

CHAPTER III

METHODOLOGY

To verify hypothesis, the next sequential step is methodology. To conduct the study, the systematic and scientific method is to be used to find out the results. To solve the problem, following steps have been taken to conduct the study.

3.1 SAMPLE :-

“A random sample is one in which each element in the universe has an equal opportunity of being selected.” (Henry, J. Montaye, 1973)

Sampling is taking any portion of a population or universe as representative of that population or universe. It is rather taking a portion of population and considering it to be the representative.

Random sampling is the method of drawing a portion (sample) of a population or a universe so that all possible samples of fixed size “n” have the same probability of being selected. (W. Feller, 1957)

Definitions indicate that a sample taken for the study may be selected from any place of the given area, therefore, for the above mentioned study, random sampling method has been selected.

For the present study, 600 tribal adolescents (300 boys and 300 girls) residing in the State of Chhattisgarh, ranging from age group 12 to 17 years were selected. From each age group i.e. 12 years, 13 years, 14 years, 15 years, 16 years and 17 years respectively, 50 tribal boys and 50 tribal girls residing in the State of Chhattisgarh were selected randomly.

3.2 RESEARCH DESIGN

The scientific quality of the research findings depends on research design. It is also known as a blue print of research engineer which tells him what to do and what not to do while chalking out the steps to be taken in sequential manner for collecting, analysing the empirical data for the sake of verification of his research hypothesis.

Comparative research, simply put, is the act of comparing two or more things with a view to discovering something about one or all of the things being compared. This technique often utilizes multiple disciplines in one study. When it comes to method, the majority agreement is that there is no methodology peculiar to comparative research. (Przeworski, A. et al., 1970)

In the present study effect of perceptual and reasoning ability on motor coordinative abilities was ascertained. Hence to compare motor coordinative ability, hand eye coordination, depth perception and reasoning ability between pre defined age groups, comparative research design is employed. Similarly, to assess the effect of grades of depth perception, hand eye coordination and reasoning ability upon motor coordinative ability of selected tribal adolescents, comparative research design has been employed.

To find out the effect of two variables upon one dependent variable, factorial group design was adopted. Hence, in the present study patched up research design was used.

3.3 NATURE OF VARIABLES :

Motor Coordinative Abilities :

Coordination is the quality, which enables the person to integrate all the powers, and capacities he has into the effective doing of an act. It is the ability to move and organize oneself around his/her own physical body. Coordinative abilities differ from technical skills in that they exist as prerequisites for subsequent motor actions.

Seven coordinative abilities can be differentiated by their characteristics, and while all seven are fundamental as a whole they may appear in quite different values in each person. These abilities are: Cominatory ability, orientation, differential ability, agility, balance, reactive ability, adaptive ability, rhythmic sense and balance.

Out of these seven coordinative abilities agility has been chosen as motor coordinative ability in the present study and it acted as dependent variable in the present study.

In the present study motor learning / educability is used as independent as well as dependent variable since the design of the study is a mixed one.

Depth Perception

Depth perception refers to the ability to see and understand the 3-D spatial relationship and relative distance between objects and oneself. Its primary value is to make hand-eye coordination efficient and provide for safe movement through space. Infants are born with an immature vision system that gradually develops to take in better and more precise visual

information while the brain learns to look for cues gleaned from experience.

Since the research design is patched up in nature, depth perception is used as dependent as well as independent variable in the present study.

Hand Eye Coordination

Hand-eye coordination is the ability of the vision system to coordinate the information received through the eyes to control, guide, and direct the hands in the accomplishment of a given task, such as handwriting or catching a ball. Hand-eye coordination uses the eyes to direct attention and the hands to execute a task.

Since the research design is patched up in nature, hand eye coordination is used as dependent as well as independent variable in the present study.

Reasoning Ability

Reasoning refers to the process of drawing conclusions or inferences from information. Reasoning always requires going beyond the information that is given (Bruner, 1957).

In the present study reasoning ability is used as independent as well as dependent variable since the design of the study is a mixed one.

Tribal Population

The word “tribe” means a unit of social organization, especially among primitive people consisting of a group of people claiming a common ancestry usually sharing a common culture, they speak

language of their own, they have succeeded in preserving their social custom, artistic traditions and religious beliefs to a large extent. Tribals in general have not been able to get rid of their socio-economic backwardness in most part of India. Tribes are privileged as per the government policies. In the present study, boys and girls of selected age group acted as independent variable in the present study.

3.4 TOOLS :-

To conduct the study following tools were used :-

(A) Motor Coordinative Ability

To assess agility of the tribal adolescents Cooper's JCR test (1963) was used. This is the modified, well-known JCR test for school boys and girls. The agility of the selected subjects was assessed by shuttle run item of this test. This test is highly reliable and valid. The motor coordinative ability scores of subjects was ascertained by their shuttle run timings, hence lower the timing, higher the motor coordinative ability formula is used.

(B) Mixed Type Group Test of Intelligence (MGTI)

To measure reasoning ability, Mehrotra's (1984) Mixed Type Group Test of Intelligence (MGTI) was used. This test has two parts i.e. verbal and non verbal intelligence test. Both the parts have 50 statements. The test-retest reliability of the verbal test is 0.89, for non verbal test it is 0.82 while full test reliability coefficient is 0.86. The validity verbal test is .86 and for non verbal test it is 0.72 while the overall validity of the test is 0.87 when it was correlated with teacher's ratings. To fulfil the objectives of the

present study only non-verbal part of this test was scored to assess reasoning ability of the selected subjects. Higher the score, higher the reasoning ability is the notion of this test.

(C) Depth Perception

Depth perception of the selected subjects was recorded by a specially designed depth perception apparatus. This device has a rectangular wooden box which is illuminated by lamp. It consist of three horizontal rod in which two rods are fixed and the middle rod is movable which moves forward and backward of the fixed rod. In this experiment the subject has to adjust the rods in such a way that they align behind each other. The error in deviation was recorded through a meter located in LCD panel. This experiment is conducted three times i.e. with left eye, right eye and both eyes. In this way we get mono ocular and binocular depth perception. Scores nearer to 0 are considered as superior depth perception i.e. lower the depth perception scores, the better depth perception is the notion used in the depth perception.

(D) Hand-Eye Coordination :

Hand eye coordination of the subjects was assessed by **mirror drawing test**. In this test, error while drawing is recorded and fewer errors indicate good hand eye coordination.

3.5 PROCEDURE:

To collect the data, following procedural steps were taken

- Prior permission was obtained from school authorities to conducted test. They were assured that the data will be strictly confidential and will only be used for research purpose.
- First of all, selected subjects were subjected to Cooper's JCR test item shuttle run.
- Similarly depth perception of each subject was measured by depth perception apparatus.
- Mirror drawing test was done by each subject as per their availability.
- Lastly, **Mehrotra's (1984)** Mixed Type Group Test of Intelligence (MGTI) was given to each subjects.
- Timings on shuttle run were recorded for each subjects. Similarly reading on depth perception apparatus panel and errors in mirror drawing test was recorded and tabulated.
- Response on MGTI (non-verbal part) by the subjects was calculated as per the instructions given by the author and after scoring it was tabulated into their respective groups.
- When the data were tabulated according to pre-defined groups, statistical procedures as mentioned in caption "Design" was used to verify the framed hypotheses.