CHAPTER III

PROCEDURE

In this chapter, the selection of subjects, selection of test, reliability of
data, collection of data, test administration and statistical techniques for
analyzing the data have been described.

Selection of Subjects

Since the purpose of this study was to develop norms of physical
fitness for schoolboys in grades V to IX of Gujarat State, a list of all the
Government aided school of Gujarat State was procured. 20 schools from
various Districts were selected at random to have true representation of the
population. Total of six thousand subjects were selected for the purpose of
the study. 1200 subjects were selected from each age group i.e., 11-12 years,
12-13 years, 13-14 years, 14-15 years and 15-16 years by verifying their age
from school records a sample of 300 subjects was picked up in five age
groups, 60 subjects in each age groups were selected from every school. All
the principals and physical education teachers of selected schools were
contacted and the purpose of the study was explained to them. All of them
readily agreed to extend full cooperation and ensured that the subjects would
be made available for conducting the AAHPER Youth fitness test as and
when required.
Selection of Test

There were several tests available in literature for measuring physical fitness such as Oregon Motor Fitness Test, California physical Performance Test, N.S.W.A. Physical Performance Test, Canadian physical Fitness Test etc.¹ But for the purpose of this study AAHPER Youth Fitness Test was considered appropriate as the test items included, measured all the components of physical fitness. Other major characteristics of selected test were its wide range of application for boys. Further the items included in the test were administratively feasible and could be conducted with standard and even non-standard facilities. The items included in the test were based on natural movements, which did not involve special skill or technique².

Even though, research scholar did not validate the AAHPER Youth Fitness Test for the purpose of this study, its long-standing use and adoption in a numerous research studies conducted in India formed another basis for selection of this test.

So, keeping the above contention and criteria in mind, the AAHPER Youth Fitness Test was selected for the purpose of developing norms. The test had the following items:

1. Pull ups
2. Bent Knee Sit-ups (sixty seconds)
3. 4x10 M. Shuttle Run
4. Standing Broad Jump
5. 50 M. Dash
6. 600 M. Run /walk

Collection of Data

Administering the AAHPER Youth Fitness Test to the selected subjects the data was collected with regard to physical fitness and its components.

Reliability of Data

Establishing the instrument reliability, tester's competency, and reliability of test and subjects' reliability ensured the reliability of data.

Instrument Reliability

All the instruments used in the study such as weighing machine, stopwatches and measuring tapes were available in the Department of Physical Education The M.S.U. of Baroda, which were supplied by standard manufacturers. Their calibrations were accepted accurate enough for the purpose of this study.
Tester Competency and Reliability of Test

The tester competency was evaluated together with reliability of the test. The research scholar had a number of practice sessions in the testing procedures under the guidance of the expert in the field. To determine the reliability of the test, Test-Retest method was employed and the research scholar himself recorded the performances of 50 subjects selected at random were recorded twice on each item of AAHPER Youth Fitness Test, A Pearson's Product Moment Correlation was computed between the two measures of each test item and these reliability coefficients are shown in Table 1.

**TABLE 1**

**RELIABILITY COEFFICIENTS OF TEST – RETEST SCORES**

<table>
<thead>
<tr>
<th>Test Items</th>
<th>Coefficient of Reliability ‘r’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pull-ups</td>
<td>.91</td>
</tr>
<tr>
<td>Bent-knee Sit-ups</td>
<td>.92</td>
</tr>
<tr>
<td>Standing Broad Jump</td>
<td>.87</td>
</tr>
<tr>
<td>4x10 m. Shuttle Run</td>
<td>.89</td>
</tr>
<tr>
<td>50m. Dash</td>
<td>.92</td>
</tr>
<tr>
<td>600 m. Run/walk</td>
<td>.86</td>
</tr>
</tbody>
</table>

Significant at 0.01 level of significance
N=50
‘R’ (48 = .354)
From the test – retest coefficients of correlation as shown in Table 1, it was obvious that the tester reliability was significantly high, establishing the competency of the scholar to administer the test.

The correlation coefficients also indicated the reliability of the test selected, as very high correlations were obtained, when the test was repeated.

Subject Reliability

The above test – retest coefficients of correlation also established the reliability of subjects as the same tester used the same subjects under similar conditions and no motivational techniques were used nor any training imparted.

Administration of AAHPER Youth Fitness Test

For the administration of AAHPER Youth Fitness Test, the research scholar requested the services of physical education experts, to assist him in conducting the test, who were well versed with testing procedure but still to ensure uniformity in the testing procedure, identifying all the problems that can be faced during testing, such as procedure of testing, scoring and recording etc, a clinic was conducted for the official team. The clinic included a demonstration test in which some performances were measured and were recorded by the members of testing team to establish the objectivity and reliability of all the testers. The clinic was conducted under the supervision of
Test and Measurement expert and Principal, Chhotubhai Purani College of Physical Education, Rajpipla, Gujarat, Director Department of Physical Education, The M.S.U. of Baroda as well as the research scholar himself.

The research scholar with the team of officials visited all the schools included in the sample and inspected the facilities available for conducting the test. Alternate facilities adjacent to the schools were located in case of those schools, which will not found to have adequate facilities required for conducting the test.

A schedule for testing in different schools was planned and the schools were informed in advance, the dates on which the tests were to be conducted in the schools. The scholar along with the helping, professional colleagues met the subjects and the objectives of the test were explained and also the demonstration of the test items was given to them. The subjects were supplied with performance cards before testing which they were to carry with them while performing the test. They were instructed to handover those cards to the tester after completion of the test. The performances of the subjects were recorded as per the procedure.

The administered six items of the AAHPER Youth Fitness Test were as follows:

**Pull-ups**

**Objective:** - To measure arm and shoulder strength.
**Equipments:** A horizontal bar positioned at a height that allowed the subjects to hang without touching the ground.

**Procedure:** The bar was adjusted to a height that permitted the subjects to hang free from the floor. From the hanging position with an overhand grip (palms forward), the body was pulled upward until the chin rested over the bar, and then lowered until the arms were straight. This movement was repeated to exhaustion. The subjects were not allowed to kick, jerk or use a "hip" movement.

**Scoring:** The subject’s score was the number of correctly executed chin-ups.

**Bent knee sit-ups.**

**Objective:** To measure muscular endurance.

**Equipments:** Stopwatch and a mat.

**Procedure:** The subject was asked to lie down on his back with the legs bent and the feet flat on the floor close to the body. The distance between the buttocks and the heels was twelve inches. The hands were clasped behind the head. On the signal 'go' the subject came up & touched the elbows to the knee and went back down to the floor to the starting position. He did as many sit-ups as possible in 60 seconds.

**Scoring:** The score was the completed sit-ups in 60 seconds.
4x10M. Shuttle Run

Objective: To measure agility.

Equipments: Stop watch and two blocks of wood (2"x2"x4"). Wooden clapper.

Procedure: Marking of two, parallel lines 3 meters in length were drawn 10 meters apart, considering one as starting point. The subject stood at starting point, with the two wooden blocks place on the edge of the other line. On the staring signal with clapper, the subject ran to the wooden block, and lifted one block and returned to the starting line and placed the block behind the line. He then returned to the second block, lifted it and then sprinted across the starting line on the way back.

Scoring: The score was the elapsed time recorded in seconds.

Standing Broad Jump

Objective: To measure the explosive power of legs.

Equipment: A measuring steel tape.

Procedure: One-meter take-off line was marked on the edge of sandy pit. The subject stood behind the marked line with his feet slightly apart and parallel. He took a crouch position by bending his knees and swinging his arms backwards then took jump forward as far as he could at a stretch, with one maximum effort along with forward arm swing and landed in front.
Scoring: The distance between the nearest heel mark and the starting line was recorded. Three trials were given and the best of the trials was recorded in centimeters.

50 Meters Dash

Objective: To measure speed.

Equiments: Two stopwatches and wooden clapper

Procedure: An area was marked on a sandy track. Two parallel lines 10 meters in length were drawn 50 meters apart, considering one as starting line. After little warm up the subject took a position behind the starting line. Two subjects ran at the one time. The starter used the command ‘Ready’ and on clapper sound the subjects took off and finish at end line only. One trial was permitted.

Scoring: The score was the elapsed time to the nearest tenth of a second between the starting signal and the instant the subjects crossed the finish line.

600-Meter Run/walk

Purpose: To measure the endurance.

Equipments: 5 Stopwatch, wooden clapper.

Procedure: On 400 meters sandy track a curved starting line was marked. In the morning session 10 subjects took a position behind the starting line. The starter used the command Ready and on clapper sound the
subjects took off for one complete lap and 200 meters and finish at end line only. One trial was permitted. Each timekeeper took time for two subjects. 

**Scoring:** Time was recorded in seconds on completing 600 Meters

**Statistical Techniques Used for Analysis of Data**

Since the purpose of the study was to develop physical fitness norms for Schoolboys in grades V to IX, having 5 age groups i.e., 11-12 years, 12-13 years, 13-14 years, 14-15 years, and 15-16 years of Gujarat State. Two scales namely, Percentile Scale and 7Sigma Scale were used age wise for each item of AAHPER Youth Fitness Test.