CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS
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Physical fitness has been defined in many different ways. A physician may define it as the absence of disease. Some athletes may rate fitness according to the amount of musculature developed. Other individuals perceive fitness as the ability to perform certain sports skills. The presidents council of physical fitness and sports had stated that physical fitness is the measure of the body strength stamina, and flexibility, perhaps the most comprehensive definition has been given by the American Medical Association, which defines physical fitness as the general capacity to adopt and respond favorably to physical effort. This implies that individuals are physical fit when they can meet the ordinary as well as the unusual demands of daily life safely and effectively without being overly fatigues, and still have energy left for leisure and recreational activities.

Physical fitness can be classified into two categories: health related fitness and motor skill related fitness. Most authorities agree that from a health point of view total physical fitness involves four basic components that are separate but interrelated cardiovascular endurance, muscular strength and endurance, muscular flexibility, and body composition (ideal body weight and fat percentage). To improve the overall fitness level, an individual has to participate in specific program to improve each of the four basic components, nevertheless, after the initial fitness boom swept across the country in the 1970s it became clear that just
improving the four components of physical fitness alone would not always decrease the risk of disease and ensure better health\(^1\).

There has been considerable thinking among physicians, physiologists and physical educators to evolve a term, which would indicate the totality of man and his total fitness, involving his physical, mental and social aspects. The term ‘Health Related Fitness’ or Health Fitness’ is now being used frequently to give a better understanding of the concept\(^2\).

**Components of Health:**

Health is constituted of many components. The basic of these components is the Physico-Physiological qualities required by the body to meet the stress of a given workload. Larson lists such constituents as below:

1. Freedom from disease: Ability to maintain high energy level and freedom from strain, worry and frustration.

2. Freedom from defects: Lack of deviation from the normal structure and function of the human body.


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(4) Muscular Strength: Represents the maximum amount of force developed in a single muscular contraction.

(5) Muscular Endurance: Ability to continue successive movement of muscular strength over an unlimited time span.

(6) Muscular Explosive Power: Ability in the combination of strength and speed of movement.

(7) Circulatory Respiratory Endurance: Ability to sustain long continued physical activity.

(8) Flexibility: Ability in the range of movement-static, or repetition of movement dynamic.

(9) Speed: Number of movements per unit of time (legs or arms).

(10) Agility: Change of position in space.

(11) Balance: Control of body movements.

(12) Co-ordination: Integration of movement patterns (legs, total body, arms and hand).

(13) Accuracy: Ability to direct movements with precision. (legs, arms and head).

(14) Rhythm: Ability to direct body movement in relationship to an external force or stimulus.
Factors Affecting Health:

(1) Anatomical Factors: In order to be fit and healthy the individual must possess all the body parts essential to the performance of the task and also appropriate body size and shape for the task.

(2) Physiological Factors: In order to be fit and healthy the physiological system of human organism must function effectively to sustain the particular activity that the individual is performing. Since different activities make different demands on the organism relating to neurological, respiratory, circulatory, metabolic, temperature, and physiological fitness is specific to each activity.

(3) Psychological Factors: Psychological factors like perception, emotional, stability, motivation and intelligence are of vital importance to determine one’s fitness level and health.

Health status is a state of complete physical, mental, social and emotional of an individual. It differs from individual to individual, from situation to situation, from habit to habit and from many factors. Involvement in the physical programmes is one of the important reasons of different in health status. In colleges some girls show their interest in physical activities and gain better health. It has been a trend in the colleges that very few girls students take active part in the programmes/activities run by the department of physical education. Hence their health status is found to be different. To confirm the same scientifically the present study is proposed. In order to achieve this objective the problem is stated as “Health
Status Of Active And Non-Active College Girls Of Amravati University And Its Correlation With Some Physiological Parameters”.

The main purpose of this study is to study the Health Status of Active and Non-Active College Girls And It’s Correlation With Certain Physiological Parameters. The allied objectives are:

i. To compare the Pulse Rate of Active and Non-Active College Girls of Amravati University.

ii. To compare the Systolic Blood Pressure of Active and Non-Active College Girls of Amravati University.

iii. To compare the Diastolic Blood Pressure of Active and Non-Active College Girls of Amravati University.

iv. To compare the Haemoglobin Percentage of Active and Non-Active College Girls of Amravati University.

v. To compare the Health Problems of Active and Non-Active College Girls of Amravati University.

vi. To survey the Medical Expenses of Active and Non-Active College Girls of Amravati University.

vii. To find out the relation of health status with certain physiological parameters.

The need of the present study is argued on the following grounds:

v. The study will provide the Health Status of Active and Non-Active College Girls of Amravati University in Maharashtra.
vi. The study will further indicate the status of different parameter of the study of the Active and Non-Active College Girls of Amravati University.

vii. The study will bring into light the physical fitness level of the Active and Non-Active College Girls of Amravati University.

viii. The study will bring forward the relationship of health status with certain physiological parameters.

It is hypothesised that there was significant difference in the health status of Active and Non-Active College Girls of Amravati University. It is also hypothesised that the relationship of health status with certain physiological parameters was more in case of Active College Girls than Non-Active ones.

The present study was delimited to the following factors:

ix. The study was delimited only to Active and Non-Active College Girls of Amravati University in Maharashtra.

x. The study was delimited only to the college girls of Active and Non-Active College Girls of Amravati University in Maharashtra.

v. The total number of college girls 600 Active and 600 Non-Active girls were there.

vi. The subjects were from co-educated colleges.
The limitations of the study were as follows:

v. Extra curricular involvement of the subjects was not being considered.

vi. Nutritional factors were unknown to the scholar.

vii. The Socio-Economic-Status of the subjects were different.

xi. The time for conducting the test was different.

The terms used in this present study were with the meaning explained through the definitions given below:

**Physical Fitness:**

"Physical fitness is the ability to carry out daily task with vigour and alertness without undue fatigue with ample energy to engage in leisure time pursuit and to meet unforeseen situation and unexpected emergencies."³

**Health Status:**

Health Status is the state of an individual, which show a complete state of physical, mental, emotional and social balance.

Active Girls:

Girls who take active part in the physical programmes conducted by the Dept. of Physical Education of the college.

Non-Active Girls:

Girls who do not take active part in the physical programmes conducted by the Dept. of Physical Education of the college.

A summary of the writings of recognized authorities and previous researchers provides evidence that the concerned researcher is familiar with what is already known and what is still unknown and untested. Since effective research is based upon past knowledge, this step helps to eliminate the duplication of what has been done, and provides useful hypotheses and helpful suggestions for significant investigation⁴.

Review suggests a method and a technique of dealing with a problematic situation, which may also suggest avenues of approach to the solution of similar difficulties, a scholar may be facing. It can provide the investigator with new ideas and approaches, which may not have occurred to him. It also assists the researcher in evaluating his own research efforts by comparing them with related efforts done by others⁵.


Keeping the previous references as guide-lines, efforts were made to find out the researches completed related to the present study by giving visit to the libraries of the following colleges viz. (1) Amravati University, Amravati, (2) Degree College of Physical Education, Amravati and (3) Shree Shivaji College of Education, Amravati. It was found that some studies in the area of physical fitness are undertaken in some of the universities. The scholar found no study, which was directly related to the present study. Some 45 studies were found which were indirectly related to the present study.

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 found out.

Table No. 5.1
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>
Apart from the above facts the following were also found:

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. Head pain in inactive girls

iv. Menstrual 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 is 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 was 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 on simple random sampling basis. There were 600 Active and 600 Non-Active College Girls i.e. in total there was1200 subjects.

Selection of the variable:

The selection of variables was done by review of the available scientific literature pertaining to the Health Status and Physical Fitness. Dr. Maya Karale, Dr. Shyam Chandak and Dr. Vijay Lohhakpure medical
practitioner at Akola, were consulted for selecting the health parameters. The basic fitness elements were muscular strength, muscular endurance, agility, power, speed and cardio-respiratory endurance. The following variables were selected:

**Health Status Variables:**

viii. Pulse Rate.
ix. Systolic Blood Pressure.
x. Diastolic Blood Pressure.
xi. Haemoglobin.

xii. Body composition.
xiii. Health Problems.
xiv. 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.

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ii. Sphygmominometer to Blood Pressure (Systolic and Diastolic).

iii. Stethoscope

iv. Hemoclyo tube, cotton, needles, stinner, dropper, and chemicals:
    HCL, (N/10 HCL) spirit, distilled water.

v. Skin fold caliper.

**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 superailiac.

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.

**Analysis of Data and Interpretation**

The main purpose of this study is to study the health status of active and non-active college girls and it’s correlation with certain physiological parameters.

It was hypothesized that there would be significant differences in some of the variables selected. Research scholar collected the data for different variables in scoring tables prepared for this purpose. For the analysis of the data the research scholar used students `t` test. The level of significance was set at 0.05.
Conclusions:

The following conclusions are drawn:

Table No.5.2
Showing The Two Means Of Height Of Both Active Group And Non-Active Group

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>SD</th>
<th>MD</th>
<th>S. Error</th>
<th>Obtained 't'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>154.728</td>
<td>5.87350</td>
<td>.4963541</td>
<td>.7708</td>
<td>1.5529</td>
</tr>
<tr>
<td>Non-Active</td>
<td>153.957</td>
<td>10.6453</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>49.6816</td>
<td>6.90794</td>
<td>.4039112</td>
<td>4.7233</td>
<td>11.694*</td>
</tr>
<tr>
<td>Non-Active</td>
<td>44.9583</td>
<td>7.08285</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>73.2750</td>
<td>6.78867</td>
<td>.4985967</td>
<td>7.6016</td>
<td>15.246*</td>
</tr>
<tr>
<td>Non-Active</td>
<td>80.8766</td>
<td>10.1524</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.P.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Systolic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>114.416</td>
<td>9.46286</td>
<td>.6645148</td>
<td>4.1833</td>
<td>6.2953*</td>
</tr>
<tr>
<td>Non-Active</td>
<td>110.233</td>
<td>13.2439</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.P.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Diastolic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>75.9883</td>
<td>6.61419</td>
<td>.4308931</td>
<td>1.8783</td>
<td>4.3591*</td>
</tr>
<tr>
<td>Non-Active</td>
<td>74.1100</td>
<td>8.22519</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemoglobin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>11.2946</td>
<td>1.10072</td>
<td>.0664</td>
<td>2.1177</td>
<td>33.067*</td>
</tr>
<tr>
<td>Non-Active</td>
<td>9.17689</td>
<td>1.11775</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>10.5500</td>
<td>3.15448</td>
<td>.1759344</td>
<td>.223333</td>
<td>1.26941</td>
</tr>
<tr>
<td>Non-Active</td>
<td>10.3266</td>
<td>2.936153</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tricep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>6.19166</td>
<td>2.264246</td>
<td>.1306231</td>
<td>0.00233</td>
<td>0.17863</td>
</tr>
<tr>
<td>Non-Active</td>
<td>6.21500</td>
<td>2.26067</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-Scapula</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>14.5550</td>
<td>4.279896</td>
<td>.2280911</td>
<td>.823333</td>
<td>3.6096*</td>
</tr>
<tr>
<td>Non-Active</td>
<td>13.7316</td>
<td>3.591355</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suprailliac</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>14.0733</td>
<td>4.291696</td>
<td>.2384782</td>
<td>1.1316</td>
<td>4.7453*</td>
</tr>
<tr>
<td>Non-Active</td>
<td>12.9416</td>
<td>3.962883</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thigh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>19.9933</td>
<td>81.67733</td>
<td>3.337702</td>
<td>4.21</td>
<td>1.261347</td>
</tr>
<tr>
<td>Non-Active</td>
<td>15.7833</td>
<td>3.601113</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calf</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>10.2033</td>
<td>2.578709</td>
<td>.1540746</td>
<td>.33500</td>
<td>2.1742*</td>
</tr>
<tr>
<td>Non-Active</td>
<td>9.86833</td>
<td>2.755659</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>37.000</td>
<td>26.83033</td>
<td>.2177379</td>
<td>56.358</td>
<td>25.883*</td>
</tr>
<tr>
<td>Non-Active</td>
<td>93.3583</td>
<td>46.09471</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.M.I.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>20.7453</td>
<td>2.604581</td>
<td>.1544628</td>
<td>1.90975</td>
<td>12.363*</td>
</tr>
<tr>
<td>Non-Active</td>
<td>18.8356</td>
<td>2.744343</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level of significance.
Table value of 't' at 1198 degree of freedom and 0.05 level of significance is 1.986.
From the above table it is seen that the Active Girls differ significantly from the Non-Active Girls in all the variables except Height, Bicep, Tricep, and Thigh. The obtained 't' values in variables where the difference is significant are 11.694 (Weight), 15.246 (Pulse Rate), 6.2953 (B.P. (S)), 4.3591 (B.P. (D)), 33.067 (Hemoglobin), 3.6096 (Sub-Scapula), 4.7453 (Suprailliac), 2.1742 (Calf), 25.883 (Medical expenses) and 12.363 (B.M.I.). The means of all the variables are shown graphically in Figure No.15.

Figure No.15
Showing The Two Means Of Height Of Both Active Group And Non-Active Group
**Conclusion**

After the statistical analysis of the data with the help of student's "t" it was found that active girls are having better health and superior to the non-active girls in some health related variables.

**Recommendations:**

On the basis of the results following recommendations are made for further necessary and follow-up action:

i. The concerned authorities viz. Coaches, Directors of Physical Education should use the results and motivate the girls of their college to participate in physical activity.

ii. The same type of study may be undertaken by selecting other universities and states.

iii. The same type of study may be undertaken by selecting other universities and states for active and non-active boys.