CHAPTER III

METHODOLOGY

General Context

Research methodology involves the systematic procedures by which the researcher starts from the initial identification of the problem to final conclusion. The role of methodology is to carry on the research work in a scientific and valid manner.

In this chapter, the procedures followed in the selection of subjects, selection of variables, orientation of the subjects, collection of data, administration of tests, experimental design, and statistical procedure adopted to analyze the data are presented.

Orientation of the Subjects

Prior to the administration of the test, the purpose of this study and the test procedure were explained in detail to the subjects to ensure proper understanding, and effective co-operation and to obtain reliable data for the tests.

Methods Used

The Investigator has adopted the survey method of research to study the Awareness of Health and Physical Fitness, Status of Physical Fitness, and Academic Achievement for higher secondary school students. Since the problem which is selected for the present study is concerned with
“survey type”, the Investigator has adopted the survey method which suggests the gathering of evidence related to current conditions. Survey research is a method for collecting and analyzing data that were obtained from larger number of respondents of a specific population. The data are collected through highly structured questionnaire and interpretation. The survey is often done also by opinions, attitudes, and suggestion. And other such data can be obtained like that. The survey method gathers information and facts from a larger number of subjects. To know their Awareness of Physical Fitness, assumption score was taken from all students. Afterwards physical tests were conducted for all students to know their Status of Physical Fitness. Global School-based Student Health Survey (GSHS) questionnaire and the marks of the previous year examinations were used then to know their Awareness of Health and Academic Achievement.

**Awareness and Status of Physical Fitness Tests**

**Speed (50 yards dash)**

Before the commencement of this test, the subjects were asked their assumed score in timings for 50 yards dash. A 200 mts track was used for this test. Each subject ran alone and their time was recorded in seconds.

**Strength (Pull-up for Boys)**

After explaining the pull-ups test, the subjects were asked their assumed abilities in number of pull-ups, afterwards they were allowed to do the test in bars. A metal bar, that is high enough, was used so that the
subjects' feet would not touch the ground. Each subject used an overhand grip, hanging fully extended, and pulled himself up until his chin cleared the bar. He would then lower himself until his arms were fully extended once again. No other body motion was allowed. The number of times he cleared the bar within one minute is counted as his score.

**Strength (Modified Pull-up for Girls)**

The same assumed method, which was used in pull-ups for boys, was used for girls. The same metal bar was used for girls, but the height was reduced so that the subjects' feet would touch the ground. Each subject used an overhand grip, slanting their body, and pulled herself up until her chin touched the bar. She would then lower herself until her arms were fully extended once again. No other body motion was allowed. Her scores amounted to the total number of times she could get her chin touched the bar within one minute.

**Endurance (600 Yards Run/Walk)**

The subjects were asked their abilities in assumed timings for 600 yards run, afterwards the subjects ran for test. A 200 mts track was used for this test. A starting line and a finishing line were marked and shown to each subject. Each subject covered 600 yards as the best either by walking or running. Score was recorded in timings.
**Flexibility (Sit and Reach Box)**

The subjects were allowed to check the apparatus before the test, and they told the researcher their assumed reach in centimetres for Flexibility test. The following procedures for Sit and Reach Test are referenced. The subjects removed their shoes and sat in long sitting position at the test apparatus. Both legs were fully extended with the foot flat against the face of the box. The arms were extended forward over the measuring scale with hands placed one on top of the table. With palms down, the subjects reached directly forward (keeping the back straight and the head up) with both hands along the scale four times and held the position for at least one second at the fourth reach. The subjects might not allow to bend knees and to move as the body moved forward though it is necessary. But the sole of the foot should remain inside the box. The number of centimetres reached to the maximum is recorded.

**Body Mass Index (BMI)**

BMI chart was shown to all students before the test, because many students do not know their assumption status in Body Mass Index. Assumption score was received from the subjects and tests were conducted afterwards. There are numerous tests for body composition including bioelectrical impedance, hydrostatic weighing, skin-fold measurements, and calculating Body Mass Index (BMI). The researcher chose to calculate BMI as opposed to the other methods because limited equipment is needed, and the
test is less invasive to higher secondary school students. Each of the body composition testing methods has a measurement error of 2% to 3% when body fat was estimated. BMI is calculated by measuring a person's weight in kilograms and dividing it by their height squared in metres. Subjects were asked to remove their shoes when their height was measured with stadiometer and weight with weighing machine.

**Awareness of Health - GSHS Questionnaire**

The GSHS (Global School-based Student Health Survey) questionnaires from (WHO) World Health Organization were given to school students who were selected for research testing. The marks were given to the students according to their positive and negative answers to each module for statistical analysis. Negative answers are nullified. This survey is about the students' health and the things they do may affect their health. Students, all over our country, are doing this survey. Also students in many other countries around the world also are doing this survey. The information it gives will be used to develop better health programmes for young people like school students. They were told not to write their names on this survey or the answer sheet. The answers they give will be kept private. No one will know how they answer. They have to answer the questions based on what they really know or do. There is no right or wrong answers. Completing the survey is voluntary. Grade or mark in this class will not be affected whether
they answer the questions or not. They were asked to read every question and to fill in the circles that match the answer in questionnaire.

**Global School – based Student Health Survey**

GSHS is a school-based survey conducted primarily among students aged 13-15 years. It is designed to measure behaviours related to the leading causes of mortality and morbidity among children and adults. The following are the questionnaire criteria of GSHS:

- Dietary Behaviours Module
- Mental Health Module
- Physical Activity Module
- Protective Factors Module
- Unintended Pregnancy Module
- Alcohol Use Module
- Drug Use Module
- Hygiene Module
- Sex Behaviour Module
- Tobacco Use Module
- Violence and Unintentional Injury Module.

Since this GSHS questionnaire is a standardized one and is prescribed by ‘WHO’ and applied for research in many countries, the investigator used this for the present study.
Academic Achievement

Academic Achievement was assessed through analysis of average results of previous year examinations. The marks from the examinations were taken from their administrative office room by their class teachers. There are three sections of the examinations which include quarterly, half yearly, and annual.

Selection of Subjects

This study was conducted to analyze the Awareness of Health and Physical Fitness, Status of Physical Fitness, and Academic Achievement among higher secondary school boys and girls. To achieve this purpose of the study, a total number of 480 students (240 boys and 240 girls) of various higher secondary schools of Tirunelveli district were selected randomly as subjects.

Selection of Variables

In the field of Physical Fitness there are many variables but researcher selected Height, Weight, Speed, Strength, Endurance, Flexibility, and Body Mass Index. These variables play a vital role in determining their Awareness and Status of Physical Fitness. Awareness of Health will be measured by GSHS (Global School-based Student Health Survey) questionnaire prescribed by WHO. Academic Achievement was measured from the average marks scored by the students in their quarterly, half yearly, and annual examination marks of the last academic year.
Tools used in the study

To collect data, stadiometer for Height, weighing machine for Weight, modified horizontal bar for pull-ups test for Strength, sit and reach box for Flexibility, 200 mts track and stop watch for both 50 yards dash Speed test as well as 600 yards run Endurance test, Body Mass Index chart, and GSHS-Health questionnaire from World Health Organization are used as equipments and field marking in this study.

Procedure

First they were all asked verbal report to record their height in metres, weight in kilograms, strength (pull-ups) in numbers, speed (50 yards) and endurance (600 yards) in timings, flexibility (sit and reach test) in centimetres, and Body Mass Index with chart as they assume what their variables might be. Next, they were all asked to do the prescribed standard tests with proper equipments like stadiometer for height, weighing machine for weight, modified horizontal bar for strength, 200 mts track and stop watch for speed and endurance tests, sit and reach box for flexibility, and BMI calculator and chart for Body Mass Index. Thus, the assumed measure of selected Physical Fitness variables and accurate measure of Physical Fitness variables were measured and recorded for Awareness and Status of Physical Fitness. Awareness of Health was measured by administering GSHS questionnaire. Academic Achievement marks were taken from the average
marks of their previous year examinations. There are three sections of the examinations which include quarterly, half yearly, and annual.

**Scoring**

The method of scoring was very simple since all Physical Directors, Physical Directress, and Physical Education Teachers have cooperated efficiently with the researcher when Height measured in metres, Weight measured in kilograms, Strength measured with counting and timings, Speed and Endurance measured in timings, Flexibility measured with sit and reach box in centimetres, Body Mass Index measured with BMI chart, grade marks given to GSHS questionnaire, and the average marks scored in previous year examinations for Academic Achievement.

**Population Study**

The 480 subjects, aged 16 to 18 years of both sexes, were selected from various higher secondary schools in Tirunelveli district.

**Higher Secondary Schools**

Many higher secondary schools are there in the nearby districts. One hundred and eighty five schools are in Tirunelveli district, One hundred and twenty schools are in Kanyakumari district, and sixty eight schools are in Tuticorin district. Among these districts, the researcher selected only 4 types of school from Tirunelveli district for research.
Types of School

Four types of higher secondary schools such as Government School, Government Aided School, Matriculation School, and Central Board of Secondary Education School from Tirunelveli district were selected for the research.

Students Strength and Description of the Sample (Sex & Numbers)

Four hundred and eighty students of (240 boys and 240 girls) XI & XII standard from various higher secondary schools in Tirunelveli district were randomly selected as subjects. Sixty boys and 60 girls from Government Higher Secondary School in Kallidaikurichi, 60 boys and 60 girls from government aided PLWA Higher Secondary School (Welfare) in Vickramasingapuram, 60 boys and 60 girls from St.Xavier's Matriculation Higher Secondary School in Vannarpettai-Tirunelveli, and 60 boys and 60 girls from Sri Parasakthi Vidyalaya CBSE Higher Secondary School in Courtallam were selected as samples.

Experimental Design and Statistical Procedure

The collected data from selected Health and Physical Fitness variables, scores of twelve modules from GSHS (Global School-based Student Health Survey) and academic achievement among school boys and girls were analyzed. They were all given field tests in selected Physical Fitness criterion variables which were selected for this study from Height, Weight, Speed,
Strength, Endurance, Flexibility, and Body Mass Index. Health Awareness questionnaire filling up test in “Global School-based Student Health Survey” (GSHS-from World Health Organization) contains Alcohol Use Module, Dietary Behaviours Module, Drug Use Module, Hygiene Module, Mental Health Module, Physical Activity Module, Protective Factors Module, Sex Behaviour Module, Unintended Pregnancy Module, Tobacco Use Module, and Violence and Unintentional Injury Module. Academic Achievement marks received from their previous academic year examinations.

The two factor (2 x 4) analysis of variance (ANOVA) was used to evaluate the selected criterion variables on the two categories of variables. The obtained results have three 'F' ratios of which two are for main effects. The first F-ratio is for rows (referring to gender (boys and girls) irrespective of different types of school), the second F-ratio is for columns (referring to different types of school such as government, government aided, matriculation, and CBSE schools irrespective of gender), and the third for interaction (referring to the gender and different types of school).