

CHAPTER III

RESEARCH DESIGN PLAN AND PROCEDURE

As per the objectives of the study, the investigator had to plan the entire process of research work in terms of research design suited to present study ; and to accomplish the purpose of the study, the design has been systematically presented and explained in this chapter, which is given as follows :

- i) Sample
- ii) Variables
- iii) Tools and Techniques
- iv) Collection of Data
- v) Statistical Procedure.

i) SAMPLE

A sample is a miniature picture of the entire group or aggregate from which it has been taken. A sample, in other words, is a small representation of a large whole, Mouly (1964) gives the following advantages of sampling :

“The layman may think that taking the sample from the total population may not get valid results but in actual fact sampling does provide the basis for reliable and valid inferences provided the sampling is proper and adequate, that is, not only sufficiently representative but also of sufficiently large size in order to ensure stability of the generalization made as result of the study.”

In the present study, the investigator used stratified random sampling technique and simple random sampling technique for selecting various groups of samples.

Population for the present study systematically consisted of all 939 sportswomen who participated in the All-India Inter University (AIIU) 1993-94 competition in team games, i.e. Cricket, Basket ball, Hockey and Individual games i.e. Judo, Gymnastics, Athletics.

Stratified random sample and simple random sample technique had been

followed. Two startas team and individual, where Team has three categories Hockey, Cricket and Basketball and Individual had three categories Judo, Gymnastic and Athletic. Details of the total population is given in Table NO. 3.1.

Out of total population 70 winners and 70 defeaters from each events viz. Ho., Cr., B.B., Ju., Gy., and Ath. were randomly selected detailed are given in Table No. 3.1. Following Simple Random Sampling technique leading to a total sample of 840 (420 win. and 420 def.) players which composed of 89.14% of the population.

Table No.3.1
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Gamewise Break up of Sportswomen

Game	Comp.	Held at	Date	Total Population	Win.	Def.	Selected Sample	Win.	Def.
<u>Team Events</u>									
Cricket	AIJU	Delhi	20-11-93	144	73	71	140	70	70
Hockey	AIJU	Ranchi	06-01-94	180	84	96	140	70	70
Basketball	AIJU	Patiala	15-11-93	164	70	94	140	70	70
<u>Individual Events</u>									
Judo	AIJU	Gwalior	07-02-94	142	70	72	140	70	70
Gymnastics	AIJU	K.U.K.	09-12-94	141	70	71	140	70	70
Athletics	AIJU	Kottayam	02-03-94	168	78	90	140	70	70
Total				939	445	494	840	420	420

ii) VARIABLES

Keeping in view the educational importance and performance in sports, following variables were selected for this study :

1. Aggression
2. Adjustment

- (a) Home adjustment
- (b) Health adjustment
- (c) Social adjustment
- (d) Emotional adjustment
- (e) Educational adjustment

3. Performance

- (a) Winners
- (b) Defeaters

iii) TOOLS AND TECHNIQUES

“The selection of suitable instrument or tool is of vital importance for successful research. Different tools are suitable for collecting various purposes. For any research one or more of the tools in combination can be used” Sukhia (1977).

The selection of tools was governed by the consideration of their (i) availability (ii) suitability to the sample (iii) reliability and validity. Keeping in view these considerations, following tests were used for data collection :

(A) “*Aggression Questionnaire*” by Dr. G.C. Pati in English version (Appendix A) and in Hindi version (Appendix B) have been used for measuring aggressive behaviour.

(B) “*Adjustment Inventory for College Students*” (AICS) by Dr. A.K.P. Singh and Dr. R.P.Singh in English version (Appendix C) and in Hindi version (Appendix D) have been used to measure home, health, social, emotional and educational adjustment.

(A) AGGRESSION TEST SCALE

Dr. G.C. Pati's Aggression questionnaire consists of 16 questions. Each question describes a situation, where some form of aggression or deviant behaviour has occurred and also some persons who have responded to that in low to mildly aggressive, moderately aggressive and highly aggressive manners. The subject is requested to indicate the best appropriate response out of the given three responses

elicited by the situation from persons described in the question. In this way, the questionnaire describes 16 different situations relating to family, peers, certain outside persons, antisocial characters, police and court.

Result of the pilot study indicated, and several psychologists opined that all 16 questions were good enough as aggression questions. A.Q. was supplied to the subjects. They were given all the instructions as laid down in the test manual to fill up their response.

(a) **Reliability**

Reliability coefficient of the aggression questionnaire was calculated by "split-half method" of the 16 questions. 8 odd and 3 even questions supplied the halves.

The correlation for a group of 225 subjects was calculated, which showed a good measure of reliability. The result is as follows :—

Questionnaire	N	Split-halves	'r' for split-half	'r' for the whole questionnaire
Aggression questionnaire	225	odd-even	.55	.71

(ii) **Validity**

To find out validity coefficient of the aggression questionnaire, it was compared with "statements in questionnaire of aggression" borrowed from Murray.

The group of subjects upon whom this validity study was made, comprised of psychiatrists, clinical psychologists, and students of psychiatry and clinical psychology of National Institute of Mental Health and Neuro-Sciences, Bangalore. Subjects were administered both questionnaires successively. They answered the questions of the aggression questionnaire in the manner described earlier. They appraised or scaled the "statements of n-aggression". On a six point scale, as these applied to them. The scale was adapted from Murray as given in the "psychological insight test". The result is given below

Questionnaire Pearsonian 'r'	Comparable questionnaire	'N'	Group	
Aggression questionnaire	"Statements in questionnaire of n-aggression"	19	Psychiatrists & clinical psychologists	.323

The validity coefficients is significant above one percent level.

(iii) Scoring

The questions admit of three possible replies indicating low to mild aggressive, moderate aggressive and high aggressive trends. These may be easily scored as 1, 2 and 3. The distances between 1 and 2, and 2 and 3 are mathematically equal. This equality should be expected in the distances between low to mildly aggressive and moderately aggressive, and between moderately aggressive and highly aggressive trends, for these to be scored as 1, 2 and 3. But, the idea of equal distances between them may not be tenable. The theoretical propositions indicates a greater distance between moderate aggression and high aggression than between low-mild aggression and moderate aggression. Therefore, scoring the alternatives as 1, 2 and 3 is not used. And, "Sigma deviate weighting method" as formulated by Likert is used. By this method, a scoring schedule is prepared to score individual performance.

(B) ADJUSTMENT TEST SCALE

Sinha & Singh's AICS has been prepared in hindi as well as in English and it has 102 items to measure five dimensions of adjustment viz., Home16, Health15, Social19, Emotional31, and educational21 and total adjustment. Item analysis was done by calculating bi-serial correlation of each item (i) with the total score of the inventory and (ii) with the area total scores. The use of small a, b, c, d, e and Deonagri letters क, ख, ग, घ, च corresponding to the five measures of adjustment, as well as the numbers, enable the test user to discover readily the particular question relating to each measure. The total score may be taken to indicate the general adjustment status.

- a. (क) Home adjustments : Low scores indicates satisfactory adjustment. Individual scoring high tend to be unsatisfactory adjusted towards their home surroundings.
- b. (ख) Health adjustment : Low scores indicate satisfactory health adjustment and high scores unsatisfactory adjustment.
- c. (ग) Social adjustment : Individuals scoring high are submissive and retiring. Low scores indicate aggressive behaviour.
- d. (घ) Emotional adjustment : High score indicate unstable emotion. Individuals with low scores tend to be emotionally stable.
- e. (च) Educational adjustment : Individuals scoring high are poorly adjusted toward their curricular and cocurricular programmes. Persons with low scores are interested in the educational activities.

AICS questionnaire was supplied to the subjects. They were given all the instructions as laid down in the test manual to fill up their response.

(i) **Reliability**

Coefficient of reliability was determined by (i) split-half method (ii) Hoyt's analysis of variance method (iii) K.R. Formula 20. Test retest reliability was also determined by administering the test after a period of 3 weeks on 228 students which is 10 percent of the total sample. The following table gives the reliability coefficients determined by different methods.

Table 3.2

Reliability coefficients of the inventory by using different methods

Reliability Coefficients						
Method Used	Home a(क)	Health b(ख)	Social c(ग)	Emotional d(घ)	Educational e(च)	Total
Split Half	.87	.83	.96	.95	.97	0.94
Test-retest	.85	.82	.95	.94	.96	0.93
Hoyt's method	.86	.85	.95	.95	.94	0.94
K-R Formula-20	.84	.82	.92	.94	.93	0.92

(ii) **Validity**

In item analysis validity coefficients were determined for each item by biserial correlation method and only such items were retained which yielded biserial correlation which both the criteria (i) total score and (ii) area score, significant of .001 level.

Intercorrelation among the five areas of the inventory were calculated. The correlation matrix is presented in the Table.

Table 3.3
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Correlation Matrix of the Five Areas

Areas	a(क)	b(ख)	c(ग)	d(घ)	e(च)
a(क) Home	—	.22	.16	.26	.25
b(ख) Health	.22	—	.14	.25	.22
c(ग) Social	.16	.14	—	.21	.20
d(घ) Emotional	.26	.25	.21	—	.32
e(च) Educational	.25	.22	.20	.32	—

Table reveals that correlation among various areas vary from 0.14 to 0.32 with an average of 0.22. Thurston's centroid method of factor analysis was employed and after the extractions of second centroid factor from the first residual correlation matrix, it was amply proved that there exists inter-independence among the five areas of inventory.

The inventory was also validated by correlating inventory-scores with Hostel Superintendents ratings. This was studied on a sample of 120 students living in different hostels of Patna University. The hostel superintendents rated the students on 5 point scale, mainly, Excellent, Good, Average, Unsatisfactory and Very Unsatisfactory in respect of their adjustment. Product moment coefficient of correlation between the inventory scores and superintendents ratings was obtained to be 0.58.

(iii) Scoring

The subjects can be classified into five categories in accordance with the raw scores obtained by them on the inventory. The five different categories of adjustment are : 'A' which stands for excellent, 'B' which stands for good, 'C' which stands for average, 'D' which stands for unsatisfactory, and 'E' which stands for very unsatisfactory adjustment. This categorisation was done by dividing the base line of the normal curve into five equal units, each unit being equal to 1.2.

iv) COLLECTION OF DATA

“Scientific problems can be resolved only on the basis of data, available or collected and a major responsibility of the scientist is to set up a research design capable of providing the data necessary for the solution of his problem” (Mouly 1964). Factual material or data unknown or untapped so far is essential in every study. They can be obtained from many sources, direct or indirect. It is necessary to adopt or evolve a systematic procedure to collect essential facts.

In order to collect the requisite data for any research problem in social sciences the investigator has to sample the population concerned since it is not possible to sample the entire population and to decide appropriate tools to measure the attributes concerned and finally to administer tools on the sample selected. The major task before the investigator in the present study was to administer the tools on the subjects in as homely a manner as possible with a view to get objective and true responses, therefore investigator first establishes personal contact with sports women and achieved a certain degree of rapport with them.

ADMINISTRATION OF TESTS

After selecting the sample of the study and before conducting the tests, the purpose of testing and technique to be employed in the study of the subjects and all possible doubts were cleared. They were assured that the information obtained through the scale would be kept confidential. It would not harm them in any case.

Therefore, they were urged to feel free and reply every question frankly and sincerely. The subjects showed enthusiasm and promise to give whole hearted co-operation to the research scholar for this venture. In this study questionnaire methods were used. Both the questionnaires scales were administered to all subjects under the direct supervision of the investigator. The questionnaires were administered in accordance with the instructions laid down in the manual. While administering the questionnaires, the subjects were assembled at their places of competition. Both tests were administered one after the other separately with the help of coaches and team managers of the respective teams.

v) STATISTICAL PROCEDURES

Keeping in view, the objectives as well as design of the study, the statistical techniques of mean, standard deviation analysis of variance were used to analyse the data as discussed in the next chapter.