Chapter 3
Methodology
Chapter-III
METHODOLOGY

In this chapter selection of sample, appropriate procedure adopted for gathering the relevant data, training programmes, experimental design, criterion measure, tools and statistical technique needed for evaluating the data are described.

This study is an attempt to assess the efficiency of three training programs on lactic acid tolerance capacity and also the effectiveness of three relaxation program on the lactic acid removal from blood.

Sample:

For the purpose of this study sixty boys in the age group of 16 to 22 years were selected from Aligarh Muslim University Aligarh.

Experimental Design:

(a) Lactic Acid Tolerance Capacity: for the purpose of estimating the efficiency of three training programmes on lactic acid tolerance capacity the sample was divided into four equal groups of 15 each. First group was control group, second group was subjected to intensive interval training programme, third group was given extensive interval training programme and fourth group was given fast continuous training group. The time duration of the three training programmes was of three months.

(b) Relaxation Programmes for speedy Lactic Acid removal: for the purpose of assessing the effectiveness of different relaxation programmes, of the four groups mentioned above three active
training programme groups were selected and control group was left over. After the exhaustive bouts of exercises in which maximum lactic acid accumulation could have been possible the three groups under go different relaxation programmes of 15 minutes each. First group followed Aerobic exercise programme. Second group followed Yogic programme. Third group was subjected to abrupt rest.

Collection of Data:

(a) Pre–Experimental Estimation of Lactic Acid Tolerance Capacity: A pre–experimental estimation of lactic acid tolerance capacity was made of all the subjects. After a maximal bout of 400mt running the blood sample were collected and tested for lactic acid estimation by the Accutrend Lactate Analyzer.

(b) Post-Experimental Estimation of Lactic Acid Tolerance Capacity: After the completion of three months training programmes again estimation of lactic acid tolerance capacity was made of all the subjects through blood samples collected immediately after 400mt bout of maximal running.

(c) Lactic Acid Estimation after Relaxation Programme: After exhaustive bouts of exercise three groups underwent three relaxation programmes and immediately after these Three Relaxation Programmes again Lactic Acid estimation of all the subject through blood samples collected was made.
Training programme:

The three training programmes were followed rigorously with rest on all Sundays for the period of three months. The training programmes with specification of load are given below.

(i) **Intensive Interval Method:**

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<table>
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<tbody>
<tr>
<td>Intensity</td>
<td>80 - 90 %</td>
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<tr>
<td>Running distance</td>
<td>80-110 meter</td>
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<tr>
<td>Total duration</td>
<td>30–40 minutes</td>
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<tr>
<td>Repetition</td>
<td>10 – 15</td>
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<tr>
<td>Recovery</td>
<td>incomplete</td>
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(ii) **Extensive Interval Method:**

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<tbody>
<tr>
<td>Intensity</td>
<td>50 - 70 %</td>
</tr>
<tr>
<td>Running distance</td>
<td>300-400 meter</td>
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<tr>
<td>Total duration</td>
<td>45 minutes</td>
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<tr>
<td>Repetition</td>
<td>8 – 10</td>
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<tr>
<td>Recovery</td>
<td>incomplete</td>
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(iii) **Fast Continuous Method:**

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<tbody>
<tr>
<td>Intensity</td>
<td>50-60%</td>
</tr>
<tr>
<td>Total duration</td>
<td>45 minute continuous running</td>
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Relaxation Programme:

The three relaxation programmes of 15 minutes each were followed after the training programmes. Their components are given below:

1. **Aerobic Exercise:**
   
   (a) **Slow running and jogging:**
   
   The students run very slow or jog with minimum effort and low intensity with some loosening exercise.
   
   (b) **Limbering down:** slow jog while body in a partial forward bending state.

2. **Yogic Technique:**
   
   (a) Bhujangasana or Snake Pose,
   
   (b) Halasana, or Plough Pose
   
   (c) Adhavasana, or Relaxed Pose
   
   (d) Shavasana, or Corpse Pose
   
   (e) Dradhasana, or Firm Pose

3. **Rest:**

   Complete rest.
Criterion Measure:

Blood Lactic acid was measured in mmol/l by Accutrend lactate portable lactate Analyzer.

Instrument had been tested using guidelines of the European committee for clinical laboratory standards (tested at 9 separate sites) and cleared for sports medicine use by federal drug administration in the United States (tested at 3 separate sites).

Statistical Technique:

Lactic Acid Tolerance capacity

Criterion Measure of Lactic Acid Tolerance capacity was passed through analysis of covariance (ANCOVA) for assessing the significant difference in the lactic acid estimation among four groups of the study. Where significant differences were observed LSD test was used for comparing the means of four groups. The t-test was also used to assess the significant difference in the pre and post experimental lactic acid estimation of each group.

Lactic Acid Removal Estimation

Criterion Measure of Lactic Acid removal was passed through analysis of covariance (ANCOVA) for assessing the significant difference in the lactic acid removal estimation among three groups of the study. Where significant differences were observed LSD was used for comparing the means of the three groups. The t-test was used to assess the significant difference in the pre and post experimental lactic acid estimation of each group.