-post test experimental design has been used in the study. The effect of three remedial treatments on academic performance and learned helplessness has been studied. These remedial measures were: physical play, mental play and yoga.

Accordingly, there were three experimental groups, physical play group, mental play group and yoga therapy group, each having 15 children in it.

The dependent variables in this study are academic performance and learned helplessness and independent variable is remedial measures. All the three groups serve as comparison groups for each other. As the number of subjects available was small, researcher could not afford a control group. All the groups had boys and girls mixed in them. A pre-test was administered before the onset of experiment and post-test at the end of intervention period, which comprised measures on learned helplessness and academic performance.
3.2 Sample

A sample is a subset of population which should be representative of large population to which results would apply.

3.2.1 Size of the Sample

Apart from representativeness of the sample, another important issue is the size of the sample. The sample size depends on the nature of the study, size of the population, sampling design, parameters used, an estimated range of unreliability and estimate of the dispersion of the characteristic under investigation.

The total sample of the study comprised of 45 children with learning disability, children identified from regular school going population of 3rd, 4th & 5th classes having average or above average intelligence, manifesting traits of children with learning disability and low academic performance and having learned helplessness traits. The initial sample drawn was four hundred and sixty four. These children belonged to three schools of Ferozepur City. The identified children (N=45) were randomly allocated to three experimental treatments.

The age of the children selected as sample was eight to eleven years.

The group wise and gender wise composition of sample is given as under.

<table>
<thead>
<tr>
<th>Gender Groups</th>
<th>Girls</th>
<th>Boys</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Play</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Mental Play</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Yoga Therapy</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

3.2.2 Technique

In this study, purposive sampling was used to select children. After that, randomization was achieved via random allocation to various groups.
3.2.3 Criteria for Sample Selection

The study required a sample of learning disabled children. These children were having low academic performance and manifested learned helplessness. The following criteria were used for the identification of sample from regular schools.

- Performance in language and Mathematics below a level of mean -1S.D.
- Above average intelligence
- A discrepancy in language and Mathematics performance of one Z or more
- Discrepancy of more than 15 points on Verbal Quotient and Performance Quotient on Wechsler Intelligence Scale for Children (WISC)
- No visual and / or hearing impairment

3.2.4 Procedure of Sample Selection

The sample was selected using the following procedure.
Marks of Language & Mathematics of 464 children of 3rd, 4th and 5th classes over three tests/exams from three schools of Ferozepur city were noted. Children performing below Mean -1S.D. in Language and Mathematics were selected.

Marks of 464 children in English and Maths over 3 tests, exams and/or in term tests, were collected from three schools of Ferozepur city. These students were from 3rd and 4th and 5th classes. Mean and S.D. of 3rd, 4th and 5th classes in English and Maths were found out separately of three schools. After that, Mean-1S.D was calculated for each school & each class in the subject of English and Maths. Children falling below Mean-I.S.D were retained in each subject, class and school. 148 children were retained here. Further, children who had difference in English and Maths performance of the order of one Z or more, were retained. These children were 51 in number. They were subjected to Wechsler Intelligence Scale for Children Malin (1991), for assessing intelligence and for identifying the learning disability using the criterion of discrepancy in verbal and non-verbal areas. After applying this scale on these children, 45 children were selected for intervention on the basis of these criteria:

a) average or above average intelligence.
b) discrepancy of more than 10 points in verbal and performance sections of intelligence scale,
c) difference of more than 40% in performance in any two areas of WISC whether verbal or non-verbal, pointing towards discrepancy.

These 45 children formed sample and were classified for intervention in three groups namely - physical play group, mental play group and yoga therapy group each having 15 children in it. Treatments were randomly allotted to groups.

3.3 Tools and Techniques

Reliability of any piece of research depends on the tools/tests/scales and techniques used in it. If the tools are not dependable, the findings of research also can't be relied upon. The following tests/scales were employed in the present study.

3.3.1 Academic Performance

Marks of 464 children of 3rd, 4th and 5th classes of three schools of Ferozepur city were noted. These marks were of English and Maths over 3 evaluations - 2 terminals and 1 annual examination.

3.3.2 Wechsler Intelligence Scale for Children (WISC) (Malin, 1991)

This scale was used for identifying the learning disabled using discrepancy criterion. This tool was also used for measuring intelligence. The original WISC is an individual intelligence scale for children from the ages of 5 to 15.11 years having 12 areas i.e. verbal & performance. The Indian adaptation covers only ten areas for children aged from 6 to 15.11 years. The areas of original scale are divided into verbal and performance groups as follows:

3.3.2.1 Verbal: This section comprises areas of Information, Comprehension, Arithmetic, Similarities, Vocabulary and Digit span.

3.3.2.2 Performance: Section of performance comprises of Picture completion, Picture arrangement, Block design, Object assembly, Coding and Mazes. The Indian adaptation omits the Picture Arrangement (s) of the Performance Scale as it proved culturally biased both in content and form.
These sub-tests may be administered in any convenient order. Only ten tests—five from each group are required for complete scoring. In case, more or fewer tests are taken for an appropriate score, pro-rating is called for. For safe validity, however, not less than four sub-tests of each group should be taken. The present study used all eleven areas.

The points or raw scores of each test are to be totalled and then converted on the principle of the "Deviation I.Q" into derived scores.

### 3.3.2.3 Reliability and Validity

Indian adaptation of WISC established its reliability with the test-retest method and yielded a Pearson's Product Moment Correlation coefficient of .91 for the full scale IQ results.

Indian adaptation, however, has established concurrent as well as congruent validity, value of both being 0.63.

### 3.3.3 Scale for Learned Helplessness

Details are given in chapter IV. Raw form of this scale is presented in appendix I and final form in appendix II. This scale was developed by the researcher. Content validity was given by the experts. Concurrent validity was established by coefficient of correlation with scores on achievement motivation of Deo Mohan (1985). Split-half and test-retest reliability were also found.

### 3.3.4 Observation

Observation was used to confirm the characteristics of children with learning disability in classrooms. Observations of three groups i.e. Physical Play Group, Mental Play Group and Yoga Therapy Group were made during remediation. The mistakes of children were explained to them. Observation showed interest among children.

### 3.4 Procedure of Data Collection

The present study was conducted in three stages: pre-test, intervention and post-test.
3.4.1 Pre-test Stage

Performance in academics and performance on learned helplessness scale served as pre-test. Pre-test was used for the purpose of assessing the baseline behaviour of these children.

Intervention comprising of 30 sessions was given to all the three groups. It was started in the mid of January and continued to complete 30 sessions. Each session was of 35-40 minutes duration. Before intervention commenced, subjects were requested to abstain from absenting themselves, otherwise they will miss some new and interesting activities. Each child in a group was subjected to a session of 35-40 minutes for treatment daily. Before starting intervention, the researcher explained the purpose of carrying on these activities, the benefits they will gain from yoga therapy and play activities. Some examples were given to children, so that they could participate in these activities in an active manner. All the three groups took much interest in their respective activities.

These three groups were given treatment of different types. One group was administered physical play activities, second group was administered mental play activities & third group was administered yoga therapy sessions. These techniques were used with an objective of improving academic performance and reducing learned helplessness among learning disabled children. The treatments started from mid of January continued till end of February excluding holidays.

3.4.2 Treatment:

3.4.2.1 Yoga Therapy (Group 1)

In yoga therapy, salutation to the sun, forward bending poses, backward bending poses, balancing poses and different types of asanas like bhujangasana, padmasana, shavasana, sidhasana, vajarasana, gorakhasana, tadasana, ardh chandrasana etc. were performed by each child for 40-45 minutes daily. Every child got same asanas and same poses for a month.

Learning disabled children took lot of interest in doing yoga. Children outside this selected group of 15 learning disabled children were also ready to take this therapy under the guidance of research scholar. Marks for doing all the asanas correctly were
allocated to each child daily. ‘1’ mark was given for ‘1’ asana. Data is presented in graphical form in appendix no. VII.

3.4.2.2 Physical Play Activities (Group 2)

Following activities were included in this category:

a. **Object Balance**

   Balance is the maintenance of a position in space and a relationship to gravity. Balance is the ability to maintain equilibrium while engaging in various locomotor or non-locomotor activities. Children were given instructions that objects can be balanced when the body is either stationary or moving. They practiced following items:
   - Walk forward, head to toe, with a spoon on the head for a distance of ten feet.
   - Walk backward, heel to toe, with a spoon on the head for a distance of seven feet.
   - Walk sideward, using a crossover step, with a spoon on the head for a distance of ten feet.
   - Walk forward, head to toe, with a small pot on the head for a distance of ten feet.
   - Walk backward, heel to toe, with a small pot on the head for a distance of seven feet.
   - Walk sideward, using a crossover step, with a small pot on the head for a distance of ten feet.

   When the object fell, the child was given instructions to do this activity again. The time taken by each child for this activity was noted for everybody. Also, marks were given to each student daily. Time and marks were recorded on papers. After practice, students took less time to perform this activity, their accuracy and hence marks improved.

b. **Throwing and Hitting**

   Individuals who have problems with motor control or who display immature development may have difficulty in throwing. Disabled children may have difficulty with
the manipulative skills and therefore, have problems grasping an object to throw. They may also have difficulty in releasing an object and fail to understand the force necessary to move an object at a particular distance. The child must be able to grasp and release objects at will before learning how to throw effectively.

Hitting means applying a force to an object by means of the hand or an implement. A ball was used to hit at a target by each student in the group. Time and mistakes were noted of each child daily. Following instructions were given to children for this activity:

- While standing, throw a ball with both hands from an over head position straight to a receiver.
- While standing, throw a ball with the preferred hand to a receiver.
- With the throwing arm and opposite foot forward, throw a ball to a receiver.

c. **One Leg Hopping**

Hopping occurs when the body is lifted into the air by one foot and returns to the ground on the same foot at a different point. Before children are capable of properly coordinating a hop on one foot, they must be able to perform a one-foot static or stationary balance. As with many other locomotor patterns, hopping may be very difficult for some children who lack motor control or who are in some way disabled. Some children can effectively hop on one foot but not on the other. Hopping activities were:

- Hop once on the left foot, then once on the right.
- Hop twice on the left foot, then twice on the right foot.
- Hop forward on the left foot ten times, then on the right foot ten times.
- Hop backward on the left foot three times, then on the right foot three times.
- Hop once on the left foot and twice on the right foot.
- Hop twice on the left foot and once on the right foot.

d. **Skipping**

Skipping is considered one of the most difficult basic motor skill. Proper execution requires the performer to step-hop alternately on each foot in a smooth and rhythmic manner. For children with motor deficits, the acquisition of skipping skills may
be impossible. Because skipping is such a basic part of so many activities conducted by the child, inability to perform it may be a real source of embarrassment. That is why this was chosen as one of activities. Skipping directions were:

- Step-hop with the left foot, then with the right foot.
- Step-hop forward twice with the left foot, then with the right foot.

### e. Jumping Activities

The skill of jumping stems directly from locomotor patterns of walking and running. A child first learns to jump a distance, from a height and then learns to jump over an obstacle. Individuals who have a physical, emotional or mental disability may find jumping difficult. Children underwent following activities:

- Jump with both feet together, leaving the ground and landing with the body in control.
- Jump with both feet together, swinging the arms, bending the knees, propelling the body over a line or very low obstacle and landing with both feet together, still under control.
- Jump over a three-inch space with both feet, then six-inch space, then nine-inch space and a twelve-inch space.
- Jump with both feet over a space equal to the length of the child’s lower leg. (It should be noted that jumping any farther than this is considered in the realm of motor fitness, not basic motor patterns.)
- Jump over a three-inch obstacle with both feet, then a six-inch obstacle and a nine-inch obstacle.
- Jump with both feet over an obstacle equal to the height of the knee. (It should be noted that jumping higher than this is considered in the realm of motor fitness, not basic motor patterns.)

### f. Race

Race or Running is a direct outgrowth of the walking pattern. The difference between walking and running is that, in running, at no time are both feet are in contact with the ground. The faster the run, the more the body is inclined forward and the more
one runs on the balls of the feet. Dynamic balance and posture control are also major prerequisites, which allow the body segments to be maintained or kept in their proper alignment throughout the entire running pattern.

Running instructions were:

- Run forward fast with the body inclined forward and the weight on the balls of the feet.
- Run fast through a zigzag obstacle course.

This entire spectrum of activities took around 40-45 minutes.

3.4.2.3 Mental Play Activities (Group 3)

Four types of activities were included in this category. Total 40 minutes were given daily for mental play activities during each of 30 sessions.

a. **Making different words from a big word**

   In this activity, three big words were given to each child in this group to make maximum meaningful words, they could in 10 minutes daily for a month, e.g. Extraordinary, Co-operation. List of large words are shown in appendix III.

b. **Anagrams**

   An anagram is a word or phrase whose constituent parts have been rearranged resulting in another word.

   Subjects are presented with an anagram and are required to think aloud as they rearrange it to make another meaningful word/s.

   Anagrams are different words, made from same set of letters. 10 minutes were given daily in this activity during each of 30 sessions.

   For example: File=Life
   
   Post=Spot

   5 words were given to each child daily by rotation. There could be more than one word from one given word. List of words given as and for anagrams are presented in appendix IV.
c. Jumbled words

In this activity, 5 jumbled words were given to each child daily, in which, letters were jumbled. The children had to make meaningful words from these jumbled words. 10 minutes were fixed for this activity e.g.

For example:  
Rbian –brain
Hsuodlre- shoulder

The provision of feedback to children and letting them know meanings was made within the time frame. List of words used are presented in appendix V.

d. Making words from boxes

In this activity also, 10 minutes were given to each child daily. A box containing letters was given to the child by rotation. The children had the option of making words from boxes vertically as well as horizontally.

For example:

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S E E S S E L W O R L D T P
T T C C C H O W P A T I I T
H A N G I N G G A R D E N S
A M A R I N E D R I V E U N
I T P Q R S J U H U M U H U
E L E P H A N T A C A V E S
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In these four mental play activities, one mark was given to one right answer i.e. making right word. A list of words used are presented in appendix VI.

3.4.3 Post Test

Learned helplessness scale was applied at the end of intervention after the gap of 2-3 days. Academic performance of learning disabled children in March (Annual) examination was also collected from schools to serve as post test. The post tests were conducted for the purpose of observing the improvement in academic performance by intervention and also to examine whether learned helplessness reduced by intervention among these 45 children.
3.5 Statistical Techniques

In the present study, different statistical techniques were employed to analyze the data keeping in view the objectives and hypotheses. For reliability and validity of the learned helplessness scale, product moment method of correlation was used.

Descriptive statistics like mean, standard deviation, skewness and kurtosis were used to describe data. In order to study the effect of remedial techniques, the analysis of variance (ANOVA) was employed at both pre-test, post-test stages and gain scores for learned helplessness and academic performance.