CHAPTER – III

METHOD OF STUDY

In this chapter, design of the study selection of subjects, selection of variables, selection of tests, administration of tests and statistical design employed are described.

A Pilot Study was conducted on 15 Active and 15 Non-active Girls. The data pertaining to the study were collected through a questionnaire. The product moment correlation was applied to see the relationship between the physiological parameters and health status. The following were the findings:

Table No. 3.1
Showing the Correlation of Health Status with Certain Physiological Parameters

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Physiological Parameters</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Pulse Rate</td>
<td>.65</td>
</tr>
<tr>
<td>02</td>
<td>Systolic Blood Pressure</td>
<td>.60</td>
</tr>
<tr>
<td>03</td>
<td>Diastolic Blood Pressure</td>
<td>.62</td>
</tr>
<tr>
<td>04</td>
<td>Hemoglobin</td>
<td>.55</td>
</tr>
</tbody>
</table>

i. It was found that the height-weight proportion was more in case of Non-Active girls than the Active-Girls.

ii. Low back pain in inactive girls.

iii. Headache pain in inactive girls

iv. M.C. period is more painful in inactive girls.

v. Non-Active girls were feeling tired earlier than the Active Girls.
The main purpose of this study was to compare the "Health Status of Active and Non-Active College Girls And Its Correlation With Certain Physiological Parameters" of Amravati University in Maharashtra. Hence the following method of study was used for the present study:

**Sources of data:**

Required data for the present study were collected from the Active and Non-Active College Girls of colleges affiliated to Amravati University.

**Sampling Procedure:**

The subjects were selected from the Academic colleges affiliated to Amravati University in Maharashtra state by simple random sampling. There were 600 Active and 600 Non-Active College Girls i.e. in total there was 1200 subjects.

**Selection of the variable:**

The following variables were selected:

**Health Status Variables:**

i. Pulse Rate.
ii. Systolic Blood Pressure.
iii. Diastolic Blood Pressure.
iv. Haemoglobin.
vi. Health Problems.
vii. Medical Expenses.
Selection of the tests:

To measure the health status variables the Health Evaluation Checklist prepared by American College of Sports Medicine was used.

Material to be used for collection of data:

The researcher used the following apparatus and equipments for collection of data during the tests.

i. Stadio-meter to measure the height of the students.
ii. Sphygmominometer to Blood Pressure (Systolic and Diastolic).
iii. Stethoscope
iv. Hemocytube, cotton, needles, stinner, dropper, and chemicals: HCL, (N/10 HCL) spirit, distilled water.
v. Skin fold caliper.

The data for the study were collected through both Questionnaire and Practical Testing in Medical Laboratory. After the collection of the data, necessary statistical techniques were applied. To find the difference in the Health Status, ‘t’ test was applied. To see the relationship, Product Moment Correlation was applied.

Body Composition:

To obtain the percentage of fat for each subject, skin fold thickness measurement in millimeter was taken at four selected sites in the body, namely, biceps, triceps, sub scapula and super iliac. Procedures of taking measurement are described as under.

Biceps

The skin fold thickness of biceps was measured with the help of skin fold calipers. The subject will stand with the arm by the side and the elbow extended, but in a relaxed position. A double layer of skin and subcutaneous tissue grasped with the thumb and forefinger of the left hand over the biceps muscle on the front of the subject's right upper arm half between the acromion and the elbow where the skin fold run parallel to the long axis of the arm. The skin fold calipers were gently placed to grasp the skin without removing the fingers and thickness of the skin was record from the indicator needle of the dial. It was measured to the nearest millimeter.

Triceps

The skin fold thickness of triceps was measured with the help of skin fold calipers. The subject will stand with the arm by the side and the elbow extended, but in a relaxed position. A double layer of skin and subcutaneous tissue was grasped with the thumb and forefinger of the left and over the triceps muscle on the back of the right upper arm, half way between the acromion and the elbow, where the skin fold run parallel to the
long axis of the arm. The skin fold caliper was gently placed to grasp the skin without removing the fingers. And thickness of the skin was recorded from the indicator needle of the dial. It was measured to the nearest millimeter.

**Sub-Scapula**

The skin fold thickness of sub-scapula was measured with the help of skin fold calipers. The subject will stand with the shoulder erect but relaxed, keeping the arms by the sides. A double layer of skin and subcutaneous tissue was grasped with the thumb and fore-finger of the left hand lateral to inferior angle of the right scapula, where the skin fold runs downward and outward in the direction of the ribs. The skin fold calipers were placed gently to grasp the skin without moving the fingers. The thickness of the skin was recorded from the indicator needle of the dial. It was measured to the nearest millimeter (Please See Photograph – 2).

**Suprailliac**

The skin fold thickness of suprailliac was measured with the help of skin fold calipers. The subject will stand in a normal erect posture and the subject was instructed to draw in a medium breath and hold it while in the same position. A double layer of skin and subcutaneous was grasped with the thumb and forefinger in a position one to two inches above the right anterior superior iliac spine where the anterior superior skin fold run forward and slightly downward. The skin fold caliper was placed gently to grasp the skin without removing the finger and thickness of the skin was recorded.
from the indicator needle of the dial. It was measured to the nearest millimeter.

After measuring the skin fold thickness of the above mentioned four sites it was added together and referred to conversion table as proposed by Dunnin and Rahaman and percentage of fat of individual subject was obtained.

**Thigh**

The skin fold thickness of thigh was measured with the help of skin fold calipers. The subject stood with the knee straight but relaxed on both the feet. A double layer of skin along with subcutaneous tissue was grasped with the thumb and fore finger of the middle portion of the quadriceps muscle of the subject of dominant leg between the iliac junction and knee where the skin fold run parallel to the long axis of the leg. The skin fold calipers was gently placed to grasp the skin without the fingers and thickness of the skin was recorded from the indicator needle of the dial. It was measured to the nearest millimeter (Please See Photograph – 3).

**Calf**

The skin fold thickness of calf was measured with the help of skin fold calipers. The subject will stand with knee straight but relaxed on both the feet. A double layer of skin and subcutaneous tissue were grasped with the thumb and fore-fingers of the left and over the gastrocnemius muscle on the front of the subject’s dominant leg between the knee junction and ankle
where the skin fold runs parallel to the long axis of the lower leg. The skin fold calipers were gently placed to grasp the skin without removing the fingers and thickness of the skin was recorded from the indicator needle of the dial. It was measured to the nearest millimeter. All the measurements of skin fold thickness of specific were done by Anand Agency Skin fold Calipers.

**Pulse-Rate:**

The resting pulse rate on radial artery was taken early in the morning. The subjects were tested in supine lying position on the bed. Finger tips were put on radial artery and the pulse rate were counted for sixty seconds with the help of stop watch.

The total number of pulse rate per minute for each subject was recorded (Please See Photograph – 4).

**Haemoglobin Test:**

The hemoglobin concentration in gm/100 ml of blood was tested with the help of Sahlis Hemometre.

The hemoglobin percentage in blood of subjects was measured by using Sahlis Hemometre which is available in Sports Science Research Laboratory of of the H.V.P. Mandal's Degree College of Physical Education, Amravati. It consists of (1) Sahlis Hemometre, (2) Hemoglobin pipette, (3) Hemometre, (4) Stirrer and (5) Spirit. In addition to this W/10 HCL, distilled water, cotton, needle were also used for estimation of
hemoglobin of blood. The hemometer consists of two tubes. The color of these tubes is used as standard. The hemoglobin pipette has got one graduated. The hemometer tube is quaduated from 2 to 22. The hemometer tube is filled by W/10 HCl up to the mark 2. This converts hemoglobin into acid haematin. The colour of the mixture was matched against the standard colour of mixture was matched with the standard colour the lower was take out of hemometer.

The rendering of the hemoglobin scale on the tube was read at the lower meniscus of the solution. The scale provided the hemoglobin content in gram /100 ml or blood (Please See Photograph – 5).

**Blood Pressure (Systolic and Diastolic):**

The instrument consists of a pressure cuff or armlet made of a flat rubber bag covered by an undistensible envelope of silk fabric. The cavity of the bag is connected by the length of rubber tubing to a graduate mercury manometer or an aneroid monometer and by another tube with a pressure blug or an air pump fitted with an outlet valve. By this means the bag can be inflated to any desired pressure. A sphygmoninometer and a stethoscope were used to measure blood pressure (Systolic and Diastolic). The resting blood pressure (systolic and diastolic) was taken early in the morning. The subjects were tested in supine lying position on the bed. The left upper arm of the subjects was encircled by an inflatable rubber bag containing in cuff was connected to a pressure pump and minometer. By pumping air, the pressure in the bag was rapidly raised to 200 mm Hg, which was sufficient
to obliterate completely the brachial artery so that no blood comes through, the radial pulse disappeared. The pressure was then lowered to a point where the pulse could be felt by using a stethoscope, the pulsation of the brachial artery at the bed of the elbow could be distinctly heard. At this elbow could be distinctly heard. At this point the pressure shown on the dial was considered to be the systolic pressure. The pressure on the bronchial artery was then gradually reduced until the arterial pulse beats could be distinctly heard and the point at which the sound disappeared was accepted as the diastolic pressure.

The systolic and diastolic blood pressure was recorded in mm Hg. (Please See Photograph – 6).

The data for the study were collected through both Questionnaire and Practical Testing in Medical Laboratory (Appendix- I and II). After the collection of the data, necessary statistical techniques were applied. To find the difference in the Health Status, 't’ test was applied. To see the relationship, Product moment correlation was applied.