Chapter III

PROCEDURE

In this chapter the procedure adopted for the selection of subjects, selection of variables, criterion measures administration of tests and the methods employed for statistical analysis of data are described.

Selection of Subjects

The research scholar contacted Director of Youth Services and Sports, Jammu and Kashmir and the Principal of Govt. College of Physical Education concerning the availability of subjects and facilities for the purpose of the study. The principal of above mentioned college issued a common circular to principals and headmasters of high schools as well as higher secondary schools of the State of Jammu and Kashmir. Only boys' schools were chosen for the study.

From total population of twentytwo thousand and nine hundred belonging to selected sixytwo schools (rural and urban) only four thousand two hundred subjects were drawn randomly as the subjects. According to the school records their age ranged 13 years through 19 years. They were
studying from 6th to 11th classes. The age wise break-up of students is presented in Table 1.

TABLE 1
AGE WISE BREAKAGE OF SUBJECTS

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 Years</td>
<td>600</td>
</tr>
<tr>
<td>14 Years</td>
<td>600</td>
</tr>
<tr>
<td>15 Years</td>
<td>600</td>
</tr>
<tr>
<td>16 Years</td>
<td>600</td>
</tr>
<tr>
<td>17 Years</td>
<td>600</td>
</tr>
<tr>
<td>'18 Years</td>
<td>600</td>
</tr>
<tr>
<td>19 Years</td>
<td>600</td>
</tr>
</tbody>
</table>

Since the subjects selected for the study belonged to different parts of the state, they be considered as representative sample of boys. All the subjects were day scholars attending schools from 10 AM to 4 PM only and had different environmental influence outside the school.

The requirement of the research study was explained to the school headmasters and principals in detail and was
also explained to all the subjects in the presence of the school physical education teachers and coaches. The physical education teachers exhorted the subjects to co-operate in the project even though they might have to work hard to their utmost limits of capacity in the interest of this study and enhancing their own performance.

Schedule of testing in detail of the test items was put on the notice boards of the various schools well in advance. Prior to the administration of tests, a meeting of all subjects was held and requirement of the testing procedure was explained to them so there was no ambiguity in their minds regarding the efforts required of them. All the subjects voluntarily agreed to co-operate in the testing procedures explained to them.

Selection of the Test Battery physical fitness, an essential aspect of performance requires the ideal combination of numerous abilities developed to a certain level.

Fleishman has identified the dimensions underlying human performance in two categories. The physical proficiency (fitness) area and the psychomotor area.

The factors of strength power, speed, agility, coordination balance, endurance, flexibility, constituted
the physical proficiency area.\textsuperscript{1}

The AAHPER Youth Fitness Test was therefore selected for the purpose of the study. This test measured most of the physical fitness components satisfactorily. Moreover, the items were not complicated but were simple and easy to be performed by the subjects. The items did not demand skilled movements but natural movements.

The selection of test was also based on the administrative feasibility, the nature of the subjects and facilities available to conduct the test.

Test selected for the purpose of study included the following items:

Pull-ups
Bent Knee Sit-ups
Standing Broad Jump
Shuttle Run
50 Metre Dash\textsuperscript{*}
600 Metre Run/Walk\textsuperscript{*}

\textsuperscript{*}The actual distances of 50 yards and 600 yards were replaced by metres because of the fact that metric system (MKS) has been introduced in India.

Reliability of Data

Before actual collection of data the reliability of data on the tests of 50 metre dash, shuttle run, 600 metre run/walk, bent knee sit-ups and pull-ups was ensured by establishing the instrument reliability, tester competency and reliability of the test and subject reliability.

Instrument Reliability

All the stop watches utilised to measure time in 50 metre dash, 600 metre run/walk and agility test were Swiss made. The supplier Syndicate Scientific Instrument Company, Srinagar, assured the accurate calibration of these watches. A calibrated steel tape of superior quality with ISI trade mark was used to measure the requirement of standing broad jump, shuttle run and marking of 200 metre track for 50 metre dash and 600 metre run/walk.

Tester Competency and Reliability of Test

It was ensured that the research scholar was well competent in the techniques of conducting the test and that the test reliable for the purpose of study. The research scholar had a number of practice sessions in the testing
procedure under the guidance of an expert.

The research scholar tested and retested the twenty randomly selected subjects under the identical conditions. Pearson's product moment correlation co-efficient was computed between two sets of data obtained by testing and retesting. The obtained high value of the co-efficient ensured the competency of the tester and also the test reliability. These correlation co-efficients are presented in Table 2.

TABLE 2

RELIABILITY CORRELATION CO-EFFICIENTS OF TEST RETEST SCORES

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Items</th>
<th>Co-efficient of Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pull-ups</td>
<td>0.94*</td>
</tr>
<tr>
<td>2.</td>
<td>Bent Knee Sit-ups</td>
<td>0.90*</td>
</tr>
<tr>
<td>3.</td>
<td>Standing Broad Jump</td>
<td>0.95*</td>
</tr>
<tr>
<td>4.</td>
<td>Shuttle Run</td>
<td>0.89*</td>
</tr>
<tr>
<td>5.</td>
<td>50 Metre Run</td>
<td>0.79*</td>
</tr>
<tr>
<td>6.</td>
<td>600 Metre Run/Walk</td>
<td>0.84*</td>
</tr>
</tbody>
</table>

*Significant at .05 level of confidence.
Subject Reliability

The obtained correlation co-efficients also established the subject reliability. As the test retest method was employed to establish reliability and the same subjects were tested under identical conditions.

Collection of Data

In order to collect data on chosen test items, the selected tests were administered on available grounds of the concerned schools.

The practice trial in each test as per the prescription in the literature was ensured to each subject before the actual testing. This was done to familiarise the subjects with the nature and the demand of the test. The use of apparatus was explained to them prior to the administration of tests. To ensure uniform testing conditions the subjects were tested only during the day time in the school hours.

Administration of Tests

For test administering, a 200 metre track was marked in the football field of each school and other stations to
conducted other items were set in the school grounds or places adjacent to the schools. On the day of test the students of all the classes selected age wise were exhorted to put in their best performance. The test was administered strictly in accordance with the prescribed procedures laid in AAHPER youth fitness manual. All the items of test were administered in the school hours from 11 AM to 4 PM. The test items administered were as described below:

Pull-ups

The purpose of this test was to measure arm and shoulder strength of the performance.

**Equipments:**

A horizontal bar or a wooden bar approximately three to four centimetres in diameter.

**Description:**

Each subject performed as many pull-ups as he could possible do, in the manner described below, from a

---

horizontal bar an appropriate height so that the fact of the tallest boy did not touch the floor when performing the test.

In taking this test, the subject hang from the bar by his hands with overhand grip and chined himself as many times as he could. In executing the movements, he was asked to pull himself up until his chin was even with his hand and then lower himself until his arms were straight. The subject was not permitted to kick, jerk or use a kip motion. Only one trial was allowed unless it was obvious that the subjects had not had a fair chance.

**Scoring:**

The number of completed ups was recorded as the score on this test.³

**Bent Knee Sit-ups**

The purpose of this test was to measure abdominal strength and endurance.

---

Equipments:

A clean floor or mats and a stop watch.

Description:

Each subject did as many sit ups as he could do in one minute, in the manner described below:

The subject assumed a supine lying position, knee bent at an angle of less than 90 degree and feet on the floor with the heels not more than 30 centimetres from the buttocks, and hands clasped behind neck. The feet were held down by a partner. To perform sit-ups, the subjects brought his head and elbows upward in a curl-up motion, touching elbows forward to the knees. In returning to the supine position it was ensured that the elbows touch the floor each time.

Scoring:

The number of completed sit-ups in one minute was recorded as the score for this test. 4

4Ibid., p.177.
Standing Broad Jump

The purpose of this test was to measure explosive power legs.

Equipment:

Tape measuring and an outdoor jumping pit.

Description:

A take-off line was drawn near one edge of a jumping pit. The subject was asked to take his position with toes just behind the take-off line, and feet slightly apart. Taking off for both the feet simultaneously, he jumped to cover the maximum horizontal distance, landing on both feet. While jumping, he was asked to crouch slightly and swing the arms to aid the jump. Three trials were given and the best of the three jumps was recorded as the standing broad jump performance.

Scoring:

The score was the horizontal distance measured in metres and centimetres to the nearest centimeter between the take-off line and the nearest point where any part of
the standing body touches the ground.\textsuperscript{5}

Shuttle Run

The purpose of this test was to measure the total body agility of the subject while running.

**Equipment:**

Two wooden blocks of $2 \times 2 \times 4$ inches and a stop watch.

**Description:**

Two parallel lines were marked on the ground 10 metres apart. For this test item the starting and finishing line were the same. Two wooden blocks were placed behind the restraining line. Each subject position himself behind the starting line and on the signal 'ready go' he ran to the opposite end line, picked up a block, ran back to the starting line, placed the block behind it, ran back and picked up the second block and carried it across the starting line.

Scoring:

The timing was clocked for the starting to the carrying of the second wooden block across the starting line to the nearest 1/10th of the seconds. Two trials were allowed and the better timing was recorded as the score on this test item.

50 Metre Dash

The purpose of this test was to measure the speed of the performer in running.

Equipments:

Clapper, stop watch and levelled area of 50 metres.

Description:

Two parallel lines were marked on the ground at 50 metres distance from each other. One of these, served as the starting line and the other the finish line.

Four subjects selected as per the class roll number were started at a time with a clapper and two

---

keepers for each subject recorded the time taken to
cover the distance of 50 metres. The subjects ran across
the finish line. One trial was permitted.

Scoring:

The score was the time taken by subject between
the starter’s signal and the instant the subject crossed
the finish line. The score was recorded to the nearest
1/10th of a second.7

600 Metre Run/Walk

The purpose of this test was to measure the
endurance of the performer in running and walking.

Equipments:

200 metre track, a square 50 metres and stop
watches. Where track was not available the area was marked
around the football field to serve the purpose.

Description:

This test item was conducted in 200 metre track
or 50 metre square marked for this purpose in the school

7Harrison H. Clarke, Application of Measurement to
Health and Physical Education (Englewood Cliffs N.J.: Prentice
football grounds. Five subjects selected as per class roll numbers were started off with a clapper with the instruction to finish the distance of 600 metres preferably by running throughout and when it was possible, resort to walking but complete the total distance. The timers called out the times as the subject crossed the finish line.

Scoring:

The slower timing of the two watches was the score recorded in minutes and seconds.8

Statistical Analysis

The scores for each test items were gathered for all the subjects separately and then pooled age-wise for preparing the norms. The age-wise norms for this study were computed in terms of Percentile Scale, Hull Scale and T-Scale separately for each item (as by the procedures recommended by Clarke and Clarke (1970), and analysis of variance was also used, the level of significance was set at .05.

---